MEGA-BITES AND ABC'S:

AN EXAMINATION OF THE USE OF INTEGRATED TECHNOLOGY IN AN

EARLY LITERACY HEALTHY EATING KINDERGARTEN PROGRAM

A Thesis

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Alaina L. Roach O'Keefe

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Canada

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Dedication

This thesis is dedicated to my husband, Sean

and my Mom, Dad, and brother Greg

their unwavering support has enabled me to achieve goals I never thought possible.

the three of us spent together were always enjoyable and I can only hope to continue working with both of them. Together, they were mentors, teachers, collaborators, and advocates for students, teachers, administration, and community members alike.

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ABSTRACT

Major efforts are made to improve the healthy eating habits and literacy levels among young children, most often through intervention-type programs. This research project emerged out of a larger study called *Eating Between the Lines: A Healthy Eating Literacy Program for Preschool Children and their Families (EBTL)* which used an emergent literacy approach, teaching children about nutrition concepts. Based on the premise of literacy as a social practice and that active learning is most effective in early childhood education, the goal of my research was to include technology as an integral component in the EBTL program. A series of technology-based activities was embedded within the program where children gained experience and new knowledge using slideshows, internet, scanners, drawing, and word processing programs. Questionnaires and interviews with parents probed what evidence existed to demonstrate that knowledge exchange was taking place in the context of the home environment.

Results from observational field data show that students made meaningful connections with each other and with new concepts and ideas. A clear theme that prevailed was the consistent use of oral language and vocabulary development. Children applied new nutrition knowledge while engaging with literacy activities using technology as a literacy tool. Additionally, interviews with parents indicated that there was uptake and meaningful transfer in the home environment with parents, siblings, and peers. Future research may include an EBTL @ Home component, and the potential of extending EBTL into the provincial curriculum.

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CHAPTER ONE: SCOPE OF RESEARCH

Connections for Canadians

"An apple a day keeps the doctor away," is a rhyme that has been passed on to children for generations and it implies taking control of personal health and preventing illness and disease. Throughout our lives, we make daily decisions that have a direct impact on our immediate and long-term health. Whether that involves an active exercise program, dental hygiene or choosing nutritious diets, we use existing knowledge and experience to develop a healthy lifestyle. This research emerged from my belief that there is a need to promote healthy patterns of behaviour (disease prevention and health promotion) very early in life, both at home and in early childhood programs and schools. We can do this by nurturing expertise and awareness through a wide range of early literacy activities (like rhyming), inspiring children through reading, writing, oral language development, playing, telling stories, and exploring emergent digital technologies in the early years. There has been little research with children under eight years of age to explore these possibilities and none which includes nutrition as a focus.

Despite the fact that Canadians experience a high standard of living (relative to the rest of the world), the health of the Canadian population, particularly in rural areas is declining (Canadian Institute for Health Information [CIHI], 2007; Canadian Population Health Initiative, 2006; Public Health Agency of Canada, 2004; Romanow, 2002). Citizens (elderly, men, women, and children) are also struggling to survive in the increasingly multifaceted everyday world of literacy where traditional reading and writing are the basis of expected everyday contexts. Both health and education are intricately connected, and when they are considered together there is potential to build

and enhance children's awareness of what it means to be healthy and ultimately improving the future health of Canadians. I believe we can begin promoting healthy patterns of preventative health care early with four and five year old children by considering their early literacy development as the key mechanism for improving their healthy eating behaviour.

What does literacy have to do with health? Generations are fighting the "battle of the bulge", binge-dieting, wondering, searching, and trying to discover the "secret" of living healthy. In addition, Canadians struggle with chronic disease such as heart attack and stroke, cancer, and diabetes. We can help shape future generations, improving future health by arming children in the 21st Century with the information and skills they will need to make healthy life choices. Additionally, children make these choices using their multiliteracies and they absorb information "like little sponges". Three and four year olds have the capacity to learn video games in seconds flat; they talk and play in social situations and learn how to live in a digitized world, in a variety of cultural contexts. In the age of digital technologies and multiliteracies, why can't educators take this into consideration and teach children how to be literate Canadians: to read, write, speak, and represent using what we consider "common sense concepts" like, healthy eating, variety, balance and moderation in order to promote positive health practices and reduce the risk of chronic diseases? The connection presents a unique opportunity to teach children in this way, and to empower them.

Defining Health

The World Health Organization defines health as "a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity"

(WHO, 1947). In addition, according to the Public Health Agency of Canada (2003) the

health of a population is also determined and measured by health status indicators, and

these are influenced by social, economic, and physical environments, personal health

practices, individual health capacity and coping skills, human biology, early childhood

development and health services (CIHI, 2007; FPT Advisory Committee on Population

Health, 1999). During the past decade, health achieved unprecedented prominence as a

key driver of socioeconomic progress, and more resources than ever are being invested

in health in various countries throughout the world (World Health Organization [WHO],

2008). There is also an expectation that people take a more active role in their own

health, and in preventative health practices. In the everyday lives of citizens, young and

old, there are choices presented to people surrounding healthy living (specifically

nutrition and activity) on how and if they are going to influence their own personal

health. It is through their literacy skills that people acquire, form new knowledge, and

develop healthy attitudes and behaviours. The subsequent chapters will explore the

socio-cultural perspective of health care and health literacy with a special focus on early

childhood development in preschool education.

Defining Literacy

There are many definitions of literacy, going beyond traditional reading and

writing models to include skills related to various multi-literacies (Cooper & Kiger,

2003; Human Resources and Skills Development Canada, 2005). Literacy can

encompass experiences that may involve a Los Angeles street gang member writing a

piece of graffiti on an urban wall (Gee, 2001), oral storytelling by an Elder about ancient

ceremonies and traditions (Chambers, 1989; Watson, 2001), or a web-quest embarked

on by third grade children (Morrow & Gambrell, 2001). Becoming literate is also the way for people to empower and support themselves, and to explore and learn about the world in a social way (Hannon, 2000). These skills can encompass math literacies, technology literacies, communications and new media skills, and the capacity to comprehend and use the wide range of information inherent in daily existence (Cooper & Kiger, 2003; Human Resources and Skills Development Canada, 2005).

More than 50 years ago, the United Nations (UN) declared literacy to be a basic human right. The UN also identified literacy as an important tool for developing other human rights, such as adequate food, housing, and health care. "The higher a nation's literacy skills, the greater the opportunity for all its citizens to participate meaningfully in community life while leading productive, healthy, and satisfying lives" (PEI Literacy Alliance, 2004). In 2003, The United Nations Educational Scientific and Cultural Organization (UNESCO) also defined literacy as "a continuum of learning that enables individuals to develop their knowledge and potential, pursue and achieve their goals, and participate fully in society" which broadens our understanding of literacy as a concept applied in multiple contexts and expressed in multiple modes. These multi-literacies are also then entrenched in multiple determinants of health (Max Bell Foundation, 2006; National Literacy Trust, 2006).

The Current State of Canadian Health

Overweight and obesity are increasingly becoming common health problems for children in Canada (Tremblay, Katzmarzyk & Willims, 2002). In fact, the obesity rates among children and youth aged two to 17 years has tripled in the past twenty-five years (Statistics Canada, 2005). Youth overweight and obesity rates vary across the country,

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with the highest rates tending to be in the Atlantic Provinces. In PEI, the childhood

obesity statistics are grim: 30% of children between the ages of two and 17 years are

overweight and/or obese which is above the national average of 26% (Statistics Canada,

2005). Eating habits undoubtedly contribute to this problem; in fact research confirms

that nationwide, only four in ten (41%) children and youth consume fruit and vegetables

five times a day or more, and that most PEI school children do not consume the

recommended number of servings from Canada's food guide, especially for fruits and

vegetables and grain products (Evers, Taylor, Manske, & Midgett, 2001). This is

important to consider since children and youth are less likely to be overweight or obese

if they consume fruits and vegetables five or more times a day (Statistics Canada)

A considerable amount of health care dollars is devoted to the treatment and

management of obesity-related health problems in Canada (Birmingham, Muller,

Palepu, Sinelli, & Anis, 1999). The economic impact of obesity on the Canadian health

system was last reported exceeding $1.8 billion, or 2.4% of the total health care

expenditures (Birmingham et al., 1999; CIHI, 2004). There is a clear need to work

toward a healthier future for our children and the health care system in Canada through

preventative efforts.

The Canadian Institute for Health Information (2004) also reports that there is

growing evidence that unhealthy eating patterns in both childhood and adolescence have

contributed to this increased prevalence of diet-related risk factors for chronic disease

and obesity (Chinn & Rona, 2001 [in Taylor, 2003]; Tremblay & Willms, 2000; Troiano

& Flegal, 1998). Knowing that overweight children are more likely to become

overweight adults and increase their risks of chronic diseases such as heart disease and

Type II diabetes, one would then assume that the greatest potential for the development of healthful dietary patterns seems to rest with young children and the early learning experiences they have in school and with their families. In fact, preschoolers are ideal participants in health promotion and disease prevention strategies because their food use is influenced strongly by parents and child-care providers (Nahikian-Nelms, 1997; Sellers, Russo, Baker & Dennison, 2005; Taras, 2005). There is opportunity to develop healthy eating patterns, introduce new foods (and vocabulary) and dialogue around hunger, satiety, and cultural practices, and thus improve on the way that children receive and interpret nutrition information in the current context. This perspective shifts the emphasis from intervention programs and services to programs where health information is taught through emergent literacy practices, thus empowering young people with meaningful knowledge and skills needed to choose a healthy lifestyle.

Current State of Literacy in Canada

The latest literacy study by Statistics Canada shows that a staggering number of Canadians do not have the literacy skills that they need to keep up with the rising demands of our society and economy: forty-two percent (42%) of Canadians struggle with basic reading and writing (International Adult Literacy Survey [IALS], 2003). This alarming statistic raises grave concerns about the impact low literacy is having on the health, social, and economic well-being of individuals, families, communities, and our country (Statistics Canada, 2005).

The International Adult Literacy Survey (2003) highlights these concerns and further reinforces the importance of strong links among literacy skills, employment and poverty, and health. Another finding from this recent survey also indicated that the low

literacy levels remained the same as the 1994 survey; the numbers of people with low literacy levels has increased. Overall, the number of adults below level 3 increased from 7.7 million in 1994 to 8.9 million in 2003, an increase of 1.1 million adults.

Consequently, with overweight and obesity rates of children rising, and low literacy rates remaining the same, there is undoubtedly a need to support Canadian children and arm them with the tools that will enable them to reach their potential and participate in all aspects of a healthy and literate society. It is through their early literacy that children will develop these tools. There is an urgent need to explore and develop an integrated approach to health literacy education for children, and this need formed the foundation for this research study.

<center>Literacy as a Determinant of Health</center>

According to the Public Health Agency of Canada (2004), two of the key social determinants of health are level of education and literacy, and healthy child development. In fact, literacy skills predict health status even more accurately than education level, income, ethnic background, or any other socio-demographic variable (Ronson & Rootman, 2004). There is also evidence that literacy is directly related to both overall health status and to mental status and it is a requirement for many aspects of life, including: reading nutrition information on food packages; understanding instructions for taking medications or preparing infant formula; searching for information on specific health issues (nutrition or diseases); making health decisions; and interactions with pharmacists or doctors. Our generation is plagued by chronic disease and a health care system which may not be able to withstand the demands on it

due to the increase in these chronic diseases. Given this, how can we ensure that the future generation does not face the same challenges?

