PROMOTING HEALTHY FOOD CHOICES IN EARLY CHILDHOOD: AN ECOLOGICAL APPROACH

By

ASHLEY ELIZABETH MANNING

Bachelor of Arts (Honours), Environmental Studies
Carleton University, 2008

A thesis submitted in partial fulfilment of the requirements for the degree of

MASTER OF ARTS
in
ENVIRONMENTAL EDUCATION AND COMMUNICATION

Please accept this thesis as conforming to the required standard

Dr. Tony Myres, Thesis Supervisor
Scientist Emeritus, Health Canada,
Consultant, Public Health Sciences

Dr. Richard Kool, EEC Program Head
School of Environment and Sustainability

Ms. Michael-Anne Noble, Director
School of Environment and Sustainability

ROYAL ROADS UNIVERSITY

August 2012

© Ashley Elizabeth Manning, 2012
Abstract

Objective: Assess the effectiveness of an ecological approach to promote healthy food choices in early childhood education through an educational workshop series.

Design: Utilizing play-based learning, the workshops emphasized an ecological approach to health and food choice by letting children explore and experience healthy foods through various play-based and experiential activities. Data were collected and analyzed using grounded theory of semi-structured interviews with children, parents, and early childhood educators (ECEs), thematic analysis of children’s drawings, and quantitative food preference and food categorization surveys conducted with the children.

Setting: The work was undertaken in three YMCA child care centres located in the Greater Toronto Area: Newcastle, Unionville, and inner-city Toronto.

Participants: Participants comprised of 19 children, 5 parents, and 9 ECEs.

Conclusions: The ecological approach to the promotion of healthy food choices in early childhood education was demonstrated to be an effective health promotion strategy for children aged 3 to 5.
Acknowledgements

I would like to thank my supervisor, Dr. Tony Myres, and his wonderful wife, Rita, for welcoming me into their home and for sharing their wealth of knowledge as well as the many cups of tea and cookies throughout this process.

I owe many thanks to my incredible parents and close friends who have supported me throughout my academic endeavours. From hours spent helping me proofread to much needed comic relief, I appreciate it all more than you will ever know.

A sincere thank you to the CIHR for making this project possible by funding this research through the Sir Frederick Banting and Charles Best Masters Scholarship.

A very big thank you to the amazing staff at the YMCA in the GTA. I could not have asked for a better partner in this research project. Their vision and dedication to the health and well-being of the community is inspiring. Also, a very special thank you to all the amazing staff, parents, and children who participated in this research project. Without them, this research would not have been possible.

I would also like to thank Real Food For Real Kids Inc. for sharing its passion in bringing “real food” to families, schools, and child care centres across the GTA, and for participating in this research project. As well, I would like to thank Creative Change Educational Solutions for partnering on this research project and granting me access to the many amazing resources available through its resource centre.

A very big thank you goes out to my wonderful editor Karen Crosby at Documedic Editing Solutions for taking such good care of me and my document in the final formatting and editing phase.

And finally, thank you to my wonderful professors, past, present, and future.
Dedication

I dedicate this publication to the wonderful children, parents, and staff of the YMCA child care centres in the Greater Toronto Area.
Table of Contents

Abstract ............................................................................................................................... ii
Acknowledgements........................................................................................................... iii
Dedication .......................................................................................................................... iv
Table of Contents ............................................................................................................... v
List of Tables ...................................................................................................................... vii
List of Figures .................................................................................................................. viii
Chapter 1: Introduction ..................................................................................................... 1
Chapter 2: Literature Review .............................................................................................. 4
  Why Early Childhood? ................................................................................................... 5
  Why Child Care Centres? ............................................................................................... 7
  Why an Ecological Approach to Promoting Healthy Food Choices? ......................... 8
  Why Play-Based and Age- or Developmentally Appropriate Learning? .................... 9
Existing Educational Programs in Early Childhood Around Food Choice ................. 11
Summary ....................................................................................................................... 15
Chapter 3: Methodology ................................................................................................... 16
  Research Design and Rationale .................................................................................... 16
  Data Collection and Analysis Methodologies ............................................................ 21
    Grounded theory methodology ................................................................................. 22
    Thematic analysis methodology .............................................................................. 25
    Descriptive statistical analysis ................................................................................. 29
  Data Collection ............................................................................................................. 30
  Quantitative Methods .................................................................................................. 31
  Participants and Site ..................................................................................................... 33
  Conduct of the Study .................................................................................................... 36
    Site protocol .............................................................................................................. 37
    Questionnaires ......................................................................................................... 38
    Workshops ................................................................................................................ 39
Chapter 4: Results ............................................................................................................. 45
  Children Semi-Structured Interviews ....................................................................... 45
    Connotations of “healthy foods.” ............................................................................... 45
    Knowledge of origins of foods .................................................................................. 46
    Knowledge of elements of food distribution ............................................................ 46
    Child engagement with food ..................................................................................... 46
List of Tables

Table 1. Six Phases of Thematic Analysis ................................................................. 27
Table 2. Child Identification of Healthy Foods .......................................................... 66
Table 3. Child Classification of Healthy Foods ............................................................ 70
Table 4. Child Classifications of Various Foods by Age ............................................. 72
Table 5. Child Classifications of Various Foods by Social Economic Status ............. 74
Table 6. Child Classifications of Unhealthy Foods ................................................... 75
Table 7. Child Food Preference for Healthy Foods .................................................... 79
Table 8. Child Food Preference for Unhealthy Foods ................................................. 81
List of Figures

Figure 1. The data collection process. ................................................................. 33
Figure 2. Correct identification of healthy foods by children at all sites................. 67
Figure 3. Child classification of foods. ............................................................... 71
Figure 4. Child classification of foods by age (food group 1). ............................... 73
Figure 5. Child classification of foods by socioeconomic status......................... 74
Figure 6. Child classification of foods by age (food group 2). ............................... 76
Figure 7. Child food preferences. ................................................................. 78
Chapter 1: Introduction

Currently in the developed world, diet-related chronic diseases account for the largest cause of morbidity and mortality (Hennig et al., 2007). This is a complex public health issue with multi-factorial causation, but the population’s poor eating habits are clearly implicated. An unhealthy diet is a major factor contributing to increasing rates of obesity, cardiovascular diseases, and diabetes, which have already reached epidemic proportions (Hennig et al., 2007). One of the most affected populations entangled in this health crisis is children. Canada ranks one of the highest for childhood obesity in the industrialized world, with children being diagnosed as obese as young as two years of age (Canadian Council of Food and Nutrition, 2008).

While the cause of this epidemic is understood to arise from various genetic and environmental factors (Lytle, 2005; Stunkard, Berkowitz, Stallings, & Schoeller, 1999; Wells & Ritz, 2001), a known and significant contributing factor is children’s food behaviours, preferences, and habits (Brown & Ogden, 2004; Schwartz & Puhl, 2003; Wells & Ritz, 2001). The 2009 Heart and Stroke Report on the health of Ontario kids noted that if adults do not address the poor eating habits of the current generation, these children will face a shorter lifespan than that of their parents due to the risks of developing diet-related chronic diseases (Heart and Stroke Foundation of Canada, 2009).

People’s relationship with food is irrefutably one of the most important relationships everyone shares. This relationship is more than simply a means of delivering nutrients and calories to the body—“it is an integral part of our lives” (Liakos Evers, 2006, p. 8). Food sustains people, brings them together, and connects them—“never lingering far from our minds or activities” (Liakos Evers, 2006, p. 8). However, in
recent years, there has been a significant shift in Canadian food habits (Serecon Management Consulting Inc., 2005). Consumers are becoming increasingly disconnected from food preparation and meals are becoming more and more portable (Serecon Management Consulting Inc., 2005, p. i). This “transition to high-fat, high-calorie, and highly processed foods lacking in micronutrients has caused people to be simultaneously overfed and undernourished” (Rakestraw, 2006, p. 11).

The Canadian population’s state of health is triggering alarm bells (Hennig et al., 2007), and this deterioration has a great deal to do with the food system (Neff, Palmer, McKenzie, & Lawrence, 2009). Food-related diseases are reaching epidemic proportions, and children are the most affected (Heart and Stroke Foundation of Canada, 2010). The diets of children in Canada are not only high in sugary, heavily processed foods (J. Taylor, Evers, & McKenna, 2005), but also severely lacking in fruits and vegetables: half of the population of Canadian children are not even meeting the minimum daily recommended serving per day of fruits and vegetables (Heart and Stroke Foundation of Canada, 2009).

Therefore this problem signifies not only a health crisis, but also a crisis within our agricultural food system. A shift is needed back to natural whole foods, in which taste and nutrition are the driving factors and in which human health, environmental impacts, and community food security are given significant consideration within the agricultural food system (Feenstra, 2002).

The solution may lie, in large part, in a paradigm shift of societal norms regarding perceptions of how food choices affect human health, the health of the environment, and most important how the two are unequivocally linked. By developing an age-appropriate
ecological approach to healthy food choices, I believe Canadians can address one of the major causes of illness and its prevention and provide children with the best start in life for optimal growth and development (Canadian Partnership for Children’s Health and Environment, 2005).

Through this study I addressed the research question, “how effective is an ecological approach in promoting healthy food choices in early childhood education?” Using developmentally appropriate environmental education workshops, I evaluated the effectiveness of an ecological approach to healthy food choices as a public health strategy in early childhood education (ECE). Utilizing play-based learning, I conducted workshops within three YMCA child care centres in the Greater Toronto Area (GTA). The workshops were designed to emphasize an ecological approach to health and food choice by allowing the children the opportunity to explore and experience healthy foods through various play-based and experiential activities. Through its implementation, the aim was to encourage the children to make the connections between their food choices, their health, and the health of the environment, leading to what I hope will evolve into a lifelong interest in healthy eating and a reverence for the connections between their health and the environment.

Throughout this paper I have attempted to use understandable, jargon-free language to discuss the ideas and results of this study. The aim is to spark interest and further exploration into this approach in the academic realm, as well as within local communities at the public and policy level.
Chapter 2: Literature Review

Food is an ecosystem issue crossing social, economic, and biophysical boundaries. The food system is a complex network that has both local and global dimensions, possessing strong cultural and economic connections, as well as health and environmental implications. However, when there is strain on the system, the negative implications are widespread and are felt across the social, economic, and biophysical boundaries. This is where Canadians currently find themselves in the prevailing food system. Unsustainable food practices have resulted in environmental degradation and negative economic effects on local food communities (Feenstra, 2002; World Society for the Protection of Animals, 2012), as well as individuals who are seriously disconnected from the origins and quality of their food.

This serious disconnect has resulted in a shift in the eating habits of Canadians. Consumers are becoming increasingly obsessed with convenience, resulting in a rise in sales of prepared foods and an increasing disconnection from food preparation (Serecon Management Consulting Inc., 2005). Consequently, the diets of Canadian children are high in sugars and highly processed foods. To exacerbate this problem, an overwhelming 50% of Canadian children are not even meeting the minimum daily recommended serving per day of fruits and vegetables (Heart and Stroke Foundation of Canada, 2009).

These eating habits have significant implications. While both genetics and environmental factors have been found to play a large role in childhood chronic diseases (Lytle, 2005; Stunkard et al. 1999; Wells & Ritz, 2001), it is recognized that a child’s food preferences, food choices, and mealtime behaviours are significant contributing factors (Brown & Ogden, 2004; Schwartz & Puhl, 2003; Wells & Ritz, 2001). Given the
significant social, economic, and biophysical implications of poor eating, the solution to the current diet-related health crisis must be equally transdisciplinary (Max-Neef, 2005).

This literature review provides a synopsis of research on the need to promote healthy food choices in early childhood using an ecological approach. The review examines the research literature in the following areas: 1) intervention beginning in early childhood; 2) intervention within child care centres; 3) an ecological approach to promoting healthy food choices; 4) play-based and age- or developmentally appropriate learning; and 5) the need for existing educational programming to promote healthy food choices in early childhood.

**Why Early Childhood?**

The importance of introducing and encouraging children to consume healthy foods early in life has been well established through numerous studies such as those of Anderson et al. (2005), Aldridge, Dovey, and Halford, (2009), Cashdan (1994), Escobar (1999), Drummond (2010), Haire-Joshu et al. (2003), Hendy (1999), Liem and Menella (2002), and Skinner, Carruth, Bounds, and Ziegler (2002). These studies have offered compelling support to the argument that experiences early in life greatly influence child health and well-being later in life and that the attitudes and behaviours formed in early childhood can persist into adulthood. The research from a range of disciplines has pointed to early childhood as presenting a pivotal time in a person’s development to establish healthy lifelong eating habits and dietary preferences (Birch & Davidson, 2001; Cashdan, 1994; Hendy, 1999; Shonkoff & Phillips, 2000; Whittaker, Wright, Pepe, Seidel, & Dietz, 1997). As Haire-Joshu et al. (2003) stated, a child’s preferences for unhealthy
foods are deeply established by the time the child reaches the age of eight. This further supports the urgent need to reach children during their earliest years.

Building on the argument that healthy food promotion should begin during a child’s earliest years, Shonkoff and Phillips (2000) argued that during early childhood, a child’s development occurs at a faster rate than during any other time during the child’s life. Furthermore, by the age of three, children have developed to the stage where they are able to model the typical behaviours they observe in their environments (Brown & Ogden, 2004; Faith, Johnson, & Allison, 1997; Whittaker et al. 1997), further supporting the important role that life experiences play during a child’s early development in shaping food preferences (Cashdan, 1994; Hendy, 1999; Liem & Menella, 2002).

This is supported by the findings of Aldridge et al. (2009), who stated that children who are introduced to healthy foods early in life have a higher likelihood of developing healthy food preferences and behaviours later on in life. Similarly, Skinner et al. (2002) reported that children who were exposed to a wide assortment of fruits and vegetables during early childhood favoured these foods later in life. Of particular interest was the finding that the most notable predictor of a child’s food preference at the age of eight was the child’s food preference at the age of four.

As the research has illustrated, “the early years are a key time for experimenting with and establishing dietary habits, some of which may have a major influence on the risk for developing certain chronic diseases later in life” (Escobar, 1999, p. 2). Furthermore, the research has suggested that in addition to empowering the children, such educational programs can empower early childhood centres themselves to become advocates for healthy food choices, food security, and sustainability (Drummond, 2010).
Drummond also stated that the benefits of encouraging healthy food choices can expand beyond the classroom, influencing the attitudes and habits of siblings, parents, and the larger community. Thus, these habits empower children not only to adopt healthy food habits themselves, but also to act as agents of change within their families and communities (Drummond, 2010).

Building on the well-established need to promote healthy food choice during early childhood, research has since highlighted the urgent need for the development of educational programs and materials within early childhood centres and for early childhood educators (ECEs) who can effectively deliver the programs related to food choice and nutrition education (Fees, Trost, Bopp, & Dzewaltowski, 2009; Fleischacker, Cason, & Achterberg, 2007; Mooney, Boddy, & Stratham, 2008; Moore et al., 2005; Romaine, Mann, Kienapple, & Conrad, 2007).

**Why Child Care Centres?**

Over the past 10 years, the percentage of Canadian children attending child care has increased considerably (Statistics Canada, 2005). As Statistics Canada (2005) has indicated, over 50% of all Canadian children between six months and five years spend a significant amount of time in child care. This statistic is not dependent on the children’s demographic background, as use of child care services is seen within the various demographic populations (Statistics Canada, 2005). On average, the children are spending over 27 hours per week in child care (Statistics Canada, 2005), often consuming multiple meals and snacks during this time.

Research has indicated that ECEs recognize their role in shaping children’s eating habits and preferences. They consider the development of healthy eating behaviours in
the children in their care to be one of their core responsibilities due to the considerable amount of time they spend with the children on a regular basis, which often includes meals and snacks (Moore et al., 2005; Pagnini, Wilkenfeld, Ling, Booth, & Booth, 2007). As a result of their perceived responsibility, the ECEs often make various social and health considerations pertaining to snacks and meal times. Such considerations include providing healthier food options, arranging the tables so that the children can all sit together, and often allowing the children to portion control and serve themselves. It is also important to note the power of positive peer pressure in seeing their peers demonstrating healthy eating behaviours during their shared time in the child care setting (Moore et al., 2005). As Moore et al. (2005) stated, such peer influence can positively affect the variety of foods children were willing to eat.

**Why an Ecological Approach to Promoting Healthy Food Choices?**

An important argument discussed in the literature on encouraging healthy food choices in early childhood is the connection between food choice, sustainability, and the environment itself (Davis & Cooke, 2007; Drummond, 2010; Pecaski McLennan, 2010). When teaching children about food choice, parents and educators must frame the issue in a manner that appropriately addresses it within the larger social and physical context, discussing the full process from seed to table. Such an approach to food literacy encourages the early acquisition of the knowledge, skills, and capacities required to adopt healthy food behaviours throughout one’s life. This includes knowledge, skills, and capacities relating to growing, selecting, storing, preparing, cooking, and serving food (Drummond, 2010). This approach also allows children to acknowledge the intricate connection between food and the environment. For not only does the way people grow,
process, and package foods have an impact on the environment, but as Shapiro (2010) stated, “Our diet is the environment” (p. 247).