To support this shift, health literacy needs to be the focus. This is defined as people's ability to find, understand, critically assess, and communicate health information in different situations or contexts. This concept is essential to this research study. Health literacy is a means of enabling people (in this case, children) to take control of their health and act as informed partners in self-care, applying new knowledge, making decisions concerning their health, using critical thinking, and potentially self-advocating (Canadian Public Health Association [CPHA], 2007). *Healthy People 2010*, a document outlining health goals for the United States, defined health literacy as the "degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Holt, 2005, p.5). Children have the ability to make health decisions at a very early age, in fact, as soon as they begin choosing foods they would like to eat and activities in which they want to participate.

There is a documented relationship between literacy and health, and strong evidence that the earlier we start educating children, the better. There is a clear need to investigate and develop ways to reach young children in their preschool and home lives, in order to help them gain the knowledge and skills to lead healthful lifestyles. Children are not eating enough fruits and vegetables (Evers et al., 2001) and literacy statistics are not improving (Brink, 2000). There is an urgency to investigate how children use information surrounding health in their lives outside of school (in their homes, on the playground, in the community). It is also critical to investigate how to integrate these

skills and knowledge with the ways that children learn best, for example, through social

practices, using various literacy strategies, using an assortment of "tools" such as

technology (computer, electronic devices, play, etc).

Eating Between the Lines: A Research Project

Eating Between the Lines: A Healthy Eating Literacy Program for Preschool

Children and their Families (EBTL) was a large two-year research project using

children's emerging literacy to build preschoolers' nutritional health information and

help them become informed decision makers. The project allowed researchers to

develop a unique program which included many rich tools and resources (including

technology) for teachers, parents, and the community. The program includes literacy

activities such as reading about nutrition (e.g. eating the alphabet), grocery shopping,

writing, playing in the sandbox, taking photographs of fruit, taste testing, and numerous

digital technology activities (the focus of this thesis) in its approach. All the while,

children learn basic concepts like word recognition, balanced nutrition, the concept of

food groups, salads, eating a good breakfast and the reasons why it is important to eat

healthy and how exciting literacy learning through various technological media can be.

Based on the premise of literacy as a social practice, and that active learning is

most effective in early childhood education, the goal was to include technology as an

integral component of EBTL. There is very little research which examines the use of

technology as a literacy practice with children under the age of eight years of age (Leu,

2000); however there is potential for preschoolers to make meaningful connections in

the digital world in which we live (Lankshear & Knobel, 2003).

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The research methodology used a participatory action research approach, and data collection techniques were informed by Action Research (AR). The nature of this research involved two phases: 1) a cyclical process of planning, teaching, recording, which incorporated digital technologies and multimedia into EBTL, and examined its role within the program; and 2) follow-up interviews with parents or caregivers to look at what the knowledge exchange process surrounding healthy eating concepts looks like for preschoolers at home.

This project involved the use of qualitative, interpretive modes of inquiry and data collection by early childhood educators and researchers about how to improve practice. It was designed to be carried out by practitioners (Early Childhood Educators [ECEs]) in the actual practice setting (the classroom). The aim was to improve practice (teaching) and increase understanding of the nature of the practice (teaching, early childhood education) (Kuhne & Quigley, 1997). In this case, it resulted in the development of a healthy eating literacy program using technology in the kindergarten setting.

Significance of the Study

Income and social status, social support networks, education and literacy, employment, social and physical environments, personal health practices and coping skills, healthy child development, biology, health services, gender, and culture are all important to good health (Public Health Agency of Canada, 2004). Educating our children, peers, parents, and elders about health issues in unique ways will communicate messages effectively and clearly. Given the statistics on the almost epidemic rates of obesity and the repercussions of low literacy in Canada, health literacy education is

something that needs more attention at the government and policy-making level, and I believe it can start at the grassroots level with our preschool children.

Research Questions

The research questions for this study were developed through my professional experience as a primary literacy teacher, my interest in program development surrounding literacy programs, my interest in health promotion starting with young children, and my personal passion for living a healthy life. As part of the larger research project surrounding this unique healthy eating program, the following two research questions guided my inquiry:

1. How do preschoolers use technology as a literacy tool in the process of learning about health and nutrition?

- *What is the role of technology in the healthy eating literacy preschool program?*

- *Which technologies support literacy learning at the preschool level?*

- *How do these technologies support the learning which occurs?*

- *How did technology influence children's understanding, motivation, or literacy skills while they were learning?*

- *How can a program like this (using technology) support the acquisition of health literacy knowledge for young children?*

2. How do kindergarten children transfer their emerging knowledge of technology and healthy eating to their family/community life?

- *What is the evidence that the knowledge exchange process took place?*

- *How do families report the transfer of new knowledge from kindergarten context to the home environment?*

This thesis contributes to the research that has been conducted in the early childhood education settings, and fills a gap in the research involving nutrition programming for young children, specifically focusing on the early childhood stage, which is under researched more than any other age group with respect to new technologies and literacy development (Lankshear & Knobel, 2003).

CHAPTER TWO: LITERATURE REVIEW

Gaining an understanding of how children interact and learn about health information in their social environment can lead to the development of best practices, further insight for researchers and improved practice for educators. Children's literacies are situated within the social practices perspective within a specific discourse, and they acquire learning through formal and informal teaching at home and at school in varied contexts (Gee, 1996). Technology also has a very special place in early learning curriculum (which is social by nature). It is through developmentally appropriate practice that there is a potential to increase and enhance children's early learning experiences, inspire active learning and motivation, and promote interest in health and nutrition.

There are clear connections between learning and health which can be integrated into practice in early literacy settings, such as kindergarten. In this chapter, the potential for learning about nutrition through literacy in a social context in kindergarten will be synthesized. The role of technology as a literacy tool in an emergent curriculum will be the primary focus, and the role that family plays in early learning will be discussed.

History of Preschool/ Kindergarten in PEI

Kindergarten in PEI follows a community- based, publicly - funded model, a continuation of preschool education rooted in community and in privately owned establishments. Prince Edward Island is the only province in Canada where kindergarten is not part of the compulsory school system. Approximately 97% of Island children attend kindergarten in PEI (Government of PEI, 2007). While kindergarten is part of the

early childhood system, the terms "kindergarten" and "preschool" are used interchangeably throughout this research.

Early Childhood Education and Healthy Eating

Even though schools are wonderful places for activity and play, and an optimal opportunity for modeling healthy eating and exercise, statistics show that "only one in five schoolchildren are active enough for optimal growth and development, there is also a rise in health problems such as obesity" (Canadian Council on Learning [CCL], 2007, p.7). Numerous nutrition examinations in North America suggest that children fail to meet daily dietary recommendations, with low intakes of fruits, vegetables and milk products and higher consumptions of less healthy choices (Evers et al., 2001; Johnson & Nicklas, 1999; King, Boyce, & King, 1999; Wilkinson, Mickle, & Goldman, 2002). This situation mirrors that of British children who eat less than half of the dietary recommendations (Thomas et al., 2003). There is evidence that Canadian children arrive at school hungry (Statistics Canada, 2005). The World Health Organization figures show that, compared to countries who belong to the Organization for Economic Co-operation and Development, Canadian children are among the least likely to eat breakfast on school days (CCL, p. 7). These survey results are alarming, given that harmful eating habits during childhood may hinder growth and development, while further developing poor eating habits during adolescence and adulthood (Tremblay & Willms, 2000).

A Unique Perspective on Health Behaviours and Learning

Given the notion that dietary behaviours in childhood track into adulthood (Berenson & Pickoff, 1995; Kelder, Perry & Klepp, 1994), and that overall nutritional

quality declines as children grow older, the greatest potential for the development of healthful dietary patterns lies with young children. In fact, it is suggested that "the earlier...the better" (Sellers et al., 2005; Taras, 2005). The Canadian Council on Learning (2007) supports the notion that "schools could do more than perhaps any other single institution in society to help young people, and the adults they become, to live healthier, longer, more satisfying and more productive lives" (p.2). The World Health Organization proposes that "an effective school health program can be one of the most cost effective investments a nation can make to simultaneously improve education and health" (2006). Healthy eating and education are brought together with the hopes that children will benefit from long term physiological consequences in addition to further healthy eating later in life (Thomas et al., 2003). This suggests huge implications for healthy eating school policies across Canada, with particular exigency in early childhood learning.

The Canadian Council on Learning also reveals "a web of links among socioeconomic status, learning and health. More prosperous members of society tend to have more education and enjoy higher health-literacy skills and better health" (CCL, 2007, p.7). Preschoolers from low- income families are up to twice as likely as those from higher income families to be delayed in measures of cognitive development, knowledge of numbers, and the capacity to understand spoken words and written symbols. More than 25% of four and five years olds from low income families have delayed receptive vocabulary development (the ability to understand spoken words), compared to 11% of other children from higher income families.

In addition, Evans, Barer and Marmor (1994) illustrate the point that many determinants of health are interrelated, that in fact there is a causality, or spectrum of latency which unfolds through the life cycle of humans. It is traditionally thought that with increased education comes decreased economic burden, and thus higher socioeconomic status. According to the Public Health Agency of Canada, one's level of income often determines living conditions such as safe housing and ability to buy sufficient good food (Public Health Agency, 2004). Education may then influence socioeconomic status (SES), which, Hertzman, Frank, and Evans (2004) argue from a classical epidemiological perspective is a factor which also increases the likelihood of health issues such as smoking, being exposed to pathogens, with subsequent heart or lung disease.

Research has shown that countries that are investing in literacy and health education have experienced sustainable improvement in the nutritional status of communities (WHO, 2008). This notion is promising for provinces in Canada, which struggle with literacy and healthy eating. For example, recent research in PEI indicates that most Island school children do not consume the recommended number of servings from Canada's food guide, especially fruits, vegetables, and grain products (Evers, Taylor, Manske, Midgett, 2001). In Newfoundland, Canning and Courage at Memorial University, recently led a study which was the first of its kind on overweight children and obesity and found high rates of both in pre-school children. The report indicates that more than 25 per cent of pre-school children in Newfoundland and Labrador can be considered obese according to a standardized method of classifying children using body mass index (BMI) (Canning, Courage, & Frizzel, 2004). The results from Atlantic

Canadian research suggests that in order to work toward improving the health literacy of children, there is a need for a unique approach to teach children about health and improve preschool health literacy. There is also compelling research elsewhere that links academic success and health status of youth (healthy students make better learners, and better learners make healthier communities) that is being used for further health literacy promotion (Marx, Hudson, Deal, Pateman, & Middleton, 2007). Additionally, there is a need to refocus the health literacy initiatives into the early childhood sector.

Literacy

Individuals require a high level of literacy to take advantage of the full spectrum of opportunities available in a competitive, technologically driven, knowledge-based economy. Literacy skills are also necessary to enjoy the best possible personal health and overall quality of life (Canadian Council on Learning, 2007, Chapter Six Summary).

Literacy in Atlantic Canada

Our nation struggles with low literacy, which has been linked to worse health, increased economic burden, and higher crime rates. Atlantic Canada has the lowest literacy rates in the country (Province of Prince Edward Island, 1996). The International Adult Literacy Survey (1995; 2003) also notes that more literate adults and seniors maintain their independence and quality of life, thus lessening their need for government support, which is a prevalent matter in Canadian provinces with lower income levels (such as Atlantic Canada).

Literacy in Prince Edward Island (PEI)

In PEI, low literacy, and several other health- related issues have been raised over the past ten years, such as: adult and childhood obesity, and early school leavers s(Canadian Population Health Initiative, [CPHI], 2005). In rural Prince Edward Island, the primary income source is resource based seasonal work such as farming and fishing. The reading skills of these seasonal workers are lower than year round workers. As well, many families rely on government support (Timmons, 2001). Year after year, families in rural Atlantic communities rely on 12-week government projects for employment, and depend on Employment Insurance to subsidize their incomes during the off-season (Government of PEI, n.d.). In addition, many families who have worked in these occupations for generations often experience intergenerational literacy challenges (Timmons, 2003).

In fact, the PEI Literacy Alliance states that "the reading skills of 30% of PEI adults are so limited that they cannot deal with most printed material; an additional 35% of PEI adults need materials written clearly in plain language; and 80% of Canadian seniors cannot read well enough to deal with everyday literacy tasks" (International Adult Literacy Survey, 1996). Furthermore, there is clearly a need for Prince Edward Island (PEI) to create a health literacy 'climate' that will enhance the skills and reach a comprehensive audience. Islanders need the literacy skills to enable them to reach potential and participate in all various aspects of a healthy and literate society.

Expanding our understanding of literacy

Hamilton (2002) and Ewing (2003) describe literacies (or multiliteracies) in terms of a range of knowledge and an understanding of the world which every

individual possesses. Literacies include developmental, socio-cultural and media

contexts associated with reading and writing and the importance and relationships of

oral language development. Additonally, Yagelski (2000) says that

> ...literacy is central to the ongoing struggle for democracy and self-
>
> determination...it has impact on public policy and says that it is empowerment in
>
> a broader sense in that literate acts are always inherently social within political,
>
> cultural, and economic contexts within which we lead our individual lives (Max
>
> Bell Foundation, 2006, p.7).

Literacy is also rapidly and continuously changing as new technologies for

information and communication repeatedly appear in our social worlds (Cope &

Kalantzis, 2000; Leu, 2000). Technology is transforming the way we learn, so that "the

literacy of yesterday is not the literacy of today, and it will not be the literacy of

tomorrow" (p.744). Researchers have often used the term *literacies* to describe diversity

in language, culture, and multimodal communication (Kress, 2003); but the term

multiliteracies (first used by the New London Group in1996) reflects and "signals

multiple communication channels, hybrid text forms, new social relations, and the

increasing salience of linguistic and cultural diversity" (Schultz & Hull, 2002, p. 26).

This broadened concept of literacy was used throughout this research.

Literacy as Social Practice

> The roots of critical literacy can be traced to the works on Freire (1970) and
>
> Freire and Macedo (1987). Central to this perspective is the notion that literacy
>
> can, and should be, emancipatory and transformational, enabling those who live
>
> on the economic, political, and social margins of society to participate fully and

meaningfully. Another tenet of a critical literacy perspective is that learning how to interpret and act on the world in socially just ways is equally important to learning how to read and write words (Kendrick, Rogers, Smythe, & Anderson, 2005, p.2)

Literacy is also very much rooted in conceptions of identity, knowledge, and being (Cho, 2007). The notion of a sociocultural approach to early literacy is grounded in what has been coined New Literacy Studies (NLS) (Gee, 1996; Street, 1993). This perspective situates language and literacy in cognitive, social, cultural, institutional, and historical contexts and thus maintains that people use literacy experiences within their own sociocultural realms and practices, and that the meaning of 'literacy' can shift from context to context (Barton, Hamilton, & Ivanic, 2000; Gee, 1996, 2001; Heath, 1983, Scollon & Scollon, 1981; Shapiro, Anderson, & Anderson, 2002; Street, 1984). Gee also proposes that our ways of "thinking, acting, talking, believing, knowing, interacting, valuing, etc. are associated with specific, socially situated identities" and that they are embedded in learning and knowledge acquisition at a very early stage in life (Gee, 2001, p.31). For instance, children experience literacy long before they can actually read (for example, in the womb) (Han, 2006). Thus, prenatal reading, talking, and storytelling are signaled as important social practices for children to experience, initiating this literacy journey (Neuman & Dickinson, 2001). Preschool age children also experience emerging literacies with family and school, initially through social interactions. Children develop literacy by having a variety of real literacy experiences, developing oral language (listening and speaking), in addition to thinking, reading and writing (Cooper et al., 2003; Watson, 2001). During the stage of early emergent literacy, preschool children

(ages 3-5) become very interested and have a natural curiosity about technology, letters, words, print, and oral language in their social worlds (Barbuto, Swaminathan, Trawick-Smith, and Wright, 2003; Bray & Lovely, 2002; Cooper et al., 2003; Heath, 1983; Piaget, 1952; 1965; Purcell-Gates, 1986, 1995, 2001; Yaden, Rowe, & MacGillivray, 2001). When children use literacy in meaningful ways, such as learning about concepts like nutrition and apply these broader concepts into their daily lives, their learning is richer and more meaningful and is further reinforced by the social world around them.

Revisiting the notion that the future health of our people is in the hands of our children, I would like to suggest using social literacy experience as a context to teach and encourage children to think about health and healthy behaviours. Before children get to the adult world of work, there is an opportunity in the rich world of early literacy for them to use this emerging literacy to build a healthy outlook. Preschool children speak, listen, view, represent and even read and write in fundamentally literate ways and use these skills in a social way to explore the world around them (Cooper et al., 2003; Heath, 1983; Purcell-Gates, 1986, 1995, 2001; Yaden, et al., 2001). Teachers, researchers, and parents can use children's literacy to build new knowledge and understanding so children can learn how to make informed decisions and nurture the attitudes/habits essential to healthy eating. Lonsdale and McCurry (2004) emphasize and concur with the notion that that literacy is indeed a social practice. In fact, Cho (2007) states that it can be viewed as socially constructed practice and individuals are seen as active agents who co-construct meaning while they develop perceptions, values, goals and purposes about ways in which literacy is used (Carrington & Luke, 1997; Gee, 1990; Luke, 2004; Muspratt, Luke, & Freebody, 1997).

Lonsdale and McCurry (2004) also suggest that literacy has multiple purposes, and that one purpose for literacy must not obstruct other purposes, but that they can exist together, such as learning to write, and learning to write about nutrition.

A broad conception of literacy requires a teaching and learning process (including assessment) which is focused on meaning-making. That is, rather than merely reproducing uncritically what they have been taught, learners should be able to make sense of the world and develop their own perspectives. This implies both an understanding of the world and the capacity to critically evaluate that world. If this broader conception of literacy is overlooked, then literacy becomes little more than the mastery of a series of sub-skills, rather than the genuinely transforming experience which current conceptions of literacy—as social practice, critical engagement, context-specific and multiple—suggest it should be. (Lonsdale et al., 2004, p.13).

The *literacy as social practice perspective* is not a new one: however, the way in which it is used through technology, and plays a crucial role in how children develop their literacy in conjunction with a growing awareness and understanding of health in their lives, is new (Gee & Lankshear, 1997; Street, 1999). Hannon (2002) suggests that "some kind of observation is needed to understand the conditions of the use of texts (referring to literacy) and how they fit into social practices" (2000, p.79). Literacy as a social practice perspective is the grounding and rationale of this research endeavour.

Literacy in Emergent Curriculum

Emergent curriculum is developmentally appropriate, and builds on well developed observation skills of early childhood teachers. Once teachers select a

focus, they plan provocations or interesting events that stimulate children's thinking and activity. Teachers document children's responses and think carefully about the next step. The intent of emergent curriculum is to slow down and deepen positive relationships among children, teachers, families and their environment (Wien, 2006, p3).

The Canadian Council on Learning recently released a report on the State of Learning in Canada (2007). It delineates that "schools are much more than a place to 'learn' per se. It is implied that schools are an environment rich in learning, playing, eating, socializing, which also provide opportunity for children to participate in extra-curricular activities" (CCL, p.36). The report also explains that "schools are very convenient settings for delivery of health and social services, for practicing positive behaviours, physical activity, and healthy eating. And children who eat good food are better learners" (p.36). Additionally, a systematic review from the EPPI-Centre in London, UK reveals two main messages in its findings: promoting healthy eating can be an integral and acceptable component of the curriculum; and effective implementation in schools requires skills, time, and support from a wide range of people (Thomas et al, 2003). What better model than that of emergent curriculum could enrich and support this type of healthy eating education? This study, grounded in a social literacy context, uses technology as a rich literacy tool to learn about health thus enriching the learning environment and benefiting young children.

Literature and current practice in early childhood education show that developmentally appropriate practice is promising in cultivating this unique and effective learning environment for young children. Developmentally appropriate

practice usually includes three elements: "practice that is: (1) age appropriate (2) adapted to individual uniqueness, and (3) emergent, or responsive, rather than prescriptive" (Wien, 1996, p. 378). The US Department of Education defines and explains that an emergent curriculum differs from a traditional curriculum because of various factors including that it "emerges from students' interests and evolves through adult/student collaboration" (2006, p.4). Additionally, it is described as an approach to teacher planning that begins with listening, building on the interests of students (Wien & Stacey, 2000) as well as what educators know is important for students to learn (US Department of Education). It is spontaneous and responsive and many teachers collaborate to identify children's interests, worries, desires, understandings and misunderstandings. They then use these pieces of information as the beginning points for curriculum planning and implementation. There are many layers (which include dialogue, documentation, numerous media, ample time, rich resources, parent involvement, careful planning, and sharing with other educators) built into programming to enrich the children's thinking (Wien, 2006).

For young children, much of their early lives (including the time spent in preschool) involve an exploration of people, of materials, of swift interactions with the immediate environment (Malaguzzi, 1998). Therefore, it is logical to use a model of developmentally appropriate practice in the research to explore emergent literacy practices, using technology to learn about healthy eating and nutrition.

The Role of Information and Digital Technologies in Early Childhood Education

Technology as a Literacy Tool

For this research, digital technologies included tools, and/or media such as: digital cameras, video recorders, computers (and computer programs), scanners, and email. The role of technology was twofold. First, it was viewed as a way to increase children's computer literacy, defined as their ability to use, manage, understand, and assess technology that was developmentally appropriate. Second, it was viewed as a way to enhance developmentally appropriate literacy practices and the culture of learning within the kindergarten, and to increase active learning and motivation, providing an additional medium through which children could creatively express themselves and learn about nutrition. In this study, technology was not merely incidental or "informal" in contrast to earlier research by Labbo, Rienking, & McKenna (1995) which explored the potential of technology to promote literacy development in kindergarten-aged children.