By highlighting the connections between a child’s health, his or her food choices, and the health of the environment, we can nurture a child’s empathy towards the natural world, cultivating a “sense of connectedness [which can evolve into] the emotional foundation for the more abstract ecological concept that everything is connected to everything else” (Sobel, 1996, p. 13). After all, as Shapiro (2010) stated, there is something magical “about seeing the fruit as an extension of a tree” (p. 250). Seeing “the dynamism . . . and separate categories like wood and fruit morphed together into a single object” (Shapiro, 2010, p. 250) blurs the divisions often emphasized in textbooks and places food within the context of the food system and the larger cycle of life.

This approach is supported by Lynch and Batal (2011), who highlighted the opportunity that child care providers have in being able to take children on outings to the grocery store, outdoor fruit and vegetable markets, and apple orchards. They believed that this allows children to be introduced to new and fresh local foods while positively affecting their development of food preferences.

**Why Play-Based and Age- or Developmentally Appropriate Learning?**

Curricula within ECE across the globe emphasize play as being fundamentally important at the early childhood stage of the learning process. Furthermore, Pramling Samuelsson and Asplund Carlsson (2008) asserted that there is “heavy rhetoric about play as necessary for learning and education” (p. 624). However, the separation of play and learning is surprisingly still the most common approach to teaching in ECE (Pramling Samuelsson & Asplund Carlsson, 2008).
This thesis project aimed to implement a series of short workshops, which utilized play-based learning, using games, storytelling, explorative learning, and the creative arts. The advantages of play-based learning lie in its ability to allow children to engage and “communicate and interpret continuously in the negotiation with peers and role play” (Pramling Samuelsson & Asplund Carlsson, 2008, p. 627). Therefore, play helps children develop their meaning-making and communication skills.

Furthermore, as White and Stoecklin (2008) argued, to be successful, children’s education “needs to be designed to match children’s developmental needs, interests, abilities and learning styles” (p. 1). This idea was supported by Sobel (1996) in his book Beyond Ecophobia, in which he argued for the need for developmentally appropriate curricula and passionate adults to help guide the students in their exploration of the natural world, instilling in them a deep respect for nature and natural systems along the way.

In the context of teaching about the connections between food choice, health, and the environment within ECE, creating developmentally appropriate curricula translate into ensuring the material is framed within a positive affect and is age appropriate for young children. In doing so, the curricula will allow educators to cultivate a sense of connectedness, which, as Sobel (1996) stated above, can “become the emotional foundation for the more abstract ecological concepts that everything is connected to everything else” (p. 13). Inherently, this form of instruction can create a strong foundation for the children to build upon in their discovery and appreciation of the natural world and its connection to their own health. If this approach proves effective
within early childhood, then it will provide an opportunity for further exploration and application in other public health promotion programs.

**Existing Educational Programs in Early Childhood Around Food Choice**

In preparing the health promotion workshops for this thesis, I thoroughly researched existing education programming promoting healthy and sustainable food choices utilizing an ecological approach during early childhood. As highlighted by Fees et al. (2009), Fleischacker et al. (2007), Mooney et al. (2008), Moore et al. (2005), and Romaine et al. (2007), there is a great need for the development of educational strategies, programs and materials for ECEs in the child care setting. This knowledge gap regarding the educational strategies and programs, and lack of initiatives that target early childhood, are quite obvious when looking at the current health and nutrition promotion strategies for children, which predominantly target elementary-school-aged children. As indicated earlier, such intervention strategies may be starting too late to be effective; as Jaime and Lock (2009) and Thomas (2006) argued, the effectiveness of nutritional interventions in elementary schools have been shown to be only minimally effective in creating long-term improvements in the food behaviours of children. This further supports the need for the development of programs and interventions that target children during early childhood, when they are still at the pivotal stage of development for the formation of positive dietary preferences and behaviours (Birch & Davidson, 2001; Cashdan, 1994; Hendy, 1999; Shonkoff & Phillips, 2000; Whittaker et al., 1997).

One significant contributor to the field that utilizes an ecological approach to promoting healthy food choices in early childhood is the award-winning *Early Sprouts* program (Kalich, Bauer, & McPartlin, 2009). It is a research-based nutrition program that
promotes healthy food choices and food behaviours in young children by growing, harvesting, and preparing organically grown foods. The program, which won the U.S. Surgeon General’s Community Champion’s Award, is committed to building community partnerships and implementing cost-effective programs to promote healthy food choices and behaviours (Kalich, Bauer, & McPartlin, 2009). The program offers a 24-week engaging curriculum that promotes healthy eating through hands-on sensory and explorative learning in the garden, in the classroom, and at home (Kalich, Bauer, & McPartlin, 2009). The program includes cooking activities, family nutrition education programming, take-home Family Recipe Kits—which include key ingredients and detailed instructions to prepare the recipe at home with the involvement of the child, as well as a cookbook provided to the parents at the end of the year with all of the Early Sprout recipes (Kalich, Bauer, & McPartlin, 2009). Using a seed-to-table approach to nutrition education during early childhood, Early Sprouts targets six vegetables (carrots, Swiss chard, green beans, tomatoes, butternut squash, and bell peppers) that offer a range of colours and various edible parts of the plant (Kalich, Bauer, & McPartlin, 2009). As part of testing the Early Sprouts model, food preference assessments of the children are conducted three times a year, and through this evaluation process researchers have discovered that over the course of the program, the children’s willingness to try the vegetables significantly improves, as does their preference for all six target vegetables (Kalich, Bauer, & McPartlin, 2009).

A big difference between the Early Sprouts program and many other health promotion initiatives that focus on young children is that while it offers various activities that require a growing area or garden, many of the activities, along with their amazing
benefits, can be achieved without a garden or growing space. Instead they can be incorporated into various classroom and cooking activities. This is an important aspect, considering that not all child care settings have land available for gardening or optimal weather conditions to include such an educational tool for much of the year. That being said, the cooking-oriented approach taken by Early Sprouts can be quite materially demanding and may be better suited for some child care settings over others, depending on the cooking facilities and materials available at each individual child care facility.

Other programs from which I drew inspiration include the Lifecycles Project Society (2012), based in Victoria, British Columbia. This organization offers various healthy food promotion initiatives, including their Growing Schools program, which through the creation of school-based organic food gardens, educates school-aged children on the interconnecting topics of urban agriculture, food security, environment, community development, and health. They have also developed Patterns Through the Seasons curriculum in partnership with the Evergreen Foundation (Welby, 2003), which offers a full year of food and garden activities for kindergarten through grade 7, many of which can be conducted or adapted to work within the classroom environment.

Another program from which I also drew much inspiration was the Creative Change Environmental Solutions’ program. Creative Change Environmental Solutions (2009a, 2009b) is a national leader in education and sustainability, based in southeast Michigan, United States. They offer multimedia curriculum resources, packages, and customized programs that “place food systems, revitalization, and other sustainability issues at the centre of innovation and reform” (Creative Change Educational Solutions, 2009a, para 2) and connect student achievement with civic engagement and community
well-being. They offer programs that target audiences that include pre-kindergarten to grade 5, grades 6 to 8, grades 9 to 12, higher education, and adult education (Creative Change Educational Solutions, 2009b).

One Creative Change program, which I evaluated and from which I adopted various activities to fit the workshop series for this project, was the *Taste of Change: Shaping Sustainable Food Systems program*. This program covers topics ranging from food and culture, our food “footprint,” the history of food systems, agricultural technologies, food chains and webs, energy and food systems, price versus cost, globalization, local economies, subsidies, and food policy. This program also crosses the disciplines of environmental science, biology, health, earth science, civics, geography and global studies, math, language arts, history, and economics. The program, which is targeted toward pre-kindergarten to grade 5, focuses primarily on how food relates to health and well-being and discusses topics related to food systems.

While all of these programs offer amazing resources and are well constructed for older children, there were limited activities that could be conducted with young children (three to five years of age), as the activities often required writing skills and competencies above the level of early childhood. However, I was able to adapt some of the activities to be more sensory and play-based to appeal to the early childhood age group.

All of the programs discussed above offer curriculum promoting healthy food choices utilizing an ecological approach, that are not dependent on having an outdoor gardening space available and that encourage collaboration and engagement of children,
parents, and ECEs—all things that I strived to include in my own workshop series promoting healthy food choices in early childhood utilizing an ecological approach.

**Summary**

Early childhood is undoubtedly a pivotal time to influence food preferences and behaviours (Birch & Davidson, 2001; Cashdan, 1994; Hendy, 1999; Shonkoff & Phillips, 2000; Whittaker et al., 1997). In order to capitalize on this critical life stage, research has shown that it is necessary to develop and implement educational programs that strongly establish healthy, sustainable, nutritional preferences and behaviours in children, which will continue well into adulthood (Catford, 2007; Kalich, Bauer, & McPartlin, 2009). In utilizing the child care setting and the play-based learning approach, research has further suggested educators are able to target the educational programming to fit the learning styles and capabilities of young children (Kalich et al., 2009; Pramling Samuelsson & Asplund Carlsson, 2008). By utilizing an ecological approach, the above research has suggested that stakeholders might be able to create a paradigm shift of societal norms and perceptions of how food choices affect physical, community, and environmental health, and how they are all unequivocally linked.
Chapter 3: Methodology

Research Design and Rationale

In his book, Jean Lebel (2003) posed the question, “Can people remain healthy in a world that is sick?” (p. 1) After all, as he stated, “Our health closely mirrors the health of our surroundings” (Lebel, 2003, p. v), and human health cannot be considered in isolation from the state of the environment in which people live—“for people to be healthy, they need healthy environments” (Lebel, 2003, p. xi). The connections between human health and the environment resonate strongly with the current food framework. The saying “You are what you eat” is familiar for good reasons. The quality of food and how it is grown, harvested, processed, and sold all have a huge impact on physical health—as well as the environmental, economic, and social health of communities (Gillespie & Smith, 2008). This is the underlying hypothesis for this thesis project.

I have employed the ecohealth paradigm in promoting healthy food choices during early childhood. The rationale for employing this approach rests upon the notion that there are “inextricable links between humans and their biophysical, social, and economic environments” (Lebel, 2003, p. 2) and these links are “reflected in a population’s state of health” (Lebel, 2003, p. v). Employing the ecohealth approach to the promotion of healthy food choices in early childhood allows educators to educate young children not only about the benefits of consuming healthy foods but also about how their food choices fit into the larger context of the world in which they live.

Acknowledging this “intimate interdependence of human health and the ecosystem in which we are embedded” (Webb et al., 2010, p. 249), research and educational frameworks need to address this multifactoral and dynamic relationship and
must overcome the “separation of humans and ecosystems” (Webb et al., 2010, p. 439). Such an approach is essential if we are to shift the way children perceive how their food choices affect their own health, the health of the environment, and, most importantly, how the two are linked.

The ecosystem approach to health (also known as ecohealth) offers a vision and the necessary tools for researchers and decision-makers to use in collaboration with communities in order to develop health and environmental policies (Lebel, 2003). This innovative approach proposes “inviting scientists, decision-makers, and community members to work towards improving the community’s health by improving the environment” (Lebel, 2003, p. xii). The ecohealth approach arose in the 1990s as a way to address complex and interrelated issues affecting population health, such as environmental degradation, sustainability, poverty, and chronic illness (Webb et al., 2010). The shift to the new research paradigm of the ecosystem approach to health has heralded significant Canadian leadership in applying systems thinking to address challenges as varied as integrated water and natural resource management, sustainable development, adaptive management of social-ecological systems and an “ecological” orientation in health promotion and healthy settings approaches. (Webb et al., 2010, p. 440)

One significant example of Canada taking a leadership role in the application of the ecohealth approach has been in the creation of the ecohealth program within Canada’s International Development Research Centre (IDRC). The creation of the ecohealth program was the IDRC’s first step in “adopting a deliberately transdisciplinary approach in an IDRC program” (Lebel, 2003, p. xii). Since its inception in 1996, the program has
supported over 70 projects in approximately 30 countries in Latin American, Africa, the Middle East, and Asia (Lebel, 2003). While still a relatively new and evolving field, the ecosystem approach to health rests upon three methodological pillars: transdisciplinarity, gender and equity, and community participation (Lebel, 2003).

The transdisciplinary approach refers to the holistic lens required to examine the various biophysical, economic, and social environments that influence ecosystem-related health problems (Lebel, 2003). It also refers to the approach’s dedication to the full inclusion and participation of the various stakeholders that include researchers and other specialists, community members, and decision makers (Lebel, 2003).

The gender and equity approach recognizes the importance of factoring in gender dimensions and differences between various social groups (Lebel, 2003). As Lebel (2003) stated, “Research does not take place in a vacuum” (p. 25); it is conducted within communities with men, women, boys, and girls whose lives are determined by various social, economic, and cultural factors. Understanding the polarities between the various social groups can lead to the development of more effective and targeted solutions and programs (Lebel, 2003).

Finally, the community participation approach aims to create and maintain participation, consensus, and cooperation both within the various stakeholder groups as well as amongst them (Lebel, 2003). By integrating needs, ideas, and information from the various stakeholders, it becomes “possible to define research objectives that clearly reflect the communities’ real priorities” (Lebel, 2003, p. 14). To achieve this, the community participation approach “gives equal weight to both local and scientific knowledge” (Lebel, 2003, p. 18).
As Webb et al. (2010) stated, the ecosystem approach to health simultaneously and systematically [embraces] ... environmental sustainability, transdisciplinarity, social justice, and gender equality, [and its] ... stakeholder participation provides a pathway, not only to understand complex problems in public health but also to translate that knowledge into effective policy and action at the local, national, and global levels. (p. 441)

This process makes the ecosystem approach to health “a highly desirable if not essential, context in which to promote human health at a time when environmental degradation has become inextricably linked to the long-term well-being of humankind” (Ole Nielsen, 2001, p. 75).

There are challenges in implementing the ecohealth approach within a research project. First, it often requires significant financial and human resources (Lebel, 2003). Second, the researcher must clearly communicate that the goal of the research is to help the community identify its own solutions and help establish the collaborations that will lead to sustainable change (Lebel, 2003). Despite these challenges, there are many benefits to employing the ecohealth approach, the most important of which is that it can provide solutions that are not only practical but also sustainable for the community (Lebel, 2003).

Supporting this approach is the application of the community-based participatory research (CBPR) paradigm, also referred to as community based health research (CBHR) when applied to health research (Horn & Mullan, 2004). Like the ecohealth approach, CBPR encourages “active and equal partnerships between community members and academic investigators” (O’Fallon & Darry, 2002, p. 155). The U.S. National Institute
of Environmental Health Sciences (NIEHS) is the leading biomedical research facility for environmental health that has led the promotion of the “use of CBPR in instances where community–university partnerships serve to advance our understanding of environmentally related disease” (O’Fallon & Deary, 2002, p. 155). Essentially, the purpose of the CBPR program is to improve intervention methods, produce exposure assessment data, study disease etiology, and promote knowledge transfer from within the scientific community to community residents and policy makers through the creation of tools and resources to improve public health promotion strategies and outcomes (Minkler & Wallerstein, 2008; O’Fallon & Deary, 2002).

In recent years, there has been a resurgence of interest in the application of community-based participatory approaches to public health issues, particularly in the realm of preventative health research (O’Fallon & Deary, 2002). CBPR promotes disease prevention as “the most effective form of healthcare because it protects people from illness, and as a result, saves money, minimizes suffering and improves the quality of life” (O’Fallon & Deary, 2002, p. 155).

The CBPR methodology rests upon the following six principles:

1. Promoting the active and equal collaboration and participation of all partners involved at every stage of the research;

2. Fostering co-learning in which both the researchers and the community residents contribute their expertise and perspectives;

3. Ensuring projects are community-driven by having the research questions guided by environmental and health issues or concerns of community members;
4. Disseminating results in to all partners in culturally appropriate, respectful, and understandable terms;

5. Ensuring the research and intervention strategies are culturally and contextually appropriate to the community under study; and

6. Lastly, defining community as it relates to the research carried out by the researcher and the participants (O’Fallon & Dearry, 2002).

By following these six principles, CBPR offers many benefits to both the researcher and the communities: building trust between researchers and community; increasing relevance of research questions; increasing quantity and quality of data collection; increasing use and relevance of data; increasing dissemination; translating research into policy; promoting the emergence of new research questions; extending research and intervention beyond a specific project; and finally, building infrastructure and sustainability (O’Fallon & Dearry, 2002, pp. 157–158).

In addition to the above benefits, I chose CBPR for this study because, as O’Fallon and Dearry (2002) stated, “CBPR can be an effective tool to enhance our knowledge of the causes and mechanisms of disorders having an environmental etiology and also to reduce adverse health outcomes by affecting policy change and developing culturally appropriate intervention strategies” (p. 158). Consistent with the ecohealth and the CBPR approach, I used multiple methods during this study to collect the essential data.

**Data Collection and Analysis Methodologies**

In addition to an analysis of the literature regarding an ecological approach to healthy food choice within ECE, the two main qualitative methodologies I used to
analyze the data for this study were grounded theory (Charmaz, 2006) and thematic analysis (Braun & Clarke, 2006). These methodologies were supported by quantitative data which I analyzed using descriptive statistics.

Applying this mixed-methods approach, I utilized qualitative data collected through semi-structured interviews (Whiting, 2008) with the children to capture their learning reflections immediately upon completion of the workshop series. In addition, I conducted semi-structured interviews with the parents and ECEs to assess changes in the children’s daily food choices. All interviews were analyzed utilizing grounded theory methodology (Charmaz, 2006) and entered into the analysis software Nvivo9 (Sorensen, 2008).