Children use various literacy "tools" to explore the world and make sense of it in social settings (Van Scoter & Boss, 2002). In the spirit of play, children of the 21st century are able to use the variety of digital technologies in ways other generations could not. They have adapted to the fast paced world of imagery, gaming, and other tools such as digital cameras, tape recorders, portable keyboards, computers, scanners, and software to explore and create their early learning experiences. Hall and Higgins (2005) view activities and technology equipment for early childhood education in the same light as books, pencils, worksheets, Lego, jigsaws, junk modeling, role play, and circle time are neither positive nor negative. However, these researchers maintain that it

is "the way in which they are used which is meaningful" (p. 301). In fact, research suggests and provides persuasive evidence that appropriate computer technology use can have a positive impact on children's social, emotional, and physical well-being as well as motor, language, cognitive, and general knowledge development (Haughland, 2000; Murphy, DePasquale, & McNamara, 2003; VanScooter, Ellis, & Railsback, 2001).

The notion that the variety of rich experiences which promote early literacy, (including computer technology, conversations with caring adults, storytelling, drawing and painting, and pretend play) are critical in the development of literacy skills (Novick, 1998) has been supported in the last decade (International Society for Technology in Education, 2002; Van Scooter & Boss, 2003). Some critics suggest that computer use can inhibit language development and lead to social isolation (Cordes & Miller, 2000; Healy, 1998). Critics also suggest that the computer can lead children to spend less time talking to their parents, or to poor communication skills (BBC News, 2003). Marsh (2005) argues that these fears about new media and children are, actually, nothing new. Springhall (1998) reinforces the point that it was always like this; older generations have always raised concerns about the cultural interests of the young. I would also argue that in contrast to the deficit model (wherein the environment is not the focus), computer use and technology have a very special place in the early childhood environment, and support the research which claims that technology enhances the development of literacy skills, and also sacts as a tool to provide creativity and motivation (Bigum, Knobel, Lanshear, & Rowan, 2003; Wepner & Ray, 2000). In fact, it has been argued that technology can be quite a valuable resource enabling education to become more effective, diverse, and more interdisciplinary (Clements, Nastasi & Swaminathan, 1993).

For example, in terms of oral language and literacy skills, it has been found that the computer can encourage interactions:

> ...computer play encourages longer, more complex speech and the development of fluency (Davidson & Wright, 1994); children tend to narrate what they are doing as they draw pictures or move objects and characters around on the screen (Bredekamp & Rosegrant, 1994); and young children interacting at computers engage in high levels of spoken communication and cooperation, such as turn-taking and peer collaboration. Compared to more traditional activities, such as puzzle assembly or block building, the computer elicits more social interaction and different types of interaction (Clements, Nastasi, & Swaminathan, 1993, p. 60).

We need to continue to think of technology as something that can support literacy and language development in order to create an opportunity for children to learn about new concepts and build on previous knowledge, based on Vygotsky's theory, which places importance on cognitive development as a socially mediated process involving scaffolding (Bruner, 1975; Cooper & Kiger, 2003). Also, with so many homes using digital technologies, it is important that the early learning environment reflects this too. Children can use these new tools to advance their own learning about a wide range of topics including healthy eating, at home and in school.

<center>Addressing the Gap in the Research</center>

The 21st century is full of increasingly technological challenges and devices for all humans, especially children. It has been suggested that the use of technology can support literacy development with children and that they will need to become

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technologically literate and competent in order to survive in this culture that depends on communication through email, text messaging, and video. The nature of the written word, and literacy practices are changing as a result of these technologies and thus these 'digitexual practices' (Everett, 2003) "need to be embedded in an understanding of young children's early literacy development" (Marsh, 2005, p.181). However, despite these suggestions, the early childhood stage is under researched more than any other age group with respect to new technologies and literacy development (Lankshear & Knobel, 2003). There is also little research on learning situations employing hypertext[1], which may offer additional informational learning that a traditional piece of text may not (Lankshear & Knobel, 2003). Little systematic research and theoretical work has been done to inform school programs with respect to the inter-relatedness of literacy and technology (Lankshear et al., 1996) and the need to integrate technology into curriculum has been described as 'urgent' as we move into this 21st century (Turbill, 2001). Additionally, cases studies concerning children and projects that are innovative and unique are barely recognized in the research literature and researched even less (Lankshear & Knobel, 2003). This paucity of research concerning technology and literacy at the preschool level, coupled with increasing demands to be technologically literate and the potential enrichment of learning environments provides a strong rationale for this research project where print and digital literacies were used to develop new nutrition knowledge.

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[1] Hypertext can be defined as electronic documents that present information that can be read by following many different directions through links (by clicking on them), rather than just read in a linear fashion like printed text.

Active Learning

When students use technology, they are often forced to assume an active (cognitive) role in their learning (Grabe & Grabe, 2006). One important key to the effectiveness of technology is this interactive and active quality, so children get involved with the content as they manipulate the media; multimedia allows the user to proceed as a function of his or her interest, prior knowledge, and skills (National Association for the Education of Young Children, 2008).

There is also evidence suggesting that students produce better quality writing when they use word processing rather than pen and paper (Kamil, Intrator, & Kim, 2000). Kamil and his colleagues also conducted research on the effects of using multimedia, integrating text animation, and sound on literacy learning (with augmented learning outcomes) but little of this research was based on the early childhood phase of learning (2000).

Motivation

Computers, media and, other various forms of technology and communication appear to entice young children's attention readily. Lankshear and Knobel (2003) report that:

> ...across the age ranges of school students, computers are seen by numerous researchers as having an effect in increasing motivation, interest in, and enjoyment of schoolwork, involvement in tasks and time-on-task, persistence and the like, in literacy acquisition and practice as well as in wider areas of the curriculum (p.63).

However, their article was published in 2003 and at that time, only a fraction of these results emerged from work that had been conducted with children less than eight years of age. Additionally, *Talking Books* (hypermedia texts with digitized pronunciations of words) were a form of technology that was designed to improve comprehension and reduce decoding difficulties for emergent readers', however, again the work was not conducted with any children younger than eight years old (Leu, 2000). In fact, the *Handbook of Early Literacy Research*, published in 2001, does not have a section for technology and early childhood learning.

Despite the lack of research on literacy and technology in children under eight years of age, and the lack of documentation, there was a theme persistent throughout the literature regarding technology use with young children. That is the socialization and language opportunities technology use affords children (Bhargava & Escobedo, 1997; Johanson 1997; Liu 1996; NAEYC Position Statement 1996; Rhee & Bhavnagri 1991) and programs and policies need to reflect this shift in multiliteracies for emergent curriculum. The past approach to literacy programming has been to focus on the struggling readers, especially those who have difficulties with alphabetic text, which Lankshear and Knobel (2003) deem an "under-realization of the potential of new technologies to orient children toward literacy futures that will be very different from the past" (p.77).

A Natural Fit

Given that early childhood multiliteracies (including oral, print, and technology) provide a basis for rich learning, as well as the current need for an increasingly enhanced literate society, and the alarming statistics on obesity in Canada, there is a

palpable need for an integrated approach to education of health literacy with regards to our precious Canadian pre school children.

The social literacy perspective using technology is a natural fit with the emergent curriculum model because of the very nature of the meaning of literacy experiences within sociocultural realms and practices: literacy, technology, and learning are tailored to the children's interests at a developmentally appropriate level. Additionally, positive relationships among children, teachers, families and their environment are taken into account in the context of learning.

Additionally, taking into account that children spend a large percentage of their time at school, early educational forums (such as kindergarten) present an opportunity for education, prevention and management of childhood obesity through the use of literacy (CIHI, 2004). In spite of the potential in early learning environments, there have been very few healthy eating initiatives in Canada which focus on the pre-school population (Sellers, et al., 2005). There are no healthy eating programs for preschool which have a strong integrated technology focus. A search of the literature found one Canadian program that utilized a literacy approach, but there was no evidence of a research component, or of a full integration of the program into the curriculum. Another program focused on physical activity more than healthy eating (ActNowBC, 2006; Szabadka, 2005).

Successful nutrition interventions in children have been characterized by a tailored approach (Baranowski , Cullen, Nicklas, Thompson, & Baranowski, 2002; Perry, Luepker, Murray, Kurth, Mullis, Crockett, & Jacobs, 1998) and a high degree of parental involvement (Manios, Moschandreas, Hatis, & Kafatos, 2002; Summerbell,

Waters, Edmunds, Kelly, Brown, & Campbell, 2005). Integrating a nutrition program and literacy activities into the 'normal' school day in an emergent way seems to be most effective with the added advantage of using the enthusiastic people (effective early childhood educators) involved in the setting itself (Buttriss, Stanner, McKevith, Nugent, Kelly, Phillips, & Theobald, 2004). A naturalistic preschool learning environment builds on an understanding of the role of nutrition in children's lives through the normal course of their literacy development/instruction and served as the research context for this study. In this context, preschool children use their emerging literacy through rich technology activities to explore the concepts and values associated with eating healthy. Children could read and write, or type their way to a healthier lifestyle.

The Role of Learning within the Family

Despite the fact that young children spend a great deal of time in the care of others, they also gain their early literacy experiences which prepare themselves to be lifelong learners as a result of familial influences, and thus families have a special role to play in early learning. Willms (2002) notes studies worldwide that consistently show that family influences on children are paramount to successful learning. Literacies start in the home and can be encouraged and reinforced by parents or caregivers so that children are better equipped to read and decipher the cultural and intellectual capital which surrounds them at all times (Meacham, 2001). Children learn by watching and interacting with parents while they model in a natural setting, and perhaps reinforcing literacy experiences and the acquisition of health information developed outside the home. Gee (1989) claims that the way we learn literacy is embedded as discourse, and it is through the formal and informal teaching at home and at school that acquisition of

learning actually occurs. In further studies Gee maintains that literacies are situated within the social practices perspective, and within a specific discourse (2000, 1996).

Siblings can also play a vital and special role in literacy development within the family, and these discourses (Gee, 1996). Siblings can be literacy teachers, the older sibling acting as a cognitive facilitator and younger child acting as a prompter as they play together (Gregory, 2001). Studies show that older siblings play an important role, acting as a "guiding light" (Padmore, 1994) in linguistic minority families where parents do not speak the new language. Siblings often share 'cultural recipes' and contribute to each other's social, cognitive, and emotional development (Azmita & Hesser, 1993; Gregory, 2005).

In addition, parents are also the first and most important role models in shaping children's eating habits, and children's dietary patterns often evolve within the context of the family (Davidson & Birch, 2001). It is this "social environment where children learn and practice dietary behaviours (Baranowski et al., 1997; Rosenstock, Stretcher, & Becker, 1988); they are also the key means by which food related aspects of culture are communicated to children" (Taylor, 2003, p. 39). By using meal times to show children that food can be nutritious and delicious, parents help to create good eating habits for life. As well, the benefits of family meal time are so much more than just nutrition; meal time in many cultures is a very social time for families. It is important for parents to model positive health behaviours for their children, including healthy eating and regular physical activity (Davison & Birch, 2001). Children will also model the behaviour of other children in social settings, such as schools and day care centers (Lytle et al., 2002). It is within this social context that parents and/or guardians have the

opportunity to model communication behaviours with their child(ren), as well as engage in conversation surrounding their child's learning (Healthy Eating Alliance, 2005).

Summary

The major focus of this literature review was to highlight the current state of health and literacy and to investigate the role that nutrition education plays in an early childhood environment. Also, the role of technology is examined in early literacy practice, and the justification for technology to be integrated into a socially contextualized practice is presented.

It appears from the review of the literature that integrating technology into an emergent literacy curriculum has the potential to enrich and enhance the acquisition and application of new health knowledge for children in kindergarten. Extant literature supports the notion that (1) children's health behaviours are in need of improvement, (2) literacy as a social practice can exist in an emergent sense in preschool/ kindergarten as a potential site for integrating health literacy into a curriculum reflecting an emergent literacy perspective, and (3) technology has rich potential as an integrated literacy tool that can promote active learning and motivation among young children. However, little research has examined the early childhood stage with respect to technology and literacy development and no researchers have investigated these social practices as potential models for nutrition education. By using healthy eating as a 'thematic' unit, this study investigates a model of how technology can be woven into daily early literacy activities in order to enhance vocabulary development, oral language, and the acquisition and application of nutrition knowledge of four and five-year old children.

The Campus Kids Kindergarten environment provides a flourishing context in which to explore how the use of technology could enrich a healthy eating literacy program (Eating Between the Lines [EBTL]). In addition, the role that parents play as participants in knowledge exchange surrounding oral language/ storytelling, and through the practical everyday social family activities such as dinner time and grocery shopping is showcased.

CHAPTER THREE: METHODS

I want to understand the world from your point of view. I want to know what

you know in the way you know it. I want to understand the meaning of your

experience, to walk in your shoes, to feel things as you feel them, to explain

things as you explain them. Will you become my teacher and help me

understand? (Spradley, 1979, p.34).

In order to situate my thesis research in a qualitative methodology that reflects

my ontological and epistemological perspective of literacy as social practice I employed

a qualitative research methodology: participatory action research (PAR), using data

collection techniques that were informed by PAR and applied ethnography. In this

chapter, I will discuss the theoretical framework, research methods, data collection and

management, processes, decisions and reflections during field work, questionnaire and

interview development, ethics, and trustworthiness features.

Description of Participants

The children in this study represented a diverse population ethnically and

linguistically, which is in contrast to many of the homogeneous preschool settings in

Prince Edward Island. There were 14 girls and nine boys who were the children of

students, faculty, and support staff from the University of Prince Edward Island. In

addition, there were also children from the local community. The children and their

families who were included in the study were of Caucasian, Hispanic, Asian and

Middle-eastern descent, who were healthy, active, and diverse in terms of the strengths

and needs that they brought to the kindergarten. Like any classroom setting, there were

also children with special needs. For example, one child was on an Individualized Education Plan; another had had recent eye surgery and required physical adaptations.

Theoretical Framework

The theoretical position that guides my research is based on the notion that literacy is situated within a sociocultural context. This perspective situates language and literacy in cognitive, social, cultural, institutional, and historical contexts and therefore the meaning of 'literacy' can shift from context to context (Barton, et al., 2000; Gee, 1996, 2001; Heath, 1983, Scollon & Scollon, 1981; Shapiro, Anderson, & Anderson, 2002; Street, 1984). The world of literacy for children can be seen from this perspective, as well as through the lens of social constructivism.

In this view, the social world is constructed by humans through their perceptions (cognitive, social, cultural, institutional, and historical contexts), which are often "shaped by cultural and linguistic constructs" (Patton, 2002, p.96). A child's worldview, then, could also be comprised of these constructs, and the child's accumulation of prior knowledge from home or school contexts (Patton). Not only was I working with, and observing (through my own lens) the children in a specific sociocultural context of a preschool kindergarten, but parents were also observing the application of new nutrition knowledge (shaped by the context of the family) through their own lens and recounting their child's experiences that were relative to their interpretations.

Research Methodology: Participatory Action Research (PAR)

PAR is like a tree, deeply rooted in people's realities, grounded

to the earth and, at the same time, stretching upwards to the sky.

PAR flows like a river; open-ended, finding its way.

Sometimes deep and calm; at other points, shallow and turbulent.

Complete with cascading waterfalls, seemingly stagnant swamps, and converging deltas.

Those creating knowledge and change through PAR climb up mountains.

Following a small path of investigation and discovery,

we will circle the mountain many times,

with each turn finding a broader, more enriched view.

(Used with permission from Susan E. Smith (1997) Nurtured by Knowledge, (p. 253) in a research forum on Engaging the Community, 2006)

The Eating Between the Lines (EBTL) project is firmly rooted in participatory action research (PAR). The research was fully shared by the participants (including the children, the parents, the early childhood educators, and the director of Campus Kids). It was clear that this research would not be possible without the trust, openness, and collaborative efforts of participants and research team alike. All who were involved in the research project contributed in a special way to the design, development, and implementation of the program (the process and the product). There are three particular attributes often used to distinguish PAR from conventional research which align nicely with this study:

1. Shared ownership of research projects

2. Community based analysis of social problems

3. An orientation toward community action (Kemmis & McTaggart, 2000).

The Eating Between the Lines research project responds to the rise in Prince Edward Island children's health concerns by addressing the lack of educational

programming in health literacy for preschoolers. Specifically, my research added a technology component and explored the role technology played in the healthy eating literacy preschool program; what types of technology best supported learning at the preschool level; how these technologies supported the learning which occurs; and how the technology affected or enhanced children's understanding, motivation, or literacy skills during play.

Participatory action research (PAR) aligns with this research because of its collaborative nature. Without the collaboration and participation of the children, their parents, the early childhood educators and director of Campus Kids in the formation of the research questions, lesson plans, and daily encounters, my research would not have been possible. Also, similar to emergent curriculum, PAR involves a multidisciplinary approach to research:

> ...participants, both the researcher and the community participants in the study, expand their understanding of issues pertinent to them and create action toward resolving the issue (Stringer & Genat, 2004). It is a particularly effective methodology that engages individuals from diverse backgrounds to apply their emergent knowledge in generating an action toward social change at the local level. PAR seeks to create emergent knowledge, to address the practical concerns of people, and to reach identified goals by joint collaboration of participants (Campbell, 2006, chapter 3).

PAR is often used in an educational setting (Kemmis & McTaggart, 2000) which involves the use of qualitative, interpretive modes of inquiry and data collection by teachers about how to improve practice, which is essentially what this research study

explores. The emphasis is "practical", that is, on the interpretations and actions teachers and students use through technology in the kindergarten context, and to an extent this informs the study. My position of teacher as researcher plays a role in the project as well. Action research can be designed to be carried out by practitioners (teachers) in the actual practice setting (classrooms), and aims to improve practice (teaching) and increase understanding of the nature of the practice (teaching, early childhood education), specifically, the practice of a healthy eating literacy program using technology in the kindergarten setting (Kuhne & Quigley, 1997).

When PAR is used in a classroom approach, it appears to employ a 'trial and error approach; however, it is a systematic process of practitioner problem posing and problem solving. The findings of a participatory action research study may potentially be applied to similar practice settings elsewhere (in this case, to other kindergarten or early childhood settings) (Kuhne & Quigley, 1997). In this case, I was trying out new ideas around the role that technology could play in the larger project, EBTL, while it was being developed and implemented. Kemmis and McTaggart (2000) brought this to life, describing it as:

>...an open, ongoing process based on putting new ideas to the test. It involves trying new ideas in practice as a means of improvement and as a means of increasing knowledge about the curriculum, teaching, and learning. The result is improvement in what happens in the classroom and school, and a better articulation and justification of the educational rationale for what goes on. Action research provides a way of working which links theory and practice into the one: ideas-in-action (in Kuhne & Quigley, 1997, p.24).

My research resembled this cyclical process and is reflected in my lesson plans (see Appendix D).

As a cyclical process, PAR involves planning, acting, observing, and reflecting. Khune and Quigley state that the most difficult part of the cycle is the problem posing-during the planning phase (see Figure 1.). It is also proposed as a good way to study a new way of doing things, or new techniques, such as teaching children about nutrition through the use of print and digital literacy activities (1997).

Reflection
5. Evaluation – compare the criteria and data, dialogue over data
6. Transition – overall promise? Decision on a new cycle of action research

Planning
1. Problem – brainstorming, dialogue, literature, review, doability?
2. Project – Intervention? Approvals, resources

The Cycle of Action Research
(Kuhne & Quigley, 1997, p.28)

Action
3. Measures – Baseline, timeline, criteria, methods, consent
4. Implementing and observing – consistency, data collection, dialogue over data

Figure 1. The Cycle of Action Research from (Kuhne & Quigley, 1997, p.28)

Data Sources and Management for Research Question One

Research question one probed how preschoolers use technology as a literacy tool in the process of learning about health and nutrition. Technology was integrated and used as a way to facilitate creativity, literacy skills, to apply new knowledge, and as a

way to learn about balance and nutrition. The focus in the study was on how the children used the computer in three specific ways:

1. To create a painted adventure embedded in the *Eating the Rainbow* unit, EBTL

2. To create a shared powerpoint big book, embedded in the *Salads* unit, EBTL

3. To use the internet to explore activities and games, and to use Health Canada's 'build your own food guide' website.

My research used a variety of approaches to collecting various data sources to inform the two research threads of the study. Creswell (1998) emphasizes that data collection may consist of various documents, participant observation, and interviewing (p.34). He also highlights the importance of engagement and extensive work in the field, which for me, was a prolonged period of engagement at Campus Kids Kindergarten (80 hours over five weeks). Here, I gathered information through observations, interviews and artifacts which were helpful in developing a portrait of how children used. I also engaged with technology as a way of learning about healthy eating through their emerging literacy. I was not only focused on my own research, but in reality I was drawn into many of the other activities of the kindergarten, similar to Turbill's experience (2001) and sometimes did not feel like I was finding anything out about my own research questions or purposes. Gaining access in this research study was not difficult, as my supervisors had a previous relationship built with the director of Campus Kids Kindergarten. The director was a key informant and provided extremely useful insights into the project (Creswell, 1998).

Research question two probed how kindergarten children transfer their emerging knowledge of technology and healthy eating to their family/community life. Self-

administered questionnaires and semi-structured telephone interviews were used as the source of data to answer the second research question. The questionnaire consisted of six descriptive, open-ended questions and two close-ended (checklist) questions which prompted parents to describe what their child had applied in their life at home, and also invited their feedback on the EBTL program. The interview questions further probed how and what information their children were sharing information about the EBTL program at home. Seven parents completed the questionnaire, and seven parents participated in the interview (not necessarily the same seven parents participated in both, however, three participated in both). Questionnaire and interview data were cross referenced and common themes were derived.