**Grounded theory methodology.** Grounded theory, which is a research methodology that promotes the development of theories “from research grounded in the data rather than deducing testable hypotheses from existing theories” (Charmaz, 2006, p. 4), can be applied to both qualitative and quantitative data, although it is used much more frequently in qualitative research (Charmaz, 2006, p. xi).

The premier book on grounded theory, *The Discovery of Grounded Theory*, was published in 1967 and authored by sociologists Barney G. Glaser and Anselm L. Strauss at a time when quantitative methods were the primary methodology. However, Glaser and Strauss rejected the notion that the quantitative methodologies were the only legitimate research methodologies and “proposed that systematic qualitative analysis had its own logic and could generate theory” (Charmaz, 2006, p. 5). Their goal was “to move qualitative inquiry beyond descriptive studies into the realm of explanatory theoretical frameworks, thereby providing abstract, conceptual understandings of the studied
phenomena” (Charmaz, 2006, p. 6). They defined the following seven pillars as the defining components of their original grounded theory methodology:

1. Simultaneous involvement in data collection and analysis;
2. Constructing analytic codes and categories from data, not from preconceived logically deduced hypotheses;
3. Using the constant comparative method which involves making comparisons during each stage of the analysis;
4. Advancing theory development during each step of data collection and analysis;
5. Memo-writing to elaborate categories, specifies their properties, define relationships between categories, and identify gaps;
6. Sampling aimed towards theory construction, not for population representativeness; and
7. Conducting the literature review after developing an independent analysis (Charmaz, 2006, pp. 5–6).

Glaser and Strauss (as cited in Charmaz, 2006) believed that employing these practices can help researchers “to control their research process and to increase the analytic power of their work” (p. 6). However, after publishing their book together, Glaser and Strauss took grounded theory in different directions; Glaser remained consistent to his original positivist approach while Strauss shifted the methodology towards verification and collaborated with Corbin to further grounded theory in this direction (Charmaz, 2006, p. 8). This led to the development of Charmaz’s (2006) variation of the grounded theory approach which I applied to my thesis. Charmaz has
offered a constructionist approach to grounded theory that has built upon Glaser and Strauss’s original approach.

Charmaz (2006) returned to “the classic statements of the past century and re-examine[d] them through a methodological lens of the present century” (p. xi). She further expanded on Glaser and Strauss’s approach in that unlike the original authors who perceived the discovery of theory grounded in data as being separate from the researcher observing, Charmaz believed “neither data nor theories are discovered. Rather, we are part of the world we study and the data we collect. We construct our grounded theories through our past, present involvements and interactions with people, perspectives, and research practices” (p. 10). Hence, this approach accepts “that any theoretical rendering offers an interpretative portrayal of the studied world, not an exact picture of it” (Charmaz, 2006, p. 10). She thus argued “for building on the pragmatist underpinnings in grounded theory and advancing interpretive analyses that acknowledge these constructions” (Charmaz, 2006, p. 10).

It is important to note that while Charmaz’s (2006) description of the process may appear linear, she acknowledged that it is far from linear in practice, as it often requires revising various steps. One disadvantage of grounded theory, according to Charmaz, is that the process, being nonlinear, can take interesting twists and turns depending on what the data reveal. While this can be an incredibly rewarding exercise, it can also be quite time and labour intensive.

Some of the advantages to grounded theory are that it grants the researcher an analytic edge to the research while still providing a solid foundation in data (Charmaz, 2006, p. xii). Charmaz (2006) expanded to say, “Grounded theory methods foster seeing
your data in fresh new ways and exploring your ideas about the data through early analytic writing” (p. 2); it also allows the researcher to “direct, manage, and streamline your data collection, and moreover, construct an original analysis of your data” (p. 2). She also pointed out that grounded theory lends itself well to “inform compelling descriptions and telling tales” (Charmaz, 2006, p. xii). Lastly, Charmaz highlighted that grounded theory methods often work well with other approaches to qualitative data analysis.

While I believe that the advantages greatly outweigh the disadvantages, I acknowledge the noted disadvantages of grounded theory. However, if the research is approached with an open mind and an appreciation of the interesting deviations and the various twists and turns that the data can take, it allows the researcher to address each challenge as they arise.

I also addressed issues of reliability and validity. This was achieved by ensuring sufficient data saturation. This means that the number of participants had not been defined going into the research. Rather, the interviews with the children as well as the parents and ECEs continued until I felt sufficiently satisfied that I had reached the maximum saturation of the data.

**Thematic analysis methodology.** In addition to grounded theory, I have also utilized thematic analysis methodology to analyze pictures that the children were encouraged to create during the final workshop to represent their perceptions of how food choices affect their health, the health of the environment, and their understanding of how the two are linked (Barraza, 1999; Braun & Clarke, 2006). As with the grounded theory,
the data collected from the thematic analysis was entered into and analyzed through the qualitative data analysis software Nvivo9 (Sorensen, 2008).

Thematic analysis “is a method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). Within the six phases of the thematic analysis approach as presented in Table 1, this study utilized the contextualist method. This method exists between

the two poles of essentialism and constructionism, and is characterized by theories, such as critical realism (e.g. Willig, 1999), which acknowledges the ways individuals make meaning of their experiences, and in turn, the ways that the broader social context impinges on those meanings, while retaining focus on the material and other limits of “reality.” (Braun & Clarke, 2006, p. 81)
Table 1

*Six Phases of Thematic Analysis*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description of the process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Familiarizing yourself with your data</td>
<td>Transcribing of the data, then reading and re-reading your data and noting down initial ideas.</td>
</tr>
<tr>
<td>2 Generating your initial codes</td>
<td>Coding interesting features of your data in a systematic fashion across the entire data set and collating data relevant to each code.</td>
</tr>
<tr>
<td>3 Searching for your themes</td>
<td>Collating your codes into potential themes and gathering all data relevant to each potential theme.</td>
</tr>
<tr>
<td>4 Reviewing your themes</td>
<td>Checking if your themes work in relation to the coded extracts (level 1) and the entire data set (level 2), and generating a thematic (map) of the analysis.</td>
</tr>
<tr>
<td>5 Defining and naming your themes</td>
<td>Ongoing analysis to refine the specifics of each of your theme, and the overall story the analysis tells, generating clear definitions and names for each theme.</td>
</tr>
<tr>
<td>6 Producing your report</td>
<td>The last opportunity for analysis. Selection of extracts examples and final analysis of selected extracts that relate back to the research question and literature, culminating in the production of a report of the analysis.</td>
</tr>
</tbody>
</table>


Thematic analysis, like grounded theory, takes an inductive or bottom-up approach—meaning that the themes that emerge will have a strong link to the data. In many respects this approach is similar to grounded theory and nicely complements it as parallel methodology. Through this approach, data were collected specifically for this research (via drawings), and the themes can bear little resemblance to the questions asked of the participants. This research, like grounded theory, involves coding data without trying to make them fit into an existing coding frame or the researcher’s analytical preconceptions: it is data driven.
Under the general umbrella of thematic analysis, I also used the semantic approach to identify themes in that “the themes are identified within the explicit or surface meanings of the data, and the analyst is not looking for anything beyond what a participant has said or what has been written” (Braun & Clarke, 2006, p. 84)—or, in the case of my study, what has been drawn. Theoretically, the analytic process involves a progression from description, where the data have simply been organized to show patterns in semantic content, and summarized to interpretation, where there is an attempt to theorize the significance of the patterns and their broader meanings and implications (Patton, 1987), often in relation to previous literature. (Braun & Clarke, 2006, p. 84)

While Braun and Clarke (2006) noted that many of the disadvantages of thematic analysis result primarily from poorly conducted analysis or unsuitable research questions, rather than the actual method itself, they do acknowledge some disadvantages. The method’s flexibility makes it difficult for researchers to decide which aspects of their data to focus on. In addition, thematic analysis has limited interpretation abilities beyond simple description, meaning that if it is not conducted within an existing theoretical framework, the claim lacks support (Braun & Clarke, 2006).

Some of the advantages of thematic analysis, according to Braun and Clarke (2006), are its flexibility and simplicity: it is relatively easy and quick to learn and to use. In addition, it is readily assessable to researchers with little or no experience with qualitative research, and the results are generally accessible to the general public. Braun and Clarke also claimed that thematic analysis is a very useful method for working within participatory research paradigms, with participants as collaborators, and can be useful to
summarize key features of large body of data and/or offer a thorough description of the data set. This permits the researcher to highlight similarities and differences across the data set, to generate unanticipated insights, and to facilitate social as well as psychological interpretations of data. Finally, thematic analysis can be useful for producing qualitative analyses suitable for informing policy development (Braun & Clarke, 2006).

As with grounded theory, I acknowledge the noted disadvantages of thematic analysis, but I do not believe that they posed any risk to my research and subsequent data analysis. I was aware of the risks, and I believe that I developed strategies to address them. I have previous experience conducting thematic analysis and have put considerable thought into the development of my research question. As well, by clearly defining the research paradigm, I have provided a clear focus for the research. Utilizing a mixed methods research approach, I am not relying solely on thematic analysis to provide rich data for this study. This accommodates for the limited interpretation abilities of the thematic analysis approach. I also utilized the NVivo9 (Sorensen, 2008) software analysis tool to correlate and analyze all of the qualitative data, thus enhancing the focus and depth of the data collected.

**Descriptive statistical analysis.** Finally, within the quantitative realm, I utilized the card-sort methodology (Bannon & Schwartz, 2006; Owen, Schickler, & Davies, 1997; Sherwood, Story, Neumark-Sztainer, Adkins, & Davis, 2003) with food preference and food categorization questionnaires with the students prior to and immediately after the workshops to determine if their food preferences and their perceptions of healthy foods had been influenced in any way. I repeated the questionnaires once again
approximately six weeks following the completion of the last workshop in the series. These data were analyzed using descriptive statistics.

As applied in Bannon and Schwartz (2006), Sherwood et al. (2003), and Owen et al. (1997), I conducted descriptive statistical analysis of pre- and post-percentages of children who categorized foods as healthy and foods they like. Descriptive statistics, such as frequency analysis (Walker, 1985) is the comparison between the data collected utilizing a range of variables, allowing for the calculation of frequencies and percentages. These data are used primarily to support the qualitative data analysis.

**Data Collection**

I conducted semi-structured interviews (Whiting, 2008) with children, parents, and staff at the child care centres and analyzed all data using the grounded theory methodology (Charmaz, 2006) with Nvivo9 Software (Sorensen, 2008). These data were collected to assess the children’s current eating habits, activities, and nutrition as well as the ecohealth education level currently being taught at home and at the child care centres. (See Appendix A for interview questions used.)

I conducted semi-structured interviews with the children immediately after the administration of a brief questionnaire following the last workshop. Semi-structured interviews with the parents were conducted either at the daycare while they were dropping off their children, or via telephone conversations or e-mail messages in the weeks following the workshops. The majority of the semi-structured interviews with staff were conducted in the child care centres following the last two workshops. The remainder were conducted via telephone conversations or e-mail messages in the weeks following the workshops.
With semi-structured interviews, the goal is to engage the participants in a dialogue to enable rich descriptions of their experiences and beliefs, thus allowing the participants to connect to the research project and become partners in the research (Fontana & Frey, 2005). Furthermore, semi-structured interviews provide the opportunity to explore interesting and unexpected responses through the use of follow-up questioning (Cousin, 2009; Smith & Osborn, 2008). It is important to note, however, that semi-structured interviewing does possess some limitations in that the context of the interviews (in this case food choice and food-related activities) can have an impact on the participants’ willingness to divulge information for fear of feeling criticized. As well, as Fontana and Frey (2005) stated, interviewer characteristics such as gender and age can also impact the participants’ openness.

I also asked the children to draw pictures depicting healthy food choices and the connections between our food and the environment (Barraza, 1999). Following the completion of their drawing, each child was asked to verbally describe their drawing and the meaning they attributed to it. These pictures and the verbal descriptions were then analyzed using thematic analysis (Barraza, 1999; Braun & Clarke, 2006) and were coded using Nvivo9 software (Sorensen, 2008).

**Quantitative Methods**

To support qualitative results, I administered quantitative food preference and food categorization questionnaires to the child participants. Utilizing the card-sort methodology (Bannon & Schwartz, 2006; Owen, Schickler, & Davies, 1997; Sherwood, Story, Neumark-Sztainer, Adkins, & Davis, 2003), the food preference and food categorization questionnaires were administered to the students prior to the first
workshop, immediately following the last workshop, and once again six weeks after the completion of the last workshop.

The food categorization data provided insight into the children’s food preferences and their perceptions of the foods that they deemed to be healthy or unhealthy and those foods that they were unsure of how to categorize. The food preference questionnaire provided knowledge and data regarding the children’s food preferences for the listed foods. By conducting the first questionnaire prior to the first workshop, it was possible to assess their knowledge and preferences going into the workshops series (their thoughts/preferences unbiased by the workshops). Administering the second round of questionnaires directly following the last workshop allowed testing of the immediate effect of the workshops on their knowledge and food preferences. Finally, testing six weeks following the last workshop allowed evaluation of the children’s retention of the material and the residual effect of the workshop material on the children’s knowledge and food preferences. These data were analyzed using descriptive statistics, including frequency analysis and group means on a range of variables. The Mann-Whitney U test (Vassarstats, 2012) and t-test (Fitz-Gibbon & Lyons Morries, 1987) were used to test the statistical significance of the difference between the means for the unmatched groups.

The full data collection process is illustrated in Figure 2 below.
Figure 1. The data collection process.

Participants and Site

For the purpose of this study, community is defined as the YMCA child care centre program within the GTA. The study took place within three YMCA child care centres across the GTA. The participants included children aged three to five years enrolled in the child care centre (many of whom were enrolled in the kindergarten half-day program), parents of the children enrolled in the child care centre, the staff and ECEs working in the YMCA child care centres, and the co-founder of Real Food for Real Kids (RFRK), a catering company that provided breakfast, lunch, and snacks to many of the YMCA child care centres.
The YMCA of the GTA is the largest child care provider in Canada, with over 150 child care centres (YMCA of Greater Toronto, 2012). It is estimated that there are 45 different ethno cultural groups represented at the YMCA of the GTA and an estimated 14,000 parents drop their children off at their child care centres (YMCA of Greater Toronto, n.d.). The child care services provided at the YMCA include nursery, infant, toddler, preschool, full-day kindergarten before and after, school aged, summer club, and summer institution (YMCA of Greater Toronto, n.d.). The three locations where decided upon by the YMCA staff after I requested the three sites to be of different social demographics.

RFRK is an educational-catering (edu-catering) company in Toronto, Ontario, that provides delicious, healthy, affordable, all-natural meals and snacks to child care centres, schools, and even homes around the GTA (Real Food for Real Kids Inc. [RFRK], 2012a). It provides both the meals and snacks to many of the YMCA child care centres across the GTA, and in addition to catering, the company offers various educational programming for children, parents, and staff promoting healthy eating through its charitable organization (RFRK, 2012a).

By choosing three different social demographic neighbourhoods within the GTA, I believe the data are reasonably representative of the cultural and economic diversity of Canada’s overall population as it represents rural-suburban, urban-suburban, and inner city. This is supported by Statistics Canada (2008), which stated that 4 in 5 Canadians live in a metropolitan area and one in three (34%) live in one of Canada’s three largest metropolitan areas: Toronto, Montreal, and Vancouver. In addition, Toronto represents
Canada’s growing minority population, with more than 41% of all recent immigrants to Canada settling in the GTA (Statistics Canada, 2008).

The first neighbourhood was located in Newcastle, Ontario. It is an area that is described as Blue-Collar Comfort (Environics Analytics, 2012). It has a medium ethnic presence, middle-aged (fledging families), upper-middle-class, blue-collar families with an average income of $88,436 (Environics Analytics, 2012).

The second neighbourhood was located in Unionville, Ontario. It is an area that Environics Analytics (2012) has described as South Asian Society. It is also described as having a high ethnic presence, younger upper-middle class South Asian families with an average income of $89,845 (Environics Analytics, 2012).

The third neighbourhood was located in Toronto, Ontario. It is an area that is described as Urban Spice (Environics Analytics, 2012). Environics Analytics noted it as having a high ethnic presence, young, multi-ethnic-lower-middle-class starter nests, with an average income of $58,626.

Participants were recruited through the YMCA child care centres via a letter distributed to parents and ECEs by the directors of the respective child care centres. They were advised their participation and that of their children was completely voluntary and that they were able to decline participation at any point in the study. Consent forms were distributed to all students, parents, and staff at the three chosen YMCA child care centres by the directors of each centre about a week or two before my first visit, after I emailed the directors of each child care centre copies of the various consent forms. The directors than collected all returned signed consent forms and provided them to me upon my first visit during the week of January 29, 2012.
Participation in the questionnaires and interviews was determined by which children were present during the day of the week and time of day I was able to visit their centre (Newcastle = Monday morning, Unionville = Tuesday morning, and Toronto = Wednesday morning) and which children had parental consent to participate in the study. For staff and parents, participation was determined by who provided personal consent to participate and availability to engage in a brief interview. For detailed lists of child, parent, and staff participants, please see Appendices B, C, and D.

The interview with the co-founder of RFRK was set up through connections in the YMCA. This participant was included due to her business connections to the YMCA in catering (providing breakfast, lunch, and snacks) to many of the YMCA child care centres. RFRK also provides educational workshops to some of the child care centres.

In line with the ecohealth and CBPR paradigms and grounded theory methodology, the children and staff were observed in the daycare setting where I was able to witness any education materials within the setting which encouraged children to explore healthy food choices. As well, I was able to observe their lunch time practices and watch how the children interacted with the food, each other, and staff during their lunch.