Table 1

Summary of data collection methods

Research question	Data collection method	The type of data gleaned
One	Anecdotal records	Written descriptive accounts of incidents
One	Field notes	Similar to anecdotal, but with researcher's impressions and interpretations recorded together. Written at the site.
One	Document analysis	Portfolios (a collection of relevant materials compiled for a purpose. A purposeful file of everything that may seem relevant to an issue), letters, memos, notes, helpful in establishing a baseline of what has happened in the past and can be invaluable for comparing a new approach to the past approach.
One	Logs	Careful records of recurring activities that are often numerical – records of attendance, number of times learners do things.
One	Journals	Records of person's reflections. Typically written on a regular basis, for instance, at the end of the day when there is relative calm. Feelings, anxieties, comments, on events that have taken place or anticipated. This technique is particularly useful in AR because events and activities can change so much during a project that one can easily forget one's earlier thoughts and feelings
Two	Questionnaires	Open/ Closed- in my case, they were combined- a few with spaces for opinions and thoughts and reflections, and a few multiple answer.
Two	Interviews	Structured, semi-structured, and open. Allow for interaction and provide rich data.
One and Two	Audio –video recording	Valuable for getting an exact record of events, one that can reveal pauses, expressions, idioms, and body language. Since recording involves the use of mechanical devices the person operating (needs to check and double check).

Data Management

The EBTL program was five-six weeks in duration, and I spent four mornings a week at the kindergarten (Monday through Thursday), participating in their regular routines as well as those activities designed for EBTL, such as technology activities and the field trip to the grocery store . After each morning at Campus Kids Kindergarten I would compile my notes, observations, any products created by the children and/ or files and store them electronically in a locked cabinet at UPEI and/ or on a password protected computer. On the fifth morning of the week (Friday) I would organize my data, reflect on the week, and create or modify the technology lesson plans for the following week.

All parent questionnaires and interviews were transcribed verbatim and coded to protect the identities of the parents/ guardians who provided information. These electronic files were kept on a password protected computer and backed up with a memory stick which was kept locked in a cabinet. Hard copies were created for manual notes and coding: however these have since been destroyed.

The children and technology tools

In order to address research question one, and to document the activities and use of technology at the kindergarten, I collected and analyzed anecdotal records and field notes, other document analysis (e.g. emails from the director, ECEs, other research coordinators, and children's work), and my reflective journal (I wrote this at the end of the day when there is relative calm). I found this journaling particularly useful because events and activities can change so much during a project that one can easily forget one's earlier thoughts and feelings (the first day at the kindergarten when I was very

new to the children was very different from the last day, when I did not want to leave!).

Journals also add to the dependability of a research project, and by recording my

thoughts and decisions I created an audit trail for future research use that was "logical,

traceable, and documented" (Schwandt, 1997, p.258).

I also collected a portfolio of students' work in technology which included

scanned images, paint booklets, powerpoints, personalized food guides, and samples of

websites. Throughout the EBTL program, I also used audio and video recording

(everyday) for technology activities and as a data source to compliment the document

analysis. This was extremely valuable for getting an exact record of events, one that

could reveal pauses, expressions, idioms, and body language. Since recording involves

the use of mechanical devices, I needed to be dutiful in checking to make sure that the

devices were working properly and were recording the correct activities.

Research, policy, and directed change

Tedlock (2000) explores research as both a process and a product, and suggests

that a researcher is "embedded within his/her field experiences" in such a way that all

interactions involve ethical choices (p.459). Technology was fully and actively

integrated into the classroom environment. This was both a process and a product, as

students made connections with each other and with new concepts and idea, applying

them while engaging with literacy activities using technology as a tool. Their behaviour

was generated from and informed by these interactions and there was an ongoing

analysis to place the children's experiences into a meaningful context of literacy as

social practice, and technology as a tool in this practice. Chambers (2000) explains how

"applied work helps people make decisions and is generally directed toward informing

others of the possible consequences of policy options or of programs of directed change" (p.851). The applied work of this research study could inform other early childhood educators how emergent curriculum, technology as a literacy tool and a healthy eating literacy project can influence children and their families. My research aimed to transform this information into a form which could be disseminated and shared with other early childhood educators, teachers, and practitioners.

Chambers notes that much of the value to this type of research lies in its narrative – "its telling of a story, which can be rich and thick with contextual information and can increase the depth of our knowledge of subjects", in this case, how four and five year olds use technology in learning about healthy eating (2000, p. 863). Trustworthiness is what is important to qualitative research such as this, and will be discussed further at the end of this chapter.

Observing and Participating in PAR

Observation in qualitative research has been distinguished as "a special skill that requires management of issues such as the potential description of the people being observed/ interviewed" (Creswell, 1998, p.125). Participant observation can be used as a "method, instrument, or technique for data collection" (Savage, p. 325). Meaning making occurs while involved in participant observation, and this meaning can be different based on the history, personality, or researcher's lived understanding and expertise prior to the experience of participating or observing. Translation then occurs, "the way of putting non-language –like knowledge into words" (Savage, 2000, p.330), and researchers will do this differently based on their knowledge or expertise. The

following is an example of how observations were translated and interpreted, and meaning was made from the data:

> One of the first days we were observing at the Kindergarten, we were "kid watching" (a form of observation and assessment used in teaching) (Goodwin, 1982) and taking notes, making observations on how the children were using the internet sites on healthy eating, what language they were using, how various behaviors emerged, how they were reading the instructions and activities on the computer, how they used the technology to reinforce concepts surrounding nutrition and healthy eating. I had pages of transcripts and audio recordings of children telling numerous stories upon stories, using vivid, imaginative descriptions and new vocabulary surrounding food. I also had parents reporting to me that their children were talking about foods from around the 'globe' and that there were rich conversations happening at home. The meaning I made from my observations of the children being engaged in time-on-task (along with the additional data) was that children were actively engaging in the technology component of the EBTL program and that the technology was acting as a medium through which the children could easily dialogue with each other and activate creative thoughts in order to 'play' with their new nutrition knowledge (Personal reflection, February 6, 2007).

My role: teacher as researcher

In this research study, I was taking an ontological perspective that saw the social interactions, daily routines, behaviours, language, and interactions with technology and nutrition education with kindergarten children as important. My epistemological

position suggested that these interactions and knowledge could be generated, and I was not only researcher as knower, but researcher as experiencer, observer and teacher (which I found very difficult, but which is extremely important to note in participatory action research). I was teaching the children how to use technology in a variety of ways in order to learn about nutrition, but I was also making observations and notes. I found this challenging, so I began to audio-record sessions with the children so that I could go back later, with my notes and the recordings and do further analysis, not only of the data, but of the action and reflection stage of the data collection. I was so busy working with the children that I was missing some very interesting observations of how they were using their literacies, play, and conversation while sitting at the computer. The video camera was used in a variety of ways to record these daily experiences with food, literacy, and the social world within which these children were interacting. A short documentary video was produced by my supervisor in order to disseminate findings from the research.

The notion of *identity work*, the roles which a researcher adopts in various settings, is important because one must think about what role one will adopt. For example, it is different and challenging for me to adopt a passive role in a classroom because of my background as a teacher. As a teacher, I learned to observe very actively and carefully. Conversely, it would be quite different for me just to sit alone, in a corner and watch, write, and not be a part of the activities in classroom life. It was quite challenging, however, to take on a role of teacher in a different capacity and then to integrate it with the role of researcher. The practicalities were also different. I had never

taught or had any experience in a preschool setting since my training and experience came from grades 2, 3, 11, and 12.

Mason (2002) talks about taking on roles and being accepted into the social realms of the research with respect to identity and relationships. I understand that developing relationships in various research settings can be difficult. However, perhaps due to my love of children/teaching, and the preparations I made before entering the kindergarten, the children responded well to me and respectful, trusting relationships were made. I also committed to spend four (out of five) mornings per week (for five weeks) working with the children in the kindergarten. At first, I remember thinking that I was at risk of "over-estimating my ability to 'hang around' in the setting; soaking up data" (Mason, p.90). I was really keen to begin collecting data. I was actively engaged with the children in their daily routines, making observations about how they worked. We tried out many different activities (almost a "pilot" week) the first week to decide on how to proceed in the project. This was part of establishing relationships and becoming accepted into the setting. I also developed a respectful rapport with the early childhood educators and their director and this made the experience positive and we learned much from each other. I was constantly examining my own role with respect to their's and the other research assistants in an attempt to ensure the most "fruitful and constructive process" (Mason, 2002, p.94). It is interesting that: after the six week pilot program was over, I really missed going to the preschool and I really missed the children! I remembered feeling this way when I was teaching in various elementary settings as well. I reflected on Mason's analogy of "cutting and running" with the data, realizing I was not the only one who experiences this (Mason, 2002, p.94). The staff from Campus

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Kids invited the research team and myself to come back and several follow-up meetings were held with the principal investigators in the EBTL project. They are very open to sharing their space and time, and we are very lucky in this way. Participants have been noted to feel as thought they have "given you enough" and cut the researcher off from any further follow-up (Mason, 2002, p.95).

Visual Methods

A camera in the hands of the researcher was pioneered as a research tool in 1939. This tool has been widely used in ethnographic and anthropologic studies and, more recently, in the process of telling stories, teaching language and literacy. Nurse researchers have utilized photographs to elicit rich data about the lived experiences of people, a method known as photovoice or photonovella. In this research study, photography was used as an additional data collection method and knowledge translation strategy (Timmons, Critchley, Campbell, McAuley, Taylor, & Walton, 2006, p.4).

Mason (2002) discusses the use of documents, visual methods, and particularly, the use of photography in social research, they enhance understanding and add to the stories of the participants in the research. We also have to be very careful to not let the technology dominate the research, but exist as a tool to aid the eye in seeing (Mason). I am excited that visual ethnography is emerging as a "diverse specialism" because I think it can enhance the richness of the data, as long as we acknowledge that the "gaze" will still be biased by the researcher, and that this is inherent in qualitative research, but it is important that we explore and recognize the use of visual data. One other question emerges from visual ethnography – and visual data collection, and that is: what role

does the camera play in the social interaction of researcher and participant? If the researcher can influence the social interactions and the social process, then how does the technique or tool used impact the interaction? How can researchers use these tools effectively? We gave children cameras during a field trip to a grocery store and I used the camera frequently throughout the data collection phase and it provided rich data for analysis.

Process, Issues, and Decisions during Field Work

Like Johnson and Samdahl (2005) "I entered the social situation both to participate in activities appropriate to the culture and to observe the people, activities, and context of the social situation" (p. 337).

Selecting a site. I did not need to obtain permission to gain access to this site, as researchers (my supervisors) were granted permission for the larger project, EBTL. My decision was relatively straightforward: to observe in the kindergarten at Campus Kids, as it was the site for the larger research project.

The role of the observer. As Creswell (1998) notes, this role can range from that of complete participant to that of complete observer. I began as an outsider and evolved to an insider. The time I spent at the kindergarten allowed me to observe more at first, and engage with the activities and children more toward the end of the six weeks. My initial role as researcher was to observe, make notes, and eventually get to know the children, activities which eventually lead to becoming a full participant in the setting. At the beginning, I had to decide whether or not I was going to sit with a group of students and engage with them (i.e. immerse myself in their culture of kindergarten) or if I was to sit back and observe as an outsider. I felt invested as a researcher and as a teacher,

because it was so important to me to represent and document these children and the program well.

Observational protocol. Wolfinger (2002) suggests that there are different strategies for writing field-notes and calls the two "the salience hierarchy" and "comprehensive note-taking" (p.90). In salience hierarchy, ethnographers sit down to take notes and start by describing whatever observations struck them as the most noteworthy, interesting, or the most telling. The comprehensive method of note-taking forces the researcher or ethnographer to recreate and take note of events in order of how they happened. Wolfinger argues that this can "aid in the recall of details that might otherwise have been forgotten and the reason for this is that cognitive psychology shows that people tend to retain information in specific 'knowledge structures'" (Abelson, 1981; Schank and Abelson, 1977 in Wolfinger, 2002, p.90).

Based on the numerous observations I made, I moved from the salience hierarchy to the strategy of comprehensive note taking, a strategy increasingly appropriate for the situation. I also took into account a new but alternate strategy for recording notes systematically and comprehensively describing everything that happened during a particular period of time, and when this became difficult, I used a tape recorder to document audio-notes.

Recording field notes. Aspects such as portraits of the informant, the physical setting, particular events and activities, and your own reaction are important (Bogdan & Biklen, 1992). Fieldnotes are a vital part of qualitative research, yet little attention has been paid to the practical details of note-taking. Exactly how does an ethnographer decide what to write about? Researchers' tacit knowledge and expectations often play a

major role in determining which observations are worthy of annotation (Wolfinger, 2002, p.85)

I made notes in a systematic way: first, I observed the physical surroundings, second, the people in them, third, what I heard, fourth, the impressions and feelings I had, then I took note of how (or if) my presence affected the setting. This enhanced the rigour of what data had been collected, comprising layers of data (a form of triangulation). There is no way to decipher what is going to be useful in observational notes or jottings until one sits down later to transform them into field notes and analyze them. Wolfinger (2002) also notes this point, that in "recounting entire segments of time spent in the field a researcher will often describe events that might otherwise seem too mundane to annotate" (p.91). Crabtree and Miller (1999) also describe how field notes during participant observation are often written outside the field, based on the researcher's "jottings", and that in this process it can be argued that this in itself is a process of selection of key information. This also reiterates the importance of having as much detail as possible, including conversations, reflections and rich description.

From Jottings to Field Notes. In the past, little attention has been paid to field notes (Emerson et al., 1995; Garfinkel & Sacks, 1970) and much of the existing information on them has not been pragmatic (Wolfinger, 2002). Van Maanen (1988, p.223) emphasizes that the 'many levels of textualization set off by experience' affect the note-taking process, and given that it is in the many writings that knowledge emerges, questions are answered, and new questions emerge, it is important to see how jottings are transformed into field notes (see Table 1).

Table 2

Jottings to field notes

Jottings	Field Notes
Finished scanning today w/ kids Raven Melanie, playing food groups, teaching, did you know? Melanie-like scanning groceries	We finished the scanning activities today with the salads. Raven and Melanie came into the room after and wanted to continue scanning, Melanie likes it, she said "it's kindof like just scanning your groceries". They were teaching each other the food groups, taking turns playing "teacher" and seemed at ease and were classifying the food into the correct "colors" or food groups.
Phoebe – fave foods, supper, a "tool", toss the salad, shy 1st, then ok	Phoebe and Jacqueline were a little shy at first, and not sure how to play the salad factory game on the internet. They began to "toss the salad" and showed more interest in it when it became their own. As they played the game, they relaxed more and it seemed like the most conversation happened when they had to teach it to a peer- Emily came in and asked what we were doing. Phoebe talked about her favorite foods and her supper. The computer seemed a mere tool to spur on conversation.

The practical details of jottings and field notes in the literature are scarce and I felt inadequate during the process simply because I wondered if I was doing it correctly. Did I notice important things? Did I waste my time in the field? Was I observing for long enough? Is this really the way that this observation is conducted? I think it is only after conducting many observations that one can begin to trust in the data and oneself as a researcher. It is through practice and reflection that quality data will be gathered.

Reflection of Observation in the Field

Observation is a valuable method of data collection because it "permits the researcher to produce a distinctive resource for preserving experience close to the moment of occurrence, and, hence, for deepening reflection upon and understanding of

those experiences" (Emerson et al., 1995, p. 13). An individual's commitment to a constructionist epistemology and the role of the researcher as instrument is inherent in this type of research, where the discretion of what to observe is in the hands of the observer. Wolfinger (2002) advocates "letting one's experience in the field guide the study's focus" (p. 87). Prior to entering the field, as earlier noted, I reviewed some literature on health information and on technology as literacy tools for preschool students. My sensitivity and prior knowledge of these topics are evident in my jottings and field notes and in my writings. I am prompted then, to reflect on Howard Becker's assertion that "you have already made many choices when you sit down to write, but you probably don't know what they are" (Wolfinger, 2002, p. 17). I used my research questions to help guide my focus.

Data Sources and Management for Research Question Two

This section includes a discussion of the various decisions made pre and post interviews, challenges faced, and benefits gained in using interviewing as a way of eliciting knowledge from participants and examining the research question: How do kindergarten children apply their emerging literacies, knowledge of technology and healthy eating to their family/community life?

Questionnaires

Prior to interviewing parents, I developed a short questionnaire to ask them what their children were sharing with them about the *Eating Between the Lines* program at home. Developing a high quality self-report instrument, such as a questionnaire, is a challenging task (Polit & Beck, 2004). Numerous drafts of closed- and- open- ended

questions were developed and evaluated with my supervisors prior to sending the questionnaire home to parents.

The questionnaire consisted of six descriptive, open-ended questions and two closed-ended (checklist) questions which prompted parents to describe what their child had applied in their life at home, and also invited their feedback on the EBTL program.

There are several advantages of using a self-administered questionnaire: costs are low, participants can remain anonymous, and there is less interviewer bias, which is why I initially thought questionnaires would be appropriate. However, after a low response rate (28%: only seven out of 25 responded), I began to note the additional disadvantages to questionnaires: audience (some cannot fill out a questionnaire), clarity (interviewees can ask questions if something is not clear), lacks depth of questioning (interviewers can probe, whereas questionnaires are silent), order of questions (respondents are at liberty to "skip"), supplementary data (interviewing can result in additional data through casual conversation) (Polit & Beck, 2004).

I decided to conduct a number of interviews in order to gain additional insight into what children were talking about at home with their parents. Compared to previous reports (Polit & Beck, 2004), I had a higher response rate, with 11 out of 25 or 44% agreeing to be contacted for an interview. Also, the types of questions I wanted to ask would possibly require parents to "tell a story" about their child. Given that many of the parents worked and had more than one child, interviews seemed to be an easier way for parents and researcher to share a discussion.

Interviews

Interviews have come to be a very popular method of data collection for qualitative researchers in the social sciences (Nunkoosing, 2005). Interviewing in qualitative research covers a broad range of activities (Murphy & Dingwell, 2003) and can range from structured to unstructured as the researcher uses a variety of stimuli to "elicit talk about the topic they are investigating" (p.77). Hermanowicz (2002) suggests that "great interviews are deceptively difficult" (p.479). Transcribing interviews can be labour intensive: however, the transcripts can also produce the most revealing, rich data (Kuhne & Quigley, 1997). Interviews are not just a neutral data product; they are formed and reframed by the relationship and interaction between the interviewer and interviewee (Nunkoosing, 2005).

The type of interview that I conducted for my project was semi-structured and open ended, using a protocol (please see Appendix F). I believed that interviews would be the best means of providing a voice to the participants (children and parents alike) in this study. One of the benefits (and challenges) in interviewing is that there are various protocols and steps one may take in order to conduct a "good interview". According to Hermanowicz (2002), a good interview is conducted in much the same way as we would conduct a date: converse, listen, find all that your date finds important, probe, sometimes remain quiet when your date is quiet, persist, play innocent sometimes, don't stay out all night, don't come home too early, word questions clearly, sequence your moves, divide conversation into topical stages, be balanced, be candid, preserve the integrity of meeting someone new, show respect, embody detached concern, test your questions beforehand, rehearse, don't date members of your own family, start off on a

strong note, end on a positive note, bring the memory of your date home, tape the session, carry on long-distance only as a last resort, and practice-practice-practice. I don't have the space to go into great detail about each of these strategies; however, I did consider them as I conducted this research study, and consequently for each interview.

Protocol

The seven semi structured interviews were audio-taped using a Panasonic digital tape-recorder with informed consent from the participants, and they were subsequently transcribed verbatim using a start-stop transcription system into a word processing document. Each interview took approximately half an hour and, in total, yielded approximately fifty pages of transcriptions. All interviews (except one) were conducted over the telephone at the request of the participants. Parents indicated that it would be much easier for them to participate if it was over the phone; some of the interviews were conducted at night, after their children went to bed.

Explanation of the research purpose. The purpose of this research is to assist researchers in developing a unique healthy eating literacy program which includes many rich tools and resources (including technology) for teachers, parents, and the community. I began our conversation(s) by discussing who I was and why I wanted to talk to them. Hermanowicz (2002) suggests that reading an introduction helps to define the interview situation, or context, and that this is part of "starting off on a good note" (p.495) so I used the guide provided in the recruitment letter to frame my introduction to them about myself:

> My name is Alaina Roach O'Keefe, and I am a second year Masters of Applied
>
> Health Research student in the Atlantic Regional Training Center (ARTC),

affiliated with Dalhousie University, Memorial University, the University of Prince Edward Island and the University of New Brunswick. I have recently been working at Campus Kids on the Eating Between the Lines Research project. It's been a few months since we have been working in the kindergarten with your children and I am interested in what has been going on in your lives since February! I just have a few questions to ask you if you have time and agree.

Then I asked the interviewees (parents) to participate in a conversation during which we would talk about what their child has talked about from the program, what was parent's overall impression of the program, and how is their child applying or not applying the new knowledge surrounding healthy eating and literacy at home? I explained that the aim of this endeavor was to help me (a graduate student) to learn how to do research and, as well, to evaluate the Eating Between the Lines project.

Hewitt (2007) writes that "qualitative research is vulnerable to bias through the attitudes and qualities of the researcher, social desirability factors, and conditions of worth; exploitation, through role confusion, therapeutic misconception, and misrepresentation are particular risks for health care–related research" (p.1149). She also argues that examination of the self through critical reflection and supervision are necessary workings of ethical research, and this is something that I was sentient of throughout this process. As a researcher, I am conscious of and fearful that I will succumb to "dutiful ethics" (Helgeland, 2005) or what I would like to call "going through the motions" of being ethical. The context, culture, rights, and beliefs of the research relationship all play into this process as well, and there exists a delicate balance

of respect in what we might call *successful ethical research*. This is what I strived for in my research.