**Conduct of the Study**

The first site, located in Newcastle, Ontario, consisted of three child participants, one parent participant, and two staff participants. The workshops and the majority of qualitative and quantitative data collection were conducted on Monday mornings on January 30; February 6; and February 13, 2012. Follow-up data were collected six weeks following the last workshop on April 2. Qualitative interview data were also collected
from one staff member via an email message following the initial research trip due to limited time and accessibility during the time spent at the child care centre.

The second site, located in Unionville, Ontario, consisted of six child participants, one parent participant, and three staff participants. The workshops and the majority of qualitative and quantitative data collection were conducted on Tuesday mornings on January 31; February 7; and February 14, 2012. Follow-up data were collected six weeks following the last workshop on April 3. Qualitative interview data were also collected from one parent via email correspondence following the initial research trip due to limited access to parent participants during my visits to the child care centre.

The third site, located in Toronto, Ontario, consisted of 10 child participants, three parent participants, and four staff participants. The workshops and the majority of qualitative and quantitative data collection were conducted on Wednesday mornings on February 1; February 8; and February 15, 2012. Follow-up data were collected six weeks following the last workshop on April 4. Qualitative interview data were collected from one staff member via email following the initial research trip due to limited time and accessibility during the time spent at the child care centre. This was in addition to qualitative interview data collected from three parents via email messages or telephone conversations following the initial research trip, again due to limited access to parent participants during my visits to the child care centre.

**Site protocol.** The first day at each site began with the collection of the consent forms from the director of the child care centres. This was followed by the administration of the brief food preference and food categorization questionnaires with the children who had parental consent to participate and who were willing to participate.
**Questionnaires.** The questionnaires were completed individually with each child, sitting at one of the children’s tables often slightly off to the side of the room within the child care centre. The children were offered stuffed veggies toys to hold and hug while conducting the questionnaire, and at the end each child was always offered some stickers as a “thank you” for participating. The children were allowed to have as many stickers as they wanted prior to and following the interviews. The stickers were not used to coerce the children to participate; children who did not participate also received stickers.

During the first questionnaire (see Appendix E), the children were asked to use the sort cards depicting various foods to tell me which foods they like, which foods they like a little bit, and which foods they dislike. The list of foods was as follows: apple, banana, broccoli, whole wheat bread, carrots, blueberries, grapes, jelly beans, French fries, orange, orange juice, almonds, peas, cherries, fruit-shaped candy, white milk, chocolate, chocolate milk, Coca Cola, Diet Coke, green pepper, veggie pizza, pepperoni pizza, corn, eggs, animal crackers, white bread, spinach, and chocolate chip cookie.

The children were provided a yellow smiley face card to place on the table to use as a symbol of foods they like, a green straight face card to use as a symbol of foods they like a little bit, and a red sad face card to use as a symbol for foods they dislike. The children then went through the pile of sort cards, placing the cards on the respective piles as they felt appropriate. The children’s decisions as to which pile each food belonged were recorded on the questionnaire form. I then dated and marked the questionnaires with the children’s individual participant codes.

For the second questionnaire (see Appendix F), the children were asked to use the sort cards depicting the various foods listed above to tell me which foods they thought to
be healthy, unhealthy, or not sure. The children were told prior to beginning this questionnaire, that for this game, healthy foods are considered “foods that that are very good for us and will help us grow big and strong,” while unhealthy foods were “foods that we would have more as a treat because they are not as good for us as healthy foods.” The children were also told that if they were not sure whether a food is healthy or unhealthy, they could place it in the not sure pile. Again, the children were provided with a yellow smiley face card to place on the table to use as a symbol of healthy foods, a red sad face to use as a symbol for unhealthy foods, and a green straight face card to use as a symbol of foods that they were unsure of. The children then went through the pile of sort cards, placing the cards on the respective piles as they felt appropriate. Again, I recorded the children’s decisions as to which pile each food belonged on the questionnaire form and marked the form with their individual participant code and date.

**Workshops.** The workshops, which utilized play-based learning as proposed by Pramling Samuelsson and Asplund Carlsson (2008), emphasized an ecological approach to health and food choice by encouraging children to make healthy food choices while teaching them about the connections between their food choices, their health, and the health of the environment. The curriculum is presented in Appendix G.

**First workshop.** The first workshop, which aimed to establish relevance of making the connections between our health, food choices and our environment, began with a discussion on what made us happy and healthy people. With the help of visual prompts depicting food, shelter, love from family/friends and healthy environment, we had a brief discussion on the importance of the many things that make us happy and healthy. We then we discussed the big role food plays in our lives in keeping us happy
and healthy too. Next, the children were asked to share some of their favourite foods with
the group. This was followed by a game where, with the help of visual prompts, we
categorized some of these foods into healthy and unhealthy and then discussed why some
of these foods are healthy and why some of these foods are considered unhealthy.

Next, we played a tasting game, where each child was provided with a small cup
containing various kinds of fruits and veggies. We began with the carrot slices and the
kids were asked to smell, look at, touch, and finally taste the food. Along the way they
were asked to share how they were experiencing the food through their senses. Verbal
prompts were used when needed to get this discussion going. Eventually, we worked our
way through carrots, oranges, cucumbers, broccoli, lemons, and apple slices. To wrap up
this section, we cut an apple down the middle and passed it around for everyone to look
at the seeds in the middle. We then discussed how these seeds could be used to plant a
new apple tree to produce even more apples. To close the first workshop we ended we a
reading of the Dr. Seuss book, *Oh Say Can You Seed*, and the stuffed veggie toys (giant
carrot, giant broccoli, giant strawberry, and baby carrot), which I purchased for each
child care centre, were then passed around for the children to snuggle and play with while
the story was read.

**Second workshop.** The following week, I returned to each site on its designated
day to conduct the second workshop. This time we did not need to conduct questionnaires
prior to the workshop so we began the workshop almost immediately.

At Newcastle, I conducted a brief (5–10 minute) semi-structured interview prior
to starting the second workshop with one of the parents who had provided consent to
participate. The interview was conducted just off to the side of the room in the child care
centre, and since consent had been provided to do so, I used an audio recording device to
audiotape the interview so that it could be transcribed at a later time.

The second workshop aimed to allow the children to explore and reflect on the
connections that they had started to learn about the previous week, during the first
workshop. It began with a game adapted from Creative Change Educational Solutions
(2009a) that was meant to illustrate the human–environment interdependence and
relationship within the larger ecosystem. Using visual aids hanging from yarn necklaces
depicting various players (air, clouds, rain, sun, soil, water, rivers, children, fruits,
flowers, vegetables, bees, birds, ladybugs, trees, butterfly, berries, bunnies, farmers,
grocery store, farmer’s market, backyard garden, community garden, truck, car, bicycle,
train, bus, boat and airplane). The children were asked to pick a necklace and place it
around their necks so that the picture lay face up and visible to the rest of the group.
Standing in a large circle in the centre of the room, we reviewed the terms so that
everyone understood what he or she represented.

We then used a small ball of yarn to pass back and forth, creating a web of
connections between the different players. After discussing the web that we made and the
many different connections in it, the children were asked to explain what would happen if
we lost some of these connections. Next I let go of my ends of the string. We then
discussed how if we lose connections the web gets loose and weak. Next, I picked up my
ends again and passed the ball of yarn around a few more times and asked the children
what happened when we make even more connections.

This was followed by a brief discussion on how the more connections you have,
the stronger the system or web is. Next we read “The Story of Strawberry Jam”
together—once again adapted from Creative Change Educational Solutions (2009b). The story depicted the lifecycle of a strawberry that grows up and becomes strawberry jam and the journey it took from the field to the table. Once we finished the reading, we used visual prompts to discuss the order of things that took place for the jam to get all the way from the field to the kitchen table. Finally, we wrapped up the workshop with a visual game, using prompts to connect pictures of apples, carrots, blueberries, and Brussels sprouts to their respective place of origin (tree, soil, bush).

Before leaving, I took the opportunity to conduct brief (5–10 minute) semi-structured interviews with several of the staff and ECEs at the various child care centres, just off to the side of the room where they could still keep an eye on and have contact with the children. If consent had been provided in their consent forms to do so, I used an audio recording device to audiotape the interview so that it could be transcribed in detail at a later time.

**Final workshop.** The following week, I returned to each site again on its respective day to conduct the final workshop, which was followed by the administration of the second round of questionnaires for the children who had parental consent to participate and who verbally consented to participating themselves.

The final workshop aimed to have the children apply the knowledge they had acquired throughout the workshop series to their decision making and actions. It began with another reading of Dr. Seuss’s, *Oh Say Can You Seed*. This was followed by an activity where each child got to plant some snap peas in a small peat moss cup by filling the small cup with soil, poking a hole in the middle for the seeds, planting the seeds, covering them with a bit more soil, and finally adding water to feed the seed. The little
pots were then placed near the windows in the child care centres or the children were permitted to take them home.

Finally, we wrapped up the final workshop with a reading of *Eat Healthy, Feel Great* by William Sears, M.D., Martha Sears, R.N., and Christie Watts Kelly. Following the reading, the children were provided white sheets of paper and brand new boxes of crayons and asked to draw a picture showing how they can make great food choices to grow healthy and strong and make sure the connections we learned about (such as our environment) stay healthy and strong, too. I also explained they could draw some of the activities we did together over the past few weeks. As the kids coloured, I asked them to share with me what they were drawing, and I made notes on the bottom of their pictures of what they explained to me. I then recorded the participant codes and date on the pictures I collected from the children who had been provided parental consent to be included in the study.

Following the last workshop, I conducted round two of the questionnaires with the children who had received parental consent and who verbally consented to participate themselves. Six children who had been included in Round 1 of the questionnaires were absent or were uninterested in participating for this round. Following the completion of the questionnaires, I conducted brief (2–5 minute) semi-structures interviews with several of the children who again had been provided parental consent to participate and who provided verbal consent to participate themselves. If consent had been provided in their consent forms to do so, I used an audio recording device to audiotape the interview so that it could be transcribed in detail at a later time.
Following the first research trip, I emailed the various staff members, whom I could not conduct interviews with at the time of my visit, with the semi-structured interview questions and offered to set up a telephone or Skype® call with them. I also offered them the opportunity simply to email their responses.

I returned during the first week of April to collect the last (third) round of questionnaire data from the child participants. Six children who had participated in either Round 1 and/or Round 2 were absent or were uninterested in participating in this final round. Again the children were each provided with stickers as a thank you and after collecting the last round of data, I thanked each director and the staff with a small box of chocolates for being so welcoming and for graciously agreeing to participate in the study.

I also contacted the directors either during my trip or directly following (depending on the child care centre) to request the child participants’ approximate ages for comparative purposes (as I did not collect these data on the consent forms or the questionnaires). In addition, I requested contact information for parents who had provided consent to participate in an interview (again not collected on the consent forms). Since I could not catch many parents during the morning when they were dropping off their children, I required some form of contact information from the child care centres in order to get a hold of them for their interview. Following the last research trip, parents were emailed or called with a personal invitation to participate in a brief semi-structured interview.
Chapter 4: Results

The results of the interviews with the children reflect the effectiveness of the workshop series, parental influence, and classroom influences. The participant coding is as follows: C = child participant; T = early childhood educator (teacher) participant; and P = parent participant. The number following the letter identifies the individual participant (please see Appendices B, C, and D for more information about the child, parent, and teacher participants and codes).

Children Semi-Structured Interviews

Common threads that arose from the children’s interviews that speak to the research question are as follows.

Connotations of “healthy foods.”

Healthy foods = growing big and strong. When asked what they think of when they hear the term “healthy foods” many of the children responded that they associate healthy foods with growing big and strong. Statements such as “it’s going to help me grow” (C1) and “it will make me grow big and strong” (C10) were observed throughout all centres, genders, and age groups (C1, C3, C10, C13, C14, C17).

Healthy foods = energy and satisfying hunger. When asked what they thought of whenever they hear the term “healthy food”, the children often associated the term with greater amounts of energy and being full. There was even the recognition that healthy foods satiate hunger more efficiently and longer than junk food. This was established in statements such as “it’s going to make me have energy and its going to full me up for longer! Way longer than junk food—that doesn’t even help!” (C1), “healthy foods make us feel good!” (C13), and “[healthy foods] give me lots of energy” (C16).
Variety of healthy foods. Another common response when asked what the children associate with healthy foods was a variety of healthy foods. Responses ranged from milk to various fruits and vegetables to eggs and crackers. Berries, especially strawberries, were the most popular fruit response, followed by oranges. Broccoli was the most popular vegetable response. Other responses included green peppers, carrots, and apples.

Knowledge of origins of foods. The interviews with the children revealed that most of them had a good understanding of the basic origins of various foods. When asked about the origins of foods such as apples and eggs, almost all of the children answered correctly with very basic explanations of the origins, such as “apples come from a tree and eggs comes from hens” (C17) and “carrots grow in the ground” (C8).

Knowledge of elements of food distribution. The interviews with the children also disclosed that many of the children had a good understanding of the basic elements of food distribution. This includes the movement of food from the farm or field to the market or store and eventually to their kitchen tables. This is illustrated in the following conversation:

Question: Who grows and harvests our food?
C16: Farmers.
Question: Where does it go from there?
C16: It goes to the store where we buy it.

Child engagement with food.

Food shopping. The interviews with the children revealed that the majority of children accompanied their parents and/or guardians when buying food—the children
reported accompanying their parents to the grocery store or market on a regular basis. They also reported being engaged in the process by helping to pick out items and putting them into the cart. These experiences are supported by such statements as, “Yes, I go the grocery store and help pick out foods” (C17). Furthermore, discussions with the children revealed that many of them enjoy helping with buying groceries.

**Seasonal vegetable gardens.** The interviews with the children revealed that a number of the children have access to seasonal vegetable gardens at home or in their community and that they assist their parents/guardians to plant the seeds and to harvest the produce. During the semi-structured interview, C1 excitedly exclaimed, “Last year I had a garden of tomatoes!”

**Cooking.** The interviews with the children indicated that many of the children engage in cooking at home. As C17 explained, “I help cook dinner. I also make snacks for my sister when she gets home. Normally bananas and yogurt; that’s two healthy foods!”

**Favourite foods.** During the interviews, each child participant was asked about his or her favourite food. The answers were fairly evenly distributed between healthy and unhealthy foods and ranged from jellybeans and pizza to carrots and apples with peanut butter. Other responses included apples, pears, French fries, macaroni, meatballs, chips, chocolate chip cookies, bread, Kraft Dinner, lasagne, and eggs with ketchup.

**Teacher/Staff Semi-Structured Interviews**

The results of the interviews with the caregivers of the child care centres reflect the opportunities present within the child care centres for further educational programming promoting health food choices utilizing an ecosystem approach. It is
important to note that two of the three child care centres (the rural suburban Newcastle and the inner-city Toronto child care centre locations) are catered by RFRK, while the urban/suburban child care centre located in Unionville has a cook on site. It was observed, however, that all three of the child care centres served lunches communally with family-style serving, in which the children serve themselves, thus permitting them to portion control their own meals.

**Food education in the classroom.**

**Discussions about healthy foods.** Interviews with the YMCA child care staff, revealed that all of the centres utilize interest-led learning when it comes to topics such as healthy foods, meaning that the promotion and discussion of healthy foods is based on the interest in the topic expressed by the children. As one of the ECEs stated, “We usually answer any questions that the children bring up about food and where they are from, but in general it’s probably only when they ask and show an interest” (T8). Another educator stated, “We do work (operate) based on interest so it just depends on what the interest is at the time” (T2), while another educator explained, “Right now the interest is food, so we’ll play with food and do stuff and come up with activities with food” (T4).

The ECEs reported that the children had expressed an interest in the following food-related topics.

**Learning the health benefits of foods.** The ECEs reported that there was interest in the classroom about learning the health benefits of various foods. One educator stated, “We talk a lot about what foods help us grow and how they make us healthy” (T7). Another educator explained, “At lunch I’ll prompt questions and discussions about what food does for our bodies, such as milk helping our bones grow strong” (T5).
**Learning the origins of foods.** The ECEs also reported interest in the classroom about learning of the origins of various foods. As one of the educators stated, “We discuss where food comes from, the farm, milk from cows, eggs from chickens. We also discuss where fruits and veggies come from, trees, plants, the ground etc.” (T7).

**Learning about foods from different regions.** The interviews with the ECEs also revealed that several of the child care centres have reported an interest in learning about foods from various geographical regions, as expressed by an educator’s statement,

Part of our program is scaffolding through our extensions so as we are learning more about fruits and vegetables, we do go to the library and borrow books about where foods come from and different fruits from different lands—so it shows which lands make different fruits, different vegetables. (T2)

**Learning about food security and food scarcity.** Another topic of interest that was reported during the interviews with the ECEs was the subject of food security and food scarcity. As one educator stated, “We want to teach them that we are lucky to have the food we have. There are a lot of families in the rest of the world that don’t have what we have” (T2).

**The ABCs and 123s of healthy food promotion.**

**Integration of healthy food in the curriculum.** The interviews with the ECEs within the YMCA child care centres revealed that many of them try to integrate the promotion and discussion of healthy foods into the core educational units. As one educator explained, “We do a lot of language and literacy activities around it. . . . We do a lot of science activities, language and literacy, and math” (T1).
**Use of books, charts and other materials.** Interviews with the ECEs also highlighted that the child care centres integrated the promotion and discussion of healthy foods into the curriculum in various ways, such as through the use of books, charts and other materials. As explained by one educator, “It’s all interest based, so if they’re interested in following through with it, we do absolutely offer them the ability to learn through books and stuff like that” (T2). As another educator stated, “We have done food before as well, so you know, doing charts of healthy versus unhealthy, stuff like that, and picking out foods in magazines and newspapers” (T5).

**Field trips.** Several of the ECEs also reported taking the children on field trips to experience and learn about healthy foods around the city. These trips range from walks around the community in the areas around the child care centres, to trips to local farms and berry picking fields, to visiting local grocery stores. ECEs from the urban suburban located child care centre reported,

For trips, every summer we go picking, we do two separate fruits for picking and they love it because they are able to pick it themselves, see where it grows and they’re excited because they see the other vegetables growing. (T2)

An educator from the inner-city child care centre reported, “Last year we went to Riverdale Farm that is located in the city. We watched a goat being milked, saw chickens laying eggs, and explored the gardens” (T7).

**Food as education.** The interviews with the ECEs also revealed that all of the child care centres use mealtimes as an opportunity to spark conversations on food and healthy eating. As stated by an educator in the inner-city location, “While we are eating lunch, we sit together and discuss what we eat at home, and what we are eating that day
Another educator from the rural-suburban location stated, “Usually we talk about foods and healthy eating at lunch and snack time” (T7). This allows them to use the food itself as an educational tool. As an educator from the urban suburban location stated, “With our lunches and our snacks being home-made and we have a cook on site; she’s able to basically teach [the children] through a variety of foods what’s good for them or [what’s] not” (T2). This idea of food as an educational tool is extended within the child care centres to include playing with food, cooking in the classroom, gardening, and planting in the classroom, as discussed below.

**Playing with food.** Through the interviews with the ECEs, it was discovered that several of the centres use food during play in the form of crafts and sensory learning games. As an educator from the inner-city child care centre explained,

> We’ll play with food and do stuff and come up with activities with the food. For instance the other day they made little people from the food. Yesterday we found food in the fridge that we had a lot of so we put it out for the kids to play with for sensory (learning). (T4)

An educator from the urban suburban location added, “We play hot potato and things like that” (T1).

**Cooking in the classroom.** The urban suburban child care centre reported that …we do cooking—based on interest again. Recently, last week we did fruit smoothie popsicles. So they got to blend their own berries and pour it into the containers, and we froze it and timed how long it took it to freeze—so teaching them that they can make healthy snacks themselves. (T2)
**Gardening.** The rural suburban child care centre and the urban suburban child care centre also reported using outdoor vegetables gardens as a teaching tool. As an educator from the urban suburban location reported,

In the summer we have our own little garden in which we plant carrots, tomatoes, cucumbers and peppers and stuff, so they actually get to have a salad at the end of the summer with everything that is in our garden. (T2)

Even at the time of the interview (February, 2012), the ECEs reported “right now it has some pretend vegetables and fruits in it because we are still trying to get the idea going” (T1). The rural suburban location also reported, “We have a garden in our yard and last year we grew tomatoes, cucumber, and a squash” (T8). The inner-city location reported, “A few years ago we tried to grow vegetables but the squirrels kept eating them so we kind of just gave up and now we have flowers” (T4).

**Planting in the classroom.** The inner-city child care centre, along with the urban suburban location, both reported planting with the children in the classroom. An educator from Unionville stated, “We even planted seeds in an aquarium like basil and oregano and rosemary and stuff—and our cook uses it to cook with in the summer” (T1). An educator from the inner-city location reported, “We are doing potato growing in the classroom currently. We cut them in half and watered them to see how they grow” (T5).

**Building knowledge and capabilities.** The interviews with the ECEs also highlighted that through many of their food production and discussions, the ECEs are nurturing life skills within the children by building knowledge and capabilities relating to food preparation, meal planning and portion control. One example of this is an activity within the urban suburban child care centre in which they ask the children to make
“collages with healthy and unhealthy in mind” using “paper plates and have them make a plate of a healthy dinner” (T2).

**Children as agents of change.** The interviews with the ECEs also presented the theme of children as agents of change. This theme was presented during an interview while discussing the use of books and other learning materials as aids to teach children about healthy foods. It was stated, “So that’s not only the biggest way of us teaching the kids, but also ourselves, right? Because we don’t know everything either, so we have to learn along the way” (T2). This statement indicated that by teaching the children about health foods, the ECEs are also learning throughout the process as well, and the knowledge and tools for healthy eating they learn will likely be shared with their family as well.

**Early childhood educator training and health food education.** The interview quote mentioned above also makes reference to the education and training that the ECEs receive regarding the promotion of healthy food choices during their formal training. While ECE programs are beginning to incorporate child health and wellness training as well as some training on sustainability and early childhood, the sentiment that ECEs have to “learn along the way” (T2) insinuates that more training should probably be made available to educators on the topics of healthy and sustainable food education for early childhood.

**Classroom observations.**

The interviews with the ECEs also revealed a few pertinent observations made by the staff.
Never too young. The first of these observations was that even the younger children in the child care centres (two to three years of age) understand many of the basic concepts involved in healthy eating. As one educator stated, “Even at lunch I’ll prompt questions and discussion about what food do for our bodies—such as milk helping our bones grow strong—even with the young ones—they get it” (T5).

Puzzling foods. Another important observation was that certain foods can confuse the children regarding whether they are healthy or not. As one educator stated, “Certain ones are tricky and can confuse them—such as gummies in the shape of fruit” (T2). However, she went on to say, “but through more discussion they are able to learn” (T2). This suggests that for certain foods that may be advertised or presented under the guise of a healthy food—such as foods that are merely in the shape of fruit or are flavoured to taste like fruit but actually contain sugars and artificial flavours—further discussion is needed with the children so they know how to see through such advertising and can distinguish healthy foods from unhealthy foods.

Parent Semi-Structured Interviews

The results of the interviews with the parents reflected the opportunities present for an extension of the classroom educational programming to reach into the children’s home life as well.

Child engagement with food.

Food shopping. The interviews with parents/guardians from the child care centres revealed that all of the parents/guardians interviewed regularly bring their children with them when buying food. Many of them also reported engaging their children in the food buying process. As P4 stated, “One or both of my children typically come with me to
grocery shop every week. I allow them to help pick out the foods that they want for snack throughout the week (e.g., fruit, yogurt, crackers).” Another parent participant expanded on how she involves her child throughout the entire process, stating that her child “helps me go through flyers, make a shopping list, write the list, and scratch off items as we put them into the grocery cart” (P3).

**Farmer’s market.** A number of the parents also mentioned that they had a tradition of weekend trips to the local farmer’s markets with their children during the summer months; “farmer’s markets on Sunday is always a fun excursion during summer months” (P3). Another participant from the inner-city child care centres also mentioned, “My husband often takes the girls to either Kensington or St. Lawrence Market on Saturday mornings” (P4).

**Cooking:** Many of the parents/guardians revealed that they often engage their children in helping to prepare and cook meals at home. Such activities mentioned during the interviews range from measuring, stirring, putting toppings on pizza, to setting the table and singing songs with parents/guardians while preparing the meal. As one parent participant mentioned, her “child loves to help make meals—measuring, stirring [and], setting the table” (P3).

**Gardening.** The interviews with parents/guardians also revealed that all of the parents/guardians interviewed had access to a small garden in which they engage their children in gardening. A participant from the inner city child care centre mentioned that “her son helps with weeding and planting seeds” (P3), while a parent from the rural child care centre mentioned, “We grow tomatoes in our backyard in the summer and things like that” (P2).
**Intergenerational gardening.** Several of the parents/guardians also revealed that their children participate in gardening or farm activities with their grandparents. One parent from the inner-city child care centre explained, “My parents have a farm, so a lot of the vegetables that we get will come from grandma and papa’s, and he’ll help out at the farm” (P2). Another parent mentioned, “We grow vegetables in our garden . . . until the raccoons eat them . . . and we pick vegetables in my parents’ garden” (P3).

**Diet at home.** During the interviews, the parents/guardians were asked either specifically about a typical day of meals and snacks at home, or about favourite foods requested by their children. The answers reflected a fairly balanced diet is being consumed at home. While many of the parents do not completely restrict junk food, it would appear that junk food is only consumed in moderation and is balanced with healthier options as part of their diet. One participant from the rural suburban child care centre mentioned, “We really try to make an effort to make sure they’re eating well!” However, she did also mention that “it’s harder on weekdays” (P1).

**Food discussions at home.**

**Discussions of food and healthy eating.** The interviews with the parents/guardians revealed that all of the parents/guardians acknowledged the importance of having discussions with their children at home about food and healthy eating and they reported that they had such discussions with their children. There also appears to be a trend of utilizing mealtimes to discuss this topic. As one participant stated, “During most meals we discuss why we need to eat a variety of foods and what benefits each food has (e.g., meat contains protein, etc.)” (P4). Another participant mentioned, “We often talk about the importance of a well-balanced meal (protein, vegetables, milk) and how food
helps [his] body grow. Also, we chat about different vitamins in foods (vitamin C in
oranges and vitamin B in carrots)” (P3).

**Discussions about health benefits.** Interviews with the parents/guardians also
revealed that all of the parents/guardians report that their children show an interest in
learning how healthy foods help them to grow big and strong. As one participant noted,
her son “wants to grow before his time, so he believes that broccoli will make him big,
tall and strong; he loves that” (P5). Another participant, (P4), stated, “My husband and I
routinely remind our children that in order to be strong and healthy we must all eat a
variety of healthy foods.” Another parents went on to say,

We try and tell him what the vegetables do, for example, he knows when you eat
carrots it helps your eyes get strong. So, we have those conversations with him
and now he really wants to know [more about] what different foods do for his
body. (P2)

**Discussions of food origins.** During their interviews, many of the
parents/guardians confirmed having discussions with their children about the origins of
various foods. As one participant explained, “We discuss about what his food is made
from” (P5). It was also revealed that many of these parents allow their children to prompt
the discussions about the origins of various foods, as illustrated by one parent’s comment:
“We occasionally explain where food comes from, mostly when they ask. [My daughter]
is usually the one to ask, ‘How did we get the milk, mommy?’” (P4).

**Discussions of food security.** The interviews with the parents also revealed that
discussions about basic food security and food scarcity come up between the
parents/guardians and their children. This is highlighted in the following statement made
by a parent from the urban suburban child care centre when explaining that they had
“discussions about finishing his meal, teaching him about children around the world who
have no food, and that it is a luxury for him to have what he wants” (P5).

**Children as agents of change.** Through the parent interviews, it was further
revealed that parents acknowledge that their children are agents of change, as illustrated
in the statement, “Sometimes [he] comes home and teaches me a thing or two” (P5).

**Healthy food promotion in childhood.**

*Food promotion in YMCA child care centres.* Another common thread within the
parent/guardian interviews was that many acknowledged the great job that the YMCA is
currently doing in providing healthy and nutritious meals and snacks within the child care
centres. This was articulated in such statements as, “I appreciate the variety of foods
offered by the YMCA programs” (P4) and “so far the YMCA is doing a great job doing
what they are doing” (P5).

*Healthy food knowledge and capabilities.* Many of the parents/guardians also
highlighted that they would like to see life skills related to healthy eating to be
incorporated into educational programming in child care centres and schools. These
include the ability to buy food and prepare it, as well as proper table etiquette. This
sentiment was expressed by a parent who stated that

> I think that it’s important to incorporate life lessons in school/child care—similar
to the one I outlined with grocery shopping. Proper table etiquette is key.

Encouraging kids to cook using healthy ingredients and hope this will encourage
them to eat healthy. (P3)
Another parent/guardian expressed that, “I feel that my husband and I provide adequate information and education about food at home, so my hope is that the same healthy messages that we provide are reinforced in the school/daycare” (P4).

**Real Food for Real Kids Semi-Structured Interview**

RFRK is a social enterprise that offers catering and educational programming services to child care centres, schools, and communities around the GTA. RFRK’s mission is to change the way children eat and understand food; provide children with delicious, healthy, all-natural meals and snacks; reconnect children and families to real food; inspire future generations to make healthier choices, every day; and support local farmers and producers who are as committed to responsible and sustainable business practices as we are. (2012b, para. 1)

The non-profit arm of the organization, entitled “Real Food Forward,” aims to improve accessibility of healthy foods within their community. When selecting their foods, they “stick to those that make up the building blocks of real food [and are] . . . fresh, whole, natural, and grown close to home whenever possible” (RFRK, 2012c, para. 4). The results of the interview with RFRK reflect a social enterprises perspective on the need for the promotion of healthy food choices for children.

**Need for a paradigm shift.** During the interview with RFRK it was highlighted that “we need a paradigm shift.” The need is rooted in the revolution that has occurred within our society towards junk food and convenience food. As RFRK stated, “There has been a change, or rather a revolution, towards junk food and convenience food without
the realization of what this will do to people’s health.” They felt that nutrition and food education is relatively absent from people’s lives. As stated by RFRK,

When we started the program eight years ago it was very important to us to include nutrition and food education because we realized how absent this was from people’s lives and how the idea of bringing food education into the different day cares, whether it be for the kids themselves, the parents or the caregivers, might help people embrace the change better, or simply might raise consciousness about what we were trying to do, which was to dislocate the junk food and bring real food into those people’s lives.

The impact of this revolution toward junk food is believed to have resulted in our society losing cultural food elements, in addition to the decline in our population’s health. As stated by RFRK,

We’re losing our ground here. We are losing cultural food elements; we are losing health; we are losing so many things by not incorporating that [healthy food education] into the current curriculum. People are getting sick. In the population of today’s kids, one out of [four] children are obese. For me, it is a state of emergency.

RFRK also noted that there is a potential need for a paradigm shift within the formal training for ECEs to more fully integrate training on sustainability and healthy food choices. As RFRK stated,

One part of the educational program is there to educate the caregivers and the reason why is that they don’t have anything in their programming when they do the early childhood education; it’s not integrated into their program. We are
talking about ECEs—they’re taking care of kids—they do the first aid stuff, so if a kid is in danger, but they don’t learn anything about nutrition or health or a child’s health.

**Opportunities for change.** Through the interview with RFRK, many opportunities were identified as effective strategies to move forward the campaign for the promotion of healthy foods in young children. They include nutrition and food education, food as education, child care centre backdrop, importance of ECEs, challenges, and policies, as discussed below.

**Nutrition and food education.** During the interview with RFRK, the idea of nutrition and food education as a tool to raise consciousness of healthy foods was thoroughly discussed. It was also noted that there is a need and an opportunity for food and nutrition education to be incorporated into the curriculum of child care centres and schools. As RFRK stated,

There is no time dedicated to food education and nutrition in schools. Some private schools will have it integrated in but the public school system needs to have food education integrated into their curriculum, just like mathematics, French, and history—they need to have food history and food education—and these needs to be compulsory—everyone has to learn about it because we’re losing our ground here.

There is also support for food and nutrition education to be incorporated into a child’s home life as well. As RFRK stated,

Certainly, by really making them part of the process, bringing them together as a group, awakening their senses all at once and adding the element of fun is very
powerful. So the same comes true with the cooking with kids. It’s not about cooking a meal with your child every night if you don’t have the time but every so often, on weekends even, having them help set the table, eating together as a family. Just the idea of tradition and bringing food back to the table. . . . Eating together, and involving children in the food process, and help continue [to nurture] or to create a relations between your child and their food, washing their salad, cutting up food, setting the table, going grocery market, going to the farmer’s market, going to farms, seeing fruits on a platter at home every day, just that is fundamental to making real food be part of the every day.

The forgoing quote clearly shows effective educational programming for ECE involves a group environment that is engaging, play-based, and utilizes sensory experiences to engage the children with the material.

Food as education. During the interview with RFRK, the use of food itself as educational tool was mentioned frequently. As RFRK stated,

Our food is an education in itself because it talks to your mouth, it talks to your stomach, but also because it has a different effect on your brain than the food that they were eating and also the way it looks.

Child care centre backdrop. The interview with RFRK also highlighted that the child care centre setting is an ideal location for nutrition and food education as it reaches many of the key players required to drive a paradigm shift towards healthy eating in our society. These players, which have been mentioned in earlier quotes, include the children, who represent our future population, and who have significant influence on the food choices of their peers and family members; the parents, who in many ways control the
food consumption within their families; and the ECEs, who act as role models and educators for the children.

**Importance of ECEs.** Another insight provided through the RFRK interview was the importance of the role of the ECEs in the promotion of healthy food choices during early childhood. The educators play a very important role in educating our children about healthy foods, and as RFRK affirmed, the ultimate goal of workshops and educational programs promoting healthy food choices is that “eventually we would like the caregivers to become the educators, they are the educators, so we are preparing them and giving them the tools to become the educators of food.”

However, it is important to note that it is not just about educating about food. It also has a psychological component to it in that an educator’s own reaction or attitude towards a food can greatly impact a child’s perspective or preference for that food. As RFRK explained,

> We would have to help the caregivers help the kids. So trying to explain to them when they react negatively to a food themselves that is served, the children will automatically react negatively as well. So it wasn’t just about teaching about food, it’s teaching about the psychology of a child’s mind and their own mind.

**Challenges.** The interview with RFRK also identified some challenges in promoting healthy food through ECE.

*Food can be personal.* Food can be a complex topic to approach given its deeply personal connections and the need for challenging personal changes involved in altering our diet. As RFRK stated,
It is a very complex issue, the educational program, even when people want it, they don’t want to hear the stuff because they know they are going to have to make change, and even though you tell them it’s for the better and they are going to feel better and all that.

*Need for policies.* The next is the need for supportive policies that include national policies that change the way industry makes food. As RFRK stated, “Don’t just ban [unhealthy foods] from schools, ban it from the food itself . . . you can make something taste good without the bad stuff.” In addition to national policies, we need provincial and municipal policies that can help with the distribution of healthy foods within our communities. As RFRK stated,

> There are many things that can be done—but its more at a structural level—being able to help the farmers deliver their products—or have meat farmers to be able to have their meat processed more easily—it’s very complicated right now. So, making it easier for people who grow the food to give access to the urbanites.

**Thematic Analysis**

At the culmination of the workshop series, the child participants were asked if they would like to draw pictures depicting the connections they had learned about healthy food choices, their health, and the environment. The following are the prominent themes depicted in their drawings.

1. Fruits: Depictions of fruits were very popular amongst the drawings. The most popular (in descending order) were berries, lemons, oranges, bananas, and watermelons.
2. Vegetables: Depictions of vegetables were the second most prevalent image within the drawings. The most popular (in descending order) were carrots, broccoli, and cucumber.

3. Berries: As mentioned above, berries were by far the most popular food amongst the children’s drawings; blueberries were the most popular, followed by strawberries.

4. Beanstalks: Another popular image was a beanstalk and/or an image of someone climbing a beanstalk.

5. Images from tasting game: Images of fruits and vegetables that we used during the tasting game that I played with the children during the first workshop were also very popular, as were depictions of the children playing the tasting game.

6. Plants growing in a garden: Another popular image was the depiction of flowers, fruits, and vegetables growing in an outdoor garden.

**Quantitative Surveys**

I used a card-sort methodology with food preference and food categorization questionnaires with the students prior to and immediately after the workshops to determine if their food preferences and their perception of healthy foods had been influenced in any way by the educational programming presented during the workshop series. This technique was repeated once again approximately six weeks following the completion of the last workshop in the series to test students’ retention and any further engagement with the material. While the results of the quantitative surveys were determined to be not statistically significant as confirmed by both the Mann-Whitney U
Test (Vassarstats, 2012) and the t-Test (Fitz-Gibbon & Lyons Morries, 1987) for the difference between means, there were some improvements in the students’ ability to identify healthy and unhealthy foods as well as their preference for healthy foods.

**Food categorization survey with children.** The results of the food categorization survey, as displayed in Table 2 and illustrated in Figure 2, while not statistically significant \((U = 99.5 \text{ at } n_1 + n_2 – 2 = 32 \text{ and } t = 1.22 \text{ at } df = 32)\), indicated that by and large there was an improvement in the students’ average score in correctly categorizing foods as healthy or unhealthy over each period: from 72.1% prior to the workshop, to 77.2% directly following the workshop series, to 79.7% six weeks following the end of the workshop series. This indicates that the workshops did have a positive influence on the children’s understanding of healthy and unhealthy foods. This also indicates that the children had good retention of the data and that there is a good possibility that the workshop series sparked further discussions either within the classroom or at home on healthy foods and eating.

**Table 2**

*Child Identification of Healthy Foods*

<table>
<thead>
<tr>
<th>Sites</th>
<th>Gender</th>
<th>Before Program</th>
<th>After Program</th>
<th>6 Weeks After Program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Correct</td>
<td>Incorrect</td>
<td>Correct</td>
</tr>
<tr>
<td>Rural suburban</td>
<td>Boys</td>
<td>100.0%</td>
<td>0.0%</td>
<td>89.6%</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>67.2%</td>
<td>32.8%</td>
<td>91.4%</td>
</tr>
<tr>
<td></td>
<td>Site total</td>
<td>78.2%</td>
<td>21.8%</td>
<td>90.8%</td>
</tr>
<tr>
<td>City suburban</td>
<td>Boys</td>
<td>67.8%</td>
<td>32.2%</td>
<td>67.2%</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>74.7%</td>
<td>25.3%</td>
<td>81.6%</td>
</tr>
<tr>
<td></td>
<td>Site total</td>
<td>71.3%</td>
<td>28.7%</td>
<td>75.9%</td>
</tr>
<tr>
<td>Inner-city</td>
<td>Boys</td>
<td>69.7%</td>
<td>30.3%</td>
<td>67.8%</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>71.7%</td>
<td>28.3%</td>
<td>75.8%</td>
</tr>
</tbody>
</table>
The largest increase was seen in the boys, whose average scores increased from 72.4% prior to the workshop series to 85.6% six weeks following the end of the workshop series. It is important to note there were no significant changes between the average score from the initial survey conducted prior to the workshops (72.4%) and the average score from the survey conducted directly following the workshop series (71.3%). This could suggest that the discussions at home or at the child care centres in the weeks following the workshop series played a very important role in the processing and retention the information.
The girls’ average scores took a large jump immediately after the workshops, increasing from 71.7% to 81.2%. However, their average score decreased to 75.9% when they were surveyed six weeks following the end of the workshop series. This could indicate poor retention or possible lack of interest in follow-up discussion amongst the girls.

Both the inner city and urban–suburban child care centres showed improvement in the average scores over the test period. The inner city location’s average score increased from 70.7% prior to the workshop series, to 72.4% directly following the workshops, to 83.5% six weeks following the end of the workshop series. Similarly, the urban–suburban’s average scores increased from 71.3% to 75.9% to 85.1% respectively. The rural suburban’s average score, however, showed a good increase between the initial survey and the survey conducted directly following the workshop series, increasing from 78.2% to 90.8%. However, the average score fell to 63.2% during the last survey conducted six weeks following the end of the workshop series. Given the 2:1 girl-to-boy ratio at this location, the decrease could be influenced by the fact that, as mentioned above, the retention and further interest in the material amongst the girls may possibly not be as strong.

**Food identification by group.** To assess the identification amongst the children of healthy foods versus unhealthy foods, I separated the selected foods into two groups: Group 1 consists of foods considered to be healthy, while Group 2 is comprised of foods considered to be unhealthy.

**Healthy foods.** While the children were initially quite good at recognizing the healthy foods in Group 1, they did display an increase in their ability to correctly identify
the healthy foods following the workshop series, as displayed in Table 3 and illustrated in Figure 3. Their average score increased from 84.5% prior to the workshop series to 93% directly following the workshop series, with a slight decline to 91% six weeks following the end of the workshops.
## Table 3

### Child Classification of Healthy Foods

<table>
<thead>
<tr>
<th>Foods Group 1</th>
<th>Before Program</th>
<th>After Program</th>
<th>6 Weeks Later</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>U/H</td>
<td>N/S</td>
</tr>
<tr>
<td>Apple</td>
<td>89.4%</td>
<td>5.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Banana</td>
<td>94.7%</td>
<td>0.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Broccoli</td>
<td>89.4%</td>
<td>10.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>W/wheat bread</td>
<td>63.2%</td>
<td>15.8%</td>
<td>21.1%</td>
</tr>
<tr>
<td>Carrots</td>
<td>100.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Blueberries</td>
<td>94.7%</td>
<td>5.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Grapes</td>
<td>89.4%</td>
<td>5.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Green peppers</td>
<td>73.7%</td>
<td>21.1%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Orange</td>
<td>89.4%</td>
<td>5.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Orange juice</td>
<td>73.7%</td>
<td>15.8%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Almonds</td>
<td>47.4%</td>
<td>26.3%</td>
<td>26.3%</td>
</tr>
<tr>
<td>Peas</td>
<td>94.7%</td>
<td>5.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cherries</td>
<td>94.7%</td>
<td>0.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Veggie pizza</td>
<td>57.9%</td>
<td>15.8%</td>
<td>26.3%</td>
</tr>
<tr>
<td>Corn</td>
<td>94.7%</td>
<td>5.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Eggs</td>
<td>100.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Spinach</td>
<td>89.4%</td>
<td>5.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>While milk</td>
<td>84.2%</td>
<td>10.6%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Percentage</td>
<td>84.5%</td>
<td>8.5%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

*Note. H = Healthy, U/H = Unhealthy, N/S = Not Sure.*
Broken down by age, as displayed in Table 4 and illustrated in Figure 4, the five-year-olds went into the workshops with the greatest ability to identify healthy foods correctly, with an average score of 87.8%. Directly following the workshops, all ages showed an improvement, with the three-year-olds showing the greatest improvement: their average score increased from 75.0% to 98.1%. After the six weeks, the four- and five-year-olds both indicated an increase, 93.1% and 95.8% respectively; however, the three-year-olds’ average score dropped back to close to their initial average score. Their average score six weeks after the workshops was 75.9%. The increase amongst the four- and five-year-olds could indicate better retention and/or more interest in engaging in further discussions both in the classroom or at home about healthy foods and nutrition. This could indicate that it is possible the three-year-olds require more repetition and more regular exposure and engagement with the material than their older counterparts. It is also possible that the older children are more likely to initiate further conversation on the topics, thus sparking the discussions that would help strengthen retention and comprehension.
Table 4

*Child Classification of Various Foods by Age*

<table>
<thead>
<tr>
<th>Age</th>
<th>Child Classification of Foods</th>
<th>Before Program</th>
<th>After Program</th>
<th>6 Weeks Later</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>H</td>
<td>UH</td>
<td>N/S</td>
</tr>
<tr>
<td>Three-Year-Olds</td>
<td>75.0% 20.8% 4.2%</td>
<td>98.1%</td>
<td>1.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Four-Year-Olds</td>
<td>85.6% 2.2% 12.2%</td>
<td>86.1%</td>
<td>6.9%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Five-Year-Olds</td>
<td>87.8% 6.7% 5.5%</td>
<td>93.7%</td>
<td>2.1%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Child Classification of Foods</th>
<th>Before Program</th>
<th>After Program</th>
<th>6 Weeks Later</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>H</td>
<td>UH</td>
<td>N/S</td>
</tr>
<tr>
<td>Three-Year-Olds</td>
<td>36.4% 59.1% 4.5%</td>
<td>45.5%</td>
<td>54.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Four-Year-Olds</td>
<td>30.9% 54.5% 14.5%</td>
<td>40.9%</td>
<td>45.5%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Five-Year-Olds</td>
<td>24.5% 48.2% 27.3%</td>
<td>20.5%</td>
<td>54.5%</td>
<td>25.0%</td>
</tr>
</tbody>
</table>

*Note.* H = Healthy, U/H = Unhealthy, N/S = Not Sure.
Broken down by location, children at all of the child care centres showed an increase in their ability to identify healthy foods correctly directly following the workshop series, as displayed in Table 5 and illustrated in Figure 5. However, only the South Asian Society indicated a sustained increase six weeks following the end of the workshop series, with an increase in their average score from 87.8% to 98.1%. The Urban Spice’s average score held fairly steady, decreasing only slightly from 94.4% to 93.8%, while the Blue-Collar Comfort dropped below its initial average score of 81.5%, down to 75.9%. Once again, a the 3:1 girl-to-boy ratio surveyed at this centre might indicate a need to initiate and engage the girls and three-year-olds in further discussion on the healthy foods to strengthen their retention and comprehension of the material.

*Figure 4.* Child classification of foods by age (food group 1).
Table 5

*Child Classification of Various Foods by Socioeconomic Status*

<table>
<thead>
<tr>
<th>Socioeconomic status</th>
<th>Child Classification of Foods: Group 1</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Program</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
<td>6 Weeks Later</td>
<td>After Program</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
</tr>
<tr>
<td>South Asian Society</td>
<td>78.7%</td>
<td>12.0%</td>
<td>9.3%</td>
<td>87.8%</td>
<td>6.7%</td>
<td>5.5%</td>
<td>98.1%</td>
<td>1.9%</td>
<td>0.0%</td>
<td>85.5%</td>
<td>3.7%</td>
<td>10.8%</td>
<td>98.4%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Blue-Collar Comfort</td>
<td>81.5%</td>
<td>18.5%</td>
<td>0.0%</td>
<td>96.3%</td>
<td>3.7%</td>
<td>0.0%</td>
<td>75.9%</td>
<td>16.7%</td>
<td>7.4%</td>
<td>92.9%</td>
<td>3.0%</td>
<td>4.1%</td>
<td>74.5%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Urban Spice</td>
<td>88.9%</td>
<td>3.3%</td>
<td>7.8%</td>
<td>94.4%</td>
<td>0.8%</td>
<td>4.8%</td>
<td>93.8%</td>
<td>0.0%</td>
<td>6.2%</td>
<td>91.6%</td>
<td>2.5%</td>
<td>6.0%</td>
<td>92.9%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Before Program</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
<th>After Program</th>
<th>6 Weeks Later</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
<td>H</td>
<td>UH</td>
<td>U/S</td>
</tr>
<tr>
<td>South Asian Society</td>
<td>31.8%</td>
<td>59.1%</td>
<td>9.1%</td>
<td>27.3%</td>
<td>56.4%</td>
<td>16.4%</td>
<td>33.3%</td>
<td>63.6%</td>
<td>3.0%</td>
<td>31.7%</td>
<td>58.5%</td>
<td>9.8%</td>
<td>27.4%</td>
<td>56.6%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Blue-Collar Comfort</td>
<td>27.3%</td>
<td>72.7%</td>
<td>0.0%</td>
<td>18.2%</td>
<td>81.8%</td>
<td>0.0%</td>
<td>39.4%</td>
<td>42.4%</td>
<td>18.2%</td>
<td>26.4%</td>
<td>73.6%</td>
<td>0.0%</td>
<td>18.2%</td>
<td>81.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Urban Spice</td>
<td>27.2%</td>
<td>41.8%</td>
<td>30.9%</td>
<td>39.0%</td>
<td>36.4%</td>
<td>24.7%</td>
<td>21.2%</td>
<td>66.7%</td>
<td>12.1%</td>
<td>26.4%</td>
<td>73.6%</td>
<td>0.0%</td>
<td>18.2%</td>
<td>81.8%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Figure 5. Child classification of foods by socioeconomic status.

Unhealthy foods. The children had significantly more difficulty correctly identifying the unhealthy foods in Group 2. As displayed in Table 6, approximately half of the children could correctly identify unhealthy foods during the first two surveys.
(52.2% and 52.1%, respectively) and only 3 out of 5 children (61.2%) could correctly recognize unhealthy foods even after the six weeks.

Table 6

*Child Classification of Unhealthy Foods*

<table>
<thead>
<tr>
<th>Food Group 2</th>
<th>Child Classification of Unhealthy Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Program</td>
</tr>
<tr>
<td></td>
<td>H</td>
</tr>
<tr>
<td>Jelly beans</td>
<td>5.3%</td>
</tr>
<tr>
<td>French fries</td>
<td>31.6%</td>
</tr>
<tr>
<td>Fruit-shaped candy</td>
<td>42.1%</td>
</tr>
<tr>
<td>Pepperoni pizza</td>
<td>63.2%</td>
</tr>
<tr>
<td>Animals crackers</td>
<td>42.1%</td>
</tr>
<tr>
<td>White bread</td>
<td>52.6%</td>
</tr>
<tr>
<td>Chocolate chip cookie</td>
<td>5.3%</td>
</tr>
<tr>
<td>Chocolate</td>
<td>15.8%</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>26.3%</td>
</tr>
<tr>
<td>Coca Cola</td>
<td>10.6%</td>
</tr>
<tr>
<td>Diet Coke</td>
<td>21.1%</td>
</tr>
<tr>
<td>Percentage</td>
<td>28.7%</td>
</tr>
</tbody>
</table>

*Note. H = Healthy, U/H = Unhealthy, N/S = Not Sure.*

Broken down by age as illustrated in Figure 6, the five-year-olds improved their average score the most over the course of the program. However, their average score was still low as they were still misidentifying a lot of the foods in this group as healthy. After the six weeks following the end of the workshop series, the four- and five-year-olds both showed improvement. Even so, they were still correctly identifying the unhealthy foods
only 2 out of 3 times, approximately. The three-year-olds appeared to be quite confused by the unhealthy foods and actually got progressively worse. After the six weeks following the end of the workshops, they were identifying the foods in Group 2 as unhealthy only 1 out of 4 times. This might indicate that messages about moderation and that people don’t need to stop eating unhealthy foods entirely, just in smaller quantities, might confuse the younger children as they may not be ready to deal with such concepts. This could also be an indication of the effect of advertising directed at children that uses fruit flavours and shapes to sell unhealthy foods.

Figure 6. Child classification of foods by age (food group 2).
Broken down by location, as displayed in Table 5 and illustrated in Figure 4, children at both the South Asian Society and Urban Spice locations recorded a slight drop in their average scores related to their ability to identify correctly the unhealthy foods in Group 2 directly following the workshop series—59.1% to 56.4% and 41.8% to 36.4%, respectively. However, the average scores at both of these centres did increase to 63.6% and 66.7%, respectively, six weeks following the end of the workshop series, indicating that the children in these centres could correctly identify the unhealthy foods in Group 2 approximately 3 out of 5 times. Children at the Blue-Collar Comfort location, on the other hand, indicated an initial increase in their ability to identify correctly the unhealthy foods. They increased their average score from 72.7% prior to the workshop series to 81.8% directly following the workshops. However, their average score dropped dramatically, down to 42.4%, six weeks following the end of the workshops. These results, again, might indicate a need to initiate and engage the girls and the three-year-olds in further discussion on the healthy foods to strengthen their retention and comprehension of the material. The initial drop in the South Asian Society and the Urban Spice locations might indicate some confusion around the message that we don’t need to stop eating unhealthy foods, we just need to eat in smaller quantities. As mentioned earlier, this might be confusing some of the children about whether a food is healthy or not. Further discussion is required to clarify the difference between healthy and less healthy food options.

**Food preference survey with children.** The results of the food preference survey indicated that workshop series had a small impact on the children’s food preferences.
**Food identification by group.** Again, to assess the identification amongst the children of healthy foods versus unhealthy foods, I separated the foods into two groups. Group 1 consists of foods considered to be healthy while Group 2 is comprised of foods considered to be unhealthy.

*Healthy foods.* The results of the food preference survey, as illustrated in Figure 7 and displayed in Table 7, indicate that the workshop series had a positive impact on the children’s food preferences of healthy foods. Combining the “like a lot” and the “like a bit” responses into one “like” category resulted in an increase in the average score from the initial survey taken prior to the workshop and the survey immediately after the workshop. The scores were 81.0% and 81.1%, respectively, increasing to an average score of 86.0% six weeks following the end of the workshop series. This would suggest that the workshop series had a positive influence in promoting healthy food choices in the child care centres.

![Figure 7. Child food preferences.](image)
Table 7

*Child Food Preferences for Healthy Foods*

<table>
<thead>
<tr>
<th>Food Group 1</th>
<th>Children Food Preferences for Healthy Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Program</td>
</tr>
<tr>
<td></td>
<td>LA</td>
</tr>
<tr>
<td>Apple</td>
<td>89.5%</td>
</tr>
<tr>
<td>Banana</td>
<td>84.2%</td>
</tr>
<tr>
<td>Broccoli</td>
<td>63.2%</td>
</tr>
<tr>
<td>Whole wheat bread</td>
<td>52.6%</td>
</tr>
<tr>
<td>Carrots</td>
<td>68.4%</td>
</tr>
<tr>
<td>Blueberries</td>
<td>89.5%</td>
</tr>
<tr>
<td>Grapes</td>
<td>94.7%</td>
</tr>
<tr>
<td>Green peppers</td>
<td>42.1%</td>
</tr>
<tr>
<td>Orange</td>
<td>73.6%</td>
</tr>
<tr>
<td>Orange juice</td>
<td>63.1%</td>
</tr>
<tr>
<td>Almonds</td>
<td>47.4%</td>
</tr>
<tr>
<td>Peas</td>
<td>68.4%</td>
</tr>
<tr>
<td>Cherries</td>
<td>78.9%</td>
</tr>
<tr>
<td>Veggie pizza</td>
<td>47.4%</td>
</tr>
<tr>
<td>Corn</td>
<td>84.2%</td>
</tr>
<tr>
<td>Eggs</td>
<td>73.6%</td>
</tr>
<tr>
<td>Spinach</td>
<td>36.8%</td>
</tr>
<tr>
<td>While milk</td>
<td>73.6%</td>
</tr>
<tr>
<td>Average score</td>
<td>68.4%</td>
</tr>
</tbody>
</table>

*Note.* LA = Like a lot, LB = Like a Bit, DL = Don’t Like.

Breaking down and evaluating the “like a lot” and “like a bit” responses separately, one can see there is still see a positive impact on the children’s overall food preferences toward healthy foods. This is observed in the slight increase of children
stating a strong preference for healthy foods (68% to 71.1%) directly following the workshop series. This number, however, did fall back down to 68.5% six weeks following the end of the workshop series. It is important to note that at the six-week period, while the percentage of children stating a strong preference for Group 1 foods fell, the number of children stating they like the Group 1 foods “a bit” rose from 10% to 17.4%. The increase in the children indicating a strong preference for the healthy foods directly following the workshop series indicates the workshops did have a positive impact on the children’s food preference. However, the fact that the strong food preferences for healthy foods were not sustained could indicate the need for continued regular engagement in similar educational materials to have a positive and sustained effect on the children’s food preferences.

*Unhealthy foods.* The results of the food preference survey, as displayed in Table 8 and illustrated in Figure 7, indicate that the workshop series had a slight positive impact on the children’s food preferences of unhealthy foods. Similarly to the foregoing, combining the “like a lot” and the “like a bit” responses into one “like” category resulted in a decrease from the initial survey taken prior to the workshop (90.5%) to 87.3% immediately after the workshop. However, six weeks following the end of the workshop series, the scores returned close to the initial average score, declining to 90.3%. This indicates the workshop series had a small, short term but positive influence in promoting the consumption of healthy food choices and deterring the consumption of the less healthy foods.
Table 8

Child Food Preferences for Unhealthy Foods

<table>
<thead>
<tr>
<th>Food Group 2</th>
<th>Children Food Preferences for Unhealthy Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Program</td>
</tr>
<tr>
<td></td>
<td>LA</td>
</tr>
<tr>
<td>Jelly beans</td>
<td>89.5%</td>
</tr>
<tr>
<td>French fries</td>
<td>73.7%</td>
</tr>
<tr>
<td>Fruit-shaped candy</td>
<td>84.2%</td>
</tr>
<tr>
<td>Pepperoni pizza</td>
<td>84.2%</td>
</tr>
<tr>
<td>Animals crackers</td>
<td>84.2%</td>
</tr>
<tr>
<td>White bread</td>
<td>84.2%</td>
</tr>
<tr>
<td>Chocolate chip</td>
<td>89.5%</td>
</tr>
<tr>
<td>Cookie</td>
<td>89.5%</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>84.2%</td>
</tr>
<tr>
<td>Coca Cola</td>
<td>52.6%</td>
</tr>
<tr>
<td>Diet Coke</td>
<td>42.1%</td>
</tr>
<tr>
<td>Average score</td>
<td>78.0%</td>
</tr>
</tbody>
</table>

Note. LA = Like a lot, LB = Like a Bit, DL = Don’t Like.

The results of the food preference survey indicate that the workshop series had a very small impact on the children’s overall food preferences for unhealthy foods. While an initial small decline was observed in the preference for unhealthy foods directly following the workshop series (78.8% down to 76.3%), the percentage of children expressing strong preferences for the unhealthy foods increased to 83.6% six weeks following the workshop series. Once again, this indicates the need for continued regular engagement in similar educational materials to have a positive and sustained effect on the children’s food preferences.
Chapter 5: Discussion

The need for effective public health promotion strategies to tackle childhood diet-related diseases such as diabetes and obesity are well established (Escobar, 1999; Jefferson, 2006; Kalich et al., 2009; Koivisto Hursti, 1999; Zarnowiecki, Dollman, & Sinn, 2011). However, the increasing rates of these diet-related diseases in children indicate that widespread and effective solutions have yet to be identified and integrated within the community (Anderson et al., 2005; Benton, 2004; Moore et al., 2005; L. Taylor, Gallagher, & McCullough, 2004; Westenhoefer, 2001).

Through the use of grounded theory, thematic analysis, quantitative surveys, semi-structured interviews, child drawings, and food preferences and food categorization surveys, in this study I assessed the effectiveness of utilizing an ecological approach in the promotion of healthy foods in ECE. The findings and the supporting literature indicate that utilizing an ecological approach to promoting healthy food choices does have the potential to offer an effective public health promotion strategy in early childhood.

Paradigm Shift

The rise in diet-related diseases in Canadian culture signifies the need for a paradigm shift in societal norms regarding our perceptions of how our food choices affect our health, the health of the environment, and the link between the two. Recent literature has suggested that this shift needs to be initiated during early childhood in order to create lifelong healthy eating habits and behaviours (Anderson et al., 2005; Drummond, 2010; Escobar, 1999; Jefferson, 2006; Kalich et al. 2009; Koivisto Hursti, 1999; Lynch & Batal, 2011; Zarnowiecki et al., 2011). This call for such a paradigm shift was supported by the
interview with RFRK, who strongly believes that “there has been a change, or rather, more precisely, a revolution, towards junk food and convenience food without the realization of what this will do to people’s health.” They have observed how nutrition and food education are absent from people’s lives and argue that we can raise the consciousness of healthy foods and the connections between our food choices, our health, and the health of the environment by bringing food education into day care centres and thereby educating the children, parents, and ECEs.

**Effectiveness of the Ecological Approach**

The effectiveness of the ecohealth approach in raising consciousness of healthy foods is demonstrated by the positive effect observed in the quantitative data collected from the food categorization and food preference surveys. While not statistically significant, the results of the food categorization surveys demonstrated an overall positive improvement in the children’s ability to categorize correctly healthy and unhealthy foods, indicating that the workshops did have a positive influence on the children’s understandings of healthy and unhealthy foods. Likewise, the food preference survey demonstrated an overall positive effect in the children’s preference for healthy foods. This suggests that the ecohealth workshop series had a positive influence in promoting the consumption of healthy food choices in the child care centres.

The thematic analysis of the children’s drawings at the culmination of the workshop series also spoke to the effectiveness of the ecohealth workshops. Common themes in the drawings included various fruits and vegetables, many of which were displayed and/or discussed during the workshop series through stuffed fruit and vegetable toys, stories, visual aids, and other games. Beanstalks were also a very popular image,
indicating that the Dr. Seuss book, *Oh Say Can You Seed*, which concluded with the Cat in the Hat climbing up a giant beanstalk, resonated very well with the children. This was observed during the workshops as well.

Images of the tasting game, which was played with the students during the first workshop, were also very popular. Many children drew pictures that depicted the foods we taste tested, as well as pictures of the students playing the tasting game. This suggests that the children thoroughly enjoyed engaging in this activity and were able to internalize the activity. Finally, images of plants growing were also popular, with depictions of flowers, fruits, and vegetables growing in a garden, which was an activity that was incorporated into the last workshop of the series. This again suggests the children thoroughly enjoyed the planting activity and were able to internalize the activity.

The effectiveness of the ecohealth approach in raising consciousness of healthy foods and the connections between our food choices, our health, and the health of the environment is further supported by the interviews with the children, parents, and ECEs. These data suggested the children not only were engaged in learning about healthy food choices and their connections to our health and the environment, but they demonstrated an interest in learning about these concepts both in the classroom and at home. During the semi-structured interviews conducted with the children at the end of the workshop series, they demonstrated an impressive knowledge about healthy foods, including their advantages over unhealthy foods, their health benefits, their origins, and their basic distribution patterns.

The interviews with the parents and ECEs confirmed the children’s interest in learning about the health benefits of various healthy foods. This keen interest in learning
about the health benefits of various foods has the benefit of providing the children with
direct perceivable benefits of what the foods can do for their health and their bodies
(Westenhoefer, 2001).

These interviews with the parents and the educators also confirmed the children’s
interest in learning about the origins of foods. This interest in and connection to food is
important, as many initiatives promoting healthy food choices in young children, such as
*Early Sprouts*, acknowledge the importance of promoting knowledge, activities, and
discussions about the origins and sources of foods, asserting that it provides a much-
needed connection to the natural world and the food children consume (Kalich et al.,
2009).

The children also really enjoyed being engaged in food-related activities such as
buying, cooking, and gardening, as expressed during their interviews. The interviews
with parents and ECEs confirmed the children’s interest in engaging in food-related
activities and they reported providing opportunities both at home and at the child care
centre for the children to engage in such activities. In fact, all of the parents reported
including their children in food shopping on a regular basis and some of the parents even
reported having a summer weekend tradition of bringing their children to the local
farmer’s market. This activity was also reported by the city suburban (Unionville) child
care centre, which mentioned taking the children on an excursion to a local grocery store.
These findings support other initiatives, such as *Early Sprouts*, which promote the
engagement of children in the food harvesting or buying process (Kalich et al., 2009).
*Early Sprouts* similarly reported that the children involved in their programs really
enjoyed grocery shopping and harvesting the produce from the garden (Kalich et al., 2009).

Many parents also reported including their children in cooking at home. They described engaging them in everything from measuring and stirring to setting the table and singing songs together while they cook. The city suburban (Unionville) location also reported cooking with the children in the classroom and making things such as fruit-smoothie popsicles.

All of the child care centres also reported and were observed providing a healthy communal lunch with family-style serving. The children were all able to engage actively in the meal time by serving themselves, thus portion controlling their own serving, while engaging in conversation with their classmates and their ECEs. The importance of including children in food preparation and cooking at home and/or in the classroom has been supported by Drummond (2010), Kalich et al. (2009), and Westenhoefer (2001), in which they described the process as developing many skills including “the selection, storage, preparation, cooking and serving of healthy food” (Drummond, 2010, p. 50).

Many of the parents and ECEs also reported engaging the children in gardening. All of the parents revealed that they had access to at least a small garden in which they engage their children in helping with weeding, planting seeds, and harvesting tomatoes and herbs. Several of the parents also mentioned that their children have grandparents with large gardens or farms which they get to help out on. The rural suburban (Newcastle) and city suburban (Unionville) child care centres also reported having small outdoor gardens in which they grow such vegetables as carrots, tomatoes, cucumbers, peppers, and squash. The city suburban (Unionville) and inner-city (Downtown) child
care centres also reported growing herbs, potatoes, and other plants in the classroom setting.

The importance of engaging children in activities such as gardening, has been demonstrated through such programs as *Early Sprouts* and *Ready, Set, Grow programs* (Kalich et al., 2009; Pecaski McLennan, 2010). These programs instill the idea that healthy eating is related to growing healthy plants. The authors believe that “children educated early in life about the benefits of healthy eating and who are encouraged to grow their own fruits and vegetables are more likely to eat healthfully as adults” (Pecaski McLennan, 2010, p. 330). They also suggested that “by encouraging our children to become engaged in gardening practices at a young age, we can encourage them to be not just readers and writers, but lifelong appreciators of the outdoors, one garden at a time” (Pecaski McLennan, 2010, p. 333).

All of these food-related activities, besides generating in children an interest in healthy foods, also aids in the creation of very important life skills involving knowledge and capabilities related to food buying, food growing, meal planning, food preparation, and portion controlling. These are very important skills for children to develop (Drummond, 2010), and both the parents and ECEs acknowledged the importance of teaching these skills and capabilities both in the home environment and in the classroom/child care centres. The importance of teaching children life skills related to food was noted by Drummond (2010) and Pecaski McLennan (2010), who contended that providing food skills empowers the children to make healthy individual choices. As well, in a
…time of increased environmental awareness, desire to eat locally grown food, and fiscal responsibility, what better way to nurture and support young children and prepare them for life in the twenty-first century than to introduce them to the thrill of growing their own flowers, fruits and vegetables. (Pecaski McLennan, 2010, p. 333)

Altogether, these food-related activities undoubtedly contributed, at least partially, to the children’s impressive knowledge about healthy foods, as observed during the interviews. This is further support for the important role an ecological approach can play in the promotion of healthy eating during early childhood.

Another advantage of educating children about the benefits of healthy food choices and the connections between our food choices, our health, and the health of the environment is that children have been observed to be powerful agents of change. They influence their parents, their siblings, their educators, and even their peers. This influence was directly observed during the workshop series. On several occasions during the tasting game, the children’s preference for a particular food or their willingness to try a certain food was influenced their peers’ decisions to try it.

The importance of children as agents of change is also supported by Drummond (2010), who stated that the benefits of promoting healthy food choices in children may transfer to eating patterns outside of school and influence attitudes of the children, their parents and the wider community, [challenging] the traditional model of intergenerational health so that students, rather than their parents, can be the agents of change for their family. (p. 45)
This finding again reinforces the important role the promotion of healthy food plays in child care centres as it not only reaches the children, but also the ECEs, the parents, the siblings, and even the children’s friends outside of the child care centres.

**Key Observations**

Through the implementation of the workshop series, I made several key observations. It was evident, for example that several fruits and vegetables were identified as being favoured by the children. A few of the most popular included berries, specifically blueberries, which were identified as a favourite through the children’s drawings. Strawberries were also a favourite identified through the interviews with the children. Other favourites included oranges and broccoli, identified in both the drawings and interviews. The other vegetables depicted frequently in the children’s drawings were carrots and cucumbers, while popular fruits in the drawings included lemons, oranges, bananas, and watermelon. For this age group, the use of favourite and/or familiar fruits and vegetables is a good place to start when first introducing nutrition and healthy food education as there is a sense of perceived comfort often associated with familiar foods (Aldridge et al., 2009). Introducing new foods into the child care centres or at home can be done by creating trust and preference from the children for a new food through exposure, which will increase the child’s familiarity and comfort with the food (Aldridge et al., 2009; Koivisto Hursti, 1999).

Another potentially helpful note is that green peppers appeared to be the least liked of all fruits and vegetables as observed during the quantitative food preference surveys. This could be because of its slightly bitter taste, which young children often have a natural tendency to avoid (Koivisto Hursti, 1999).
It also appeared that many of the younger children initially had a tendency to associate a food they like as healthy whether it was really healthy or not. The children also had a tendency to perceive foods as healthy if the foods were regularly consumed by the child’s parents/guardians. Such was the case of Coca Cola and Diet Coca Cola on more than one occasion. This reinforces the importance of parents and educators adopting healthy life styles themselves, as they have significant influence on a child’s food consumption and often serve as important role models to the children (Benton, 2004; Carruth, Skinner, Moran, & Coletta, 2000; Jefferson, 2006; Koivisto Hursti, 1999; Lynch & Batal, 2011; Moore et al., 2005; L. Taylor et al. 2004; Westenhoefer, 2001). As Koivisto Hursti (1999) stated, children “need positive role models in order to learn to accept the foods we want them to eat” (p. 30).

There was also a noticeable tendency among many of the children to avoid the word unhealthy and instead preferred the term “a little bit healthy” for many of the unhealthier food options. For the sake of the survey, these responses were categorized in the “not sure” category, because while the responses indicated that they were less healthy options than the Group 1 foods, it was not felt that this provided a clear indication of the children’s understanding that there is significant health difference between the Group 1 and Group 2 foods. That being said, it was also noted that several of the Group 2 foods consistently confused many of the children as to whether they should be considered healthy or unhealthy. This was due, in large part, to the fact that foods are rarely classified as completely healthy or completely unhealthy, but tend to be rated on a graded scale with healthy at one end of the spectrum and unhealthy at the other end.
The foods which tended to confuse the children the most were items such as chocolate milk and white bread: both have nutritional merits but also much healthier alternatives, such as white milk and whole wheat bread. Fruit-shaped gummy candies were also an item that often confused the children. This could be attributed to the fact that they are marketed to look, taste, and smell like real fruit and are often advertised as being made with real fruit juices. However, they have high amounts of sugar, which make them a less healthy option compared to their whole fruit alternatives that offer many health benefits and are good sources of vitamins and fibre.

Consequently, this confusion must be taken into consideration when developing an ecological-based ECE program to promote healthy foods. For instance, the findings indicate the need to discuss the concept of healthier food options, such as the health benefits of whole wheat bread over white bread.

Another finding that has an important consequence for the development and implementation of an ecological-based ECE program is the importance of including activities that engaged the children in more tactile and sensory ways. During the workshops, it was also observed that this type of activity was very well received with all of the children in the child care centres. This was especially evident during the tasting game and the planting of peas with the children. This finding is supported by the interview with RFRK, which described effective health promotion in early childhood as “making them part of the process, bringing them together as a group, awakening their senses all at once and adding the element of fun.” This idea is also supported by Westenhoefer (2001), who stated that one critical element of successful educational
strategies is that there should be a focus on providing a variety of healthy foods and that children should be encouraged to taste and explore the food.

It was also observed that activities requiring the students to use more abstract thinking, such as the human–environment interdependence and relationship within the larger ecosystem game, were too advanced for this age group as they required much assistance and coaching. While I think it was very beneficial to introduce these concepts during the workshop series, it might be valuable first to introduce these concepts more thoroughly before introducing a game in which the children are asked to apply the concepts so intricately. This will allow the children to get comfortable with the concepts of systems and webs before introducing them to such connections as the process of butterflies and bees pollinating the flower so that it can produce fruit, so that the farmers can bring the produce to the market, so we can buy it and enjoy it at home or at the child care centre. Only once each of these components is understood in isolation can a child be expected to connect the dots and discuss the large system.

It was also revealed through observations and discussion with the parents and ECEs that the children in this study for the most are exposed to good variety of healthy foods both at home and at the child care centres. It was also revealed that the topic of food security and food scarcity is also often discussed with the children by several of the parents and ECEs. Lastly, the data revealed the need for sustained, integrated, ecohealth approaches to be incorporated into the child care centres and schools to ensure sustained interest in healthy food choices. This is supported by Westenhoefer (2001), who stated, “isolated short-term projects are not likely to change eating behaviours” (p. 128). Kalich et al. (2009) and Mooney et al. (2008) also argued it is important to involve both the
ECEs and the parents in the educational programming for the healthy food behaviours to be integrated effectively into the child’s lifestyle given the shared roles that they play in forming the children’s eating habits and behaviours.

**Conclusion**

This study has demonstrated that an ecological approach to the promotion of healthy food choices can offer an effective health promotion tool in enhancing the children’s knowledge of healthy foods and their understanding of food-related issues. Furthermore, the research identified many important issues that must be taken into consideration when developing and implementing an ecological-based educational program for ECE. The importance of using familiar or favourite foods as a way to ease the children into food and nutrition education was accentuated, as was the avoidance of more bitter fruits and vegetables to which the children often have a natural aversion. The significant role that parents and ECEs play as role models for the children’s food behaviours and habits was also highlighted and underlines the need for parents and ECEs to discuss the concept of healthier food options with the children. The importance of utilizing play-based learning using tactile and sensory engagement was also confirmed while highlighting the challenges of implementing abstract learning prematurely with this age group.

Finally, the study underscored the importance of involving the ECEs and parents in this type of research, as well as their importance in the education programs. In addition to offering a rich resource of information concerning the children’s exposure to food, they are critically important for the establishment of the essential collaboration and cooperation in the promotion of healthy foods that must span both the classroom and
home environment. Implementing health promotion strategies endorsing healthy foods that span both spheres of the child’s life allows for greater saturation of healthy food promotion and leads to better comprehension and greater sustained influence on food choice (Drummond, 2010; Kalich et al., 2009; Mooney et al. 2008; Westenhoefer, 2001).

**Recommendation**

More research is necessary in order to assess the full potential of this kind of program and to identify the most effective instructional techniques and programs. I recommend that future research evaluate the effectiveness of implementation of a long-term application of the ecological approach to the promotion of healthy food choices in the child care centres and at home that actively involves the children, parents, and ECEs into the process.

**Dissemination**

The dissemination of research results is an integral component of action research and CBPR, as it allows the results and information presented in the thesis to be shared within the academic and the local community at both a public and policy level (Minkler & Wallerstein, 2008; O’Fallon & Dearry, 2002). The dissemination of the results of this thesis will be shared with all of the partners involved in this study, including the YMCA of the GTA, ECEs, parents, children, RFRK, and Creative Change Educational Solutions. The style of dissemination will vary by group, ranging from the distribution of the final paper, to presentations and workshops, and even the creation of educational materials, such as a train-the-trainer manual for a workshop series for ECEs for YMCA child care centres across the GTA.
In many ways, the dissemination of the results signifies the beginning for this project. It is with this step that the information collected can be used in future partnerships and opportunities within the community with the hopes of creating healthier children and communities.
References


http://www.creativechange.net/programs/taste_change


YMCA of Greater Toronto. (n.d.). *A day at the YMCA of Greater Toronto.* Toronto, ON: Author.

Appendix A: Semi-Structured Interview Questions

Parents

1. What, if any, kind of discussions do you have with your child at home about food and healthy eating?

2. What, if any, kind of discussions do you have with your child at home about the source and origins of their food?

3. What, if any, kind of food-related activities do you do with your child (i.e., grocery shopping, visiting farmer’s markets, community or backyard gardening, etc.)

4. Can you please explain an average day of meals, including snacks in your home?

Revised Parents

1. What kind of discussions do you have with your child at home about food and healthy eating?

2. What kind of discussions do you have with your child at home about the source and origins of their food?

3. What kind of food-related activities do you do with your child (i.e., grocery shopping, visiting farmer’s markets, community or backyard gardening, cooking/baking, etc.)

4. What are some of the most requested/favourite meals and snacks in your home?
5. What kind of educational programming would you like to see implemented into the child care centres/schools?

**Early Childhood Educators**

1. What, if any, kind of discussions do you have with the students about food and healthy eating?

2. What, if any, kind of discussions do you have with the students about the source and origins of their food?

3. What, if any, kind of food-related activities do you do with the students (i.e., visiting farmer’s markets, community or schoolyard gardening, growing bean plants, etc.)

4. What kind of snacks and lunches do you observe being brought to school? (e.g., healthy snacks, pre-packaged foods, junk food, etc.)

**Students**

1. What do you think of when you hear the term “healthy food”?

2. What do you typically know about where your food comes from? (Provide example; e.g., an apple).

3. Do you often help out with picking out groceries for your family? If so, what kind of places do you go? (e.g., grocery store, farmer’s market, community garden, backyard garden, etc.)

4. What are some of your favourite foods?

**RFRK**

1. Can you tell me more about the various educational programming RFRK offers?
2. Do you incorporate any of the educational programming into the catering at the YMCA child care centres? If so, can you explain how?

3. What components would you most recommend including when creating educational programming for teaching young children about healthy and environmentally sustainable eating habits?

4. What policies would you like to see implemented locally, provincially, and/or nationally to help support your initiatives?

5. Have you encountered many obstacles along the way in implementing your programs?
Appendix B: Child Participants

<table>
<thead>
<tr>
<th>CODE</th>
<th>AGE</th>
<th>GENDER</th>
<th>POSTAL CODE</th>
<th>AREA DEMOGRAPHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>5</td>
<td>MALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>C2</td>
<td>3</td>
<td>FEMALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>C3</td>
<td>3</td>
<td>FEMALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>C4</td>
<td>5</td>
<td>MALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>C5</td>
<td>5</td>
<td>MALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>C6</td>
<td>5</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>C7</td>
<td>4</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>C8</td>
<td>3</td>
<td>MALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C9</td>
<td>5</td>
<td>MALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C10</td>
<td>4</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C11</td>
<td>3</td>
<td>MALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C12</td>
<td>4</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C13</td>
<td>4</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C14</td>
<td>5</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C15</td>
<td>5</td>
<td>MALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C16</td>
<td>5</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C17</td>
<td>5</td>
<td>MALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>C20</td>
<td>5</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>C21</td>
<td>4</td>
<td>MALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
</tbody>
</table>

Child participant population: n = 19

Child participant population:
3 yrs old: n = 10/19
4 yrs old: n = 5/19
3 yrs old: n = 4/19

Males: n = 9/19
Females: n = 10/19

Newcastle (L1B 1M5): n = 3/19
Unionville (L3P 7G2): n = 6/19
Toronto (M4M 3C7): n = 10/19
Appendix C: Parent Participants

<table>
<thead>
<tr>
<th>Code</th>
<th>GENDER</th>
<th>POSTAL CODE</th>
<th>AREA DEMOGRAPHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>FEMALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>P2</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>P3</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>P4</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>P5</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
</tbody>
</table>

Parent participant population: n = 5
Males: n = 2
Females: n = 3

Newcastle (L1B 1M5): n = 1/5
Leondville (L3P 7G2): n = 1/5
Thorpe (M4M 3C7): n = 3/5
Appendix D: Staff Participants

<table>
<thead>
<tr>
<th>CODE</th>
<th>GENDER</th>
<th>POSTAL CODE</th>
<th>AREA DEMOGRAPHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>T2</td>
<td>FEMALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>T3</td>
<td>MALE</td>
<td>L3P 7G2</td>
<td>South Asian Society</td>
</tr>
<tr>
<td>T4</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>T5</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>T6</td>
<td>FEMALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>T7</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
<tr>
<td>T8</td>
<td>FEMALE</td>
<td>L1B 1M5</td>
<td>Blue-Collar Comfort</td>
</tr>
<tr>
<td>T9</td>
<td>FEMALE</td>
<td>M4M 3C7</td>
<td>Urban Spice</td>
</tr>
</tbody>
</table>

BCE participant population: n = 9
Males: n = 1/9
Females: n = 8/9

Newcastle (L1B 1M5): n = 2/9
Unionville (L3P 7G2): n = 3/9
Toronto (M4M 3C7): n = 4/9
Appendix E: Food Preference Questionnaire

Date:

Participant Code:

<table>
<thead>
<tr>
<th>#</th>
<th>Food Item</th>
<th>I Like it a lot</th>
<th>I like it a little bit</th>
<th>I don’t like it</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Banana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Broccoli</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Whole Wheat Bread</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Carrots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Blueberries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Grapes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Jelly Beans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Green Pepper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>French Fries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Orange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Orange Juice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Almonds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Peas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Cherries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Fruit Shaped Gummy Candy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Veggie Pizza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Pepperoni Pizza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Corn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Animal Crackers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>White Bread</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Spinach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Chocolate Chip Cookie</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>White Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Chocolate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Chocolate Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Coca Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Diet Coca Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Food Categorization Questionnaire

Date:

Participant Code:

<table>
<thead>
<tr>
<th>#</th>
<th>Food Item</th>
<th>Healthy</th>
<th>Unhealthy</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Banana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Broccoli</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Whole Wheat Bread</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Carrots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Blueberries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Grapes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Jelly Beans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Green Pepper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>French Fries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Orange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Orange Juice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Almonds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Peas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Cherries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Fruit Shaped Gummy Candy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Veggie Pizza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Pepperoni Pizza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Corn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Eggs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Animal Crackers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>White Bread</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Spinach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Chocolate Chip Cookie</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>White Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Chocolate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Chocolate Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Coca Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Diet Coca Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Workshop Curriculum

Promoting Healthy Food Choice in Early Childhood: An Ecological Approach

Unit 1: Establishing Relevance

What Makes Us Healthy and Happy?

Pose the Question:
Can you tell me what kind of things do we need to be happy and healthy people?

Use Visual Prompts depicting: Food; Shelter; Love from Family/Friends; Healthy Environment.

Discuss: As you just heard Food is a very important part of our lives and it plays a big role in keeping us happy and healthy!

The Foods We Eat!

Pose the Question: Given how important food is in our lives –Can you tell me what kind of foods you like to eat?

Game

1. Out of some of the foods you just mentioned – which of these do you believe are healthy and which do you think are unhealthy?

2. Use Visual Prompts depicting: healthy and unhealthy foods;

3. Place Titles ‘Healthy’ and ‘Unhealthy’ on the wall

4. Hold up visual prompts of various foods and get the children to instruct you on where to place it under the appropriate category.

Discuss: Why do they think certain foods are healthy vs. unhealthy?

Game:
1. Now we’re going to play a tasting game! (Get children to wash their hands)

Materials: Provide each child with a small cup containing: apple slice, orange slice, carrot, cucumber, broccoli, and lemon.

2. Have them smell, look at, touch and finally taste the food. Along the way ask them to talk about how they are experiencing the food through their senses. Pose the following questions:
a) How does it smell? (sweet? Sour? Fruiting? Spicy?)

b) How does it look? (red on the outside, white on the inside? It is round?)

c) How does it feel to touch? (Is it slippery? Rough, Soft, Bushy?)

d) How does it taste? (sweet? Sour?)

3. Demonstration: Show Children Full examples of the Fruit and Veggie and then cut them open to show them the seeds.

Story: Read Dr. Seuss’ ‘Oh Say Can You Seed’

Pass around Stuff toys to play with during the reading.

Unit 2: Exploration and Reflection

Teaching About The Human-Environmental Interdependence And Relationships With Communities.

Discuss: We’re going to start today’s workshop with a game that teaches us about the connection between us (as humans) to our physical environment and our ecological and social community.

Materials/Prompts: Large ball of yarn, visual aids depicting various players (Air, Clouds, Rain, Sun, Soil, Water, River, Children, Fruits, Flowers, vegetables, Bees, Birds, Lady Bugs, Trees, Butterfly, Berries, Bunnies, Farmers, Grocery Store, Farmers Market, Backyard Garden, community garden, Truck, Car, Bicycle, Train, Bus, Boat, Airplane…), Strong Yarn through each of the visual aid, so it can be worn around the neck.

Game:

1. Pass out one card to each student and ask them to put them around their neck so that the picture lays face up on their chest.

2. Review the terms as needed so that everyone understands what he or she represents. (If they teacher is willing to participate give them the Sunlight card).

3. The teacher begins the game by announcing, “My sunlight provides food for…” The teacher chooses the person wearing the appropriate card and tosses the ball of string to that person while completing the statement.

Ex:
“My sunlight provides food for Flowers” (Teacher then tosses the ball of string to the student wearing the Flower picture).

4. That student makes another connection statement using a word worn by another student and again tosses the string as she/he states the connection.

As each of the students takes a turn and creates new connections, a web, or system is formed.

5. Once the web is formed, discuss the connections using these questions as guides (Introduce or reinforce bolded vocabulary):

**When the web is done pose the following questions:**

a) “What do we have here? (A web, a net, a network)

*Introduce the term ‘System’ as a collection of interconnected elements.*

b) What connections in this web/system did you already know?

c) What connections (that someone else) made were new to you?

d) What would happen if some of the elements dropped out of the system? (Have several students drop their parts of the web)

**Students will see the web weakens/collapses.**

e) What would happen if we added more elements/connections? (Makes several more connections by tossing several students the strong and weaving in more connections).

**Students will see that the web gets stronger/denser/more resilient.**

**Discuss:** We see the web gets stronger and more resilient or weaker and more fragile. This shows us that Systems are strong and healthy when the elements and their connections are strong and healthy!

**Where Does Our Food Come From?**

**Game:**

1. Read ‘The Story of Strawberry Jam’ out loud to the class.

2. After you finish reading the story, ask the children to help you place the visual prompts depicting each stage of the Strawberry Jam’s story in the order that they happened.
1. Use Visual prompts of Various Foods (apples, carrots, blueberries, and brussels sprouts)

2. Ask the children to help you match the Food up on the wall with their place of origin (Tree, Soil, Bush)

Unit 3: Decision Making and Action

Growing Our Own Food!

**Story:** Read Dr. Seuss’s ‘Oh Say Can You Seed’ out loud to the class once again.

**Activity:**

1. Provide each student with a small Peat moss cup and a bean/seeds to plant.

2. Allow each child to grab some soil to full their peat moss cup.

3. Get them to push their bean into the soil.

4. Allow them to sprinkle a little water over their newly planted seed.

5. Place in a window at the day care, or allow them to bring them home.

**Healthy Food Choices, Healthy You!**

**Story:** Read “Eat Healthy, Feel Great” by William Sears, M.D., Martha Sears, R.N., and Christie Watts Kelly.

**Discuss:** “Healthy foods means healthy environment and means healthy you!”

**Drawing:** Ask the children to draw a picture showing how they can make great food choices to grow healthy and strong and make sure the connections we learned about (such as our environment) stay healthy and strong too!