The interview context as enabling and constraining the process. Creswell (1998) notes that a successful interview should be in a location that is free from distractions and appropriate for audio taping. Therefore, I conducted the interviews with parents at times that were convenient to them (after the kids went to bed). We were thus able to converse in a relaxed, neutral setting. We talked at a time of day that was not overly busy (mornings or late at night) which enabled the interview process to be less stressful for parents – when one has young children it can be a busy, bustling time. Interviewees were very comfortable with the idea of a tape recorder and it seemed to be forgotten after the first few minutes of the interview(s). This comfort with the audio-recorder was surprising to me because I have previously observed that it was distracting or intimidating to participants. Hermanowicz (2002) also notes that this negative impact on participants is common, but yet important to ensuring the capture of quality data: "the narrative itself, intonation, nuance, meaning, sequence" (p.496). Also, because interviews were conducted over the phone, they could not see the tape-recorder and more easily forgot it.

Conversely, the context of the interview can also constrain or inhibit an interview process as well. Face-to-face interviews are usually much better for eliciting more meaningful conversations and thus data; therefore telephone interviews and email interviews may affect the quality of the data gleaned in the exchange (Hermanowicz, 2002). The context also has an impact on the relationship which is built or established between the interviewer and interviewee – a cold, sterile environment is not going to

establish a warm, inviting, and potentially trusting feeling for participants when they meet the researcher. Despite the interviews being conducted over-the-phone, parents were forthright with information and comfortable conversations ensued.

Building rapport with the participant. Nunkoosing (2005) speaks to the importance and the complexity of building relationships with interviewer and interviewee. In order to gain any kind of information that is underlying the topic of interest, an interviewer has to establish a rapport with the interviewee.

I was able to successfully build rapport with the participants since I had met many of the parents (that I interviewed) face-to-face in the mornings during the six-week program at Campus Kids. I had also sent home information to them on the technology work I was doing with the children. When I called the parents, we were relaxed and seemed to be able to talk easily before, during, and after the interview process. They seemed quite confident and at ease speaking with me. This comfortable atmosphere may be due to the nature of our relationship and early engagement.

Notably, though the parents scheduled the time for me to call, I did feel like I was intruding a little bit (like a telemarketer) calling late in the evening, The parents, however, seemed excited to have "adult talk" and were open and friendly with me, and dispelling any fears I had.

Flexibility with the interview guide. Lofland, Snow, Anderson, and Lofland (2006) call a flexible interview a "guided conversation" (p.105). Also, in Hermanowicz's first recommendation for a successful interview, he discusses conversing with a participant, and emphasizes that interview guides "are not an inflexible list that the interviewer follows rigidly" (2005, p.483). Similarly, Fontana & Frey (1994) reiterate the

importance that "interviewers must be aware of respondent differences and must be

flexible enough to make proper adjustments for unanticipated developments" (p.364).

Conversely, Creswell (1998) recommends "sticking to the questions", but still

listening more than talking (p.125). I did not deliberately try to follow one scholar or

another on this; however, I was not extremely flexible with the interview guide. Murphy

and Dingwell (2003) would consider that I exerted a high degree of control over the

content and the encounter. I really wanted to glean data that would be related and

relevant to the topic at hand. However, I did listen more than talk, and prompted with

"hmmm" and "what else?" during the interviews (see Table 2.)

Table 3

Effective Probes

Transcript excerpt	Probes
Parent1: ...like I said he you know he was pretty proud of himself going out to the grocery store everytime I'd pick something up ..'that's from the such and such a group'... A: uhum Parent: I think that um they may be more inclined to eat better A: yeah Parent: um you know if they got it at an early age and it was just something that was talked um was mentioned to them or explained to them on a regular basis A: what else could help?	 *Uhum* *Yeah* *What else?*

In addition, there were some questions that were answered from other parts of

the guide (see Table 3.) and this is a form of flexibility (Lofland et. al 2006).

Table 4

Flexible Interviewing

Reflection	Transcript excerpt
Parent jumped in and voiced her desire for longer programming at the beginning of the interview on an un-related question. I did not ask her the question again, demonstrating flexibility in the guide.	Parent1: um I thought I'm just throwing this in there it might be a question down the road but it was excellent and I almost wish it could be like you know almost a year long thing A: Right Parent: um because it made a difference in my opinion um for him and his understanding of what to eat not that he you know does a great job every day but um like I said it sometimes I think if it was continued on a longer basis then instead of just a you know a six week stint or whatever that he might even carry on with eating

Phrasing of questions. The phrasing of questions is extremely important to elicit information from participants, especially when there are no other stimuli such as vignettes or photographs to extract information (Hermanowicz, 2002; Murphy & Dingwall, 2003). Lofland et al. (2006) state that a competent interviewer is one who phrases questions in order to obtain rich data, but avoids imposing preconceived concepts or notions on the participant. It is important not to pose leading questions. In this case, I found that the questions in the interview guide were worded clearly enough to be comprehended, but yet were open enough that participants were able to answer based on their knowledge or their experience as a parent, and on their impression of their child. I utilized this well developed interview guide, along with "playing innocent" (for example, one of my favorite probes was "tell me more about this"). These strategies influenced participants to respond fully and also to respond to the probes.

Interruptions and silences. As an interviewer one attempts to avoid asking leading questions. However, this is something I was conscious of doing in the past while conducting interviews for other research projects. It is something 'suggestive' that, for

some reason, interviewers tend to do that is so strange. For example, people will attempt to fill the silence and will often talk a little bit more, and they will answer questions based on their experience and knowledge (which is what we want as researchers) and, sometimes, they talk and talk and talk!

Silence, on the other hand, can be very uncomfortable for both the researcher and the participant. However, Hermanowicz (2002) suggests silence can also be used as a probe. There are two ways to proceed when there is silence, and I tried both ways in the interviews I conducted. The first way is to simply let the silence allow the participant to think about the question, and wait for them to respond. Some people require additional time to think about, or ponder, how they might respond to a question. One of the advantages of using semi-structured interviews is that they allow participants to expand or elaborate (Patton, 2002). The interview questions were not shared with the participants in advance so each question required them to "think on their feet" which sometimes takes a little longer.

Probing is useful for clarifying information shared during the interview (Patton, 2002).The second way to proceed involves waiting a small amount of time to re-phrase the question so that participants can re-consider their response.

The notion that "great interviews are deceptively difficult" (Hermanowicz, 2002, p.479) is justified and supported through this project. Hermanowicz's strategies for a good interview were helpful in analyzing my own experience and the following are ones that I have learned to pay special attention to (based on my experience, strengths, and learning): converse, listen, find all that your date finds important, probe, sometimes

remain quiet when your date is quiet, persist, and play innocent sometimes. I continue to reflect.

Ethics

Ethics approval was granted by the University of Prince Edward Island Research Ethics Board for the Eating Between the Lines project in June, 2006. A second ethics approval was granted on March 1, 2008 for the second phase of data collection (specifically the parent interviews).

In any research in the social sciences, participants must be given the opportunity to give free and informed consent with minimal risk (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 2005). Consent can occur in writing, or by verbal agreement (or handshake) when request for signature implies distrust. Researchers are encouraged and expected to "think about informed consent, the right to information concerning the purposes, processes, and outcomes of the study (related to fairness), the right to withdraw at any stage (related to autonomy), and confidentiality (to protect the privacy and do no harm)" (Etherington, 2007, p.601).

Separate consent forms were used for the questionnaire and the interview because different parents participated in both. In this case, I explained the interview and consent process and also requested that participants sign the consent form (when the interviews were in person). The phone interviewees provided verbal consent. I provided participants with the assurance that they would not be identified, and that they could withdraw without penalty at any time. Participants were very accommodating and it did not seem to be an inconvenience for them to talk to me (they were very willing to give

up their time, and praised the EBTL program). I followed ethical protocol and assured

participants that they could contact me at any time, as I do not view the consent process

as a one-time-event; there is much accountability required in the collaborative

participant – researcher relationship (Hoskins & Stoltz, 2005, Sandelowski, 2002).

I issued participants a pseudonym in order to provide anonymity and

confidentiality. Transcripts are locked in a filing cabinet at UPEI, in a research office.

Trustworthiness

In action research, results can often be used by policy makers, other researchers,

and in this case, practitioners or educators. There are four criteria for establishing

trustworthiness: credibility, confirmability, transferability, and dependability. In

qualitative research such as this study, the findings can be used to inform other similar

groups (Gerg, 2006) in this case, early childhood educators and curriculum developers.

Credibility

Credibility refers to the "confidence in the truth of the data and interpretations of

them" (Polit & Beck, 2004, p.430). Credibility involves two aspects: carrying out the

study in a way that is believable and taking steps to demonstrate that it is believable or

credible (Lincoln & Guba, 1985). Lincoln and Guba suggest a variety of techniques to

enhance the credibility. The following strategies were used in this study to ensure

credibility of the data.

Prolonged engagement. This refers to the investment of considerable time

collecting the data (at the kindergarten) to develop an in-depth understanding of the

setting or culture. In addition, it provided time to build trust and rapport with

informants: the children, parents, ECEs, and director of Campus Kids. I spent

approximately 80 hours within the kindergarten environment in an attempt to increase the credibility of my research.

Persistent engagement .This refers to the salience of the data being collected (Polit & Beck, 2004). Lincoln and Guba state "if prolonged engagement provides scope, persistent engagement provides depth" (1985, p.304). Often, the time I spent in the kindergarten was not only used for data collection – it was cleaning up after the lessons, helping the children with their snowsuits, listening to read-alouds with the children, and informal conversations with the director at lunchtime.

Triangulation. Triangulation refers to the "use of multiple referents to draw conclusions" (Polit & Beck, 2004, p.431). The goal is to "overcome the intrinsic bias that comes from single-method, single-observer, and single-theory studies" (Denzin, 1989, 313). There were multiple ways in which triangulation was used in this research.

There were multiple data sources for this study, which is called data triangulation: observation and field notes, document analysis (documents were those produced by the children), questionnaires, and interviews. I used these numerous sources of data to (first in each document, then across data source) establish themes and glean insights into what the children had learned and how they were applying their new knowledge in the social literacy environment, at school and at home.

As well, there were data collected from different perspectives: the children and their parents. Also, in addition to myself, there were two principal investigators analyzing and interpreting the data set, which is called investigator triangulation. Due to the fact that my two supervisors were also the researchers carrying out the larger EBTL

project, through collaboration and an interdisciplinary lens, the possibility of biased interpretation is reduced.

Peer debriefing. This refers to sessions with peers to review and explore various aspects of the inquiry (Polit & Beck, 2004). There were many discussions, often weekly, with my fellow graduate students in the Atlantic Regional Training Centre program where we would discuss our thesis topics and projects – from conception through to the second year when some had finished collecting their data and were in preliminary stages of analysis. We presented oral and written accounts of project ideas, data collection, emerging themes, initial analysis, and discussions ensued concerning rigour and research protocols. These discussions and presentations also helped reduce researcher bias.

Dependability and Transferability

I kept a research journal throughout the entire research project which documents each decision and step-by-step reflection of the research process. This way, if someone were to replicate the research project, they could do so based on what Guba and Lincoln (1985) call an audit trail or a systematic collection of materials (Polit & Beck, 2004). In addition, there are detailed lesson plans and field notes (raw data), my scribbles and coding on paper transcripts, the products of work that students created. All of this documentation serves as an aid to enhance the ability to replicate the research in a different setting.

Confirmability

Finally, the question remains: did I make this up? Confirmability is a way for researchers to reassure themselves and their readers that they did not, and that the data is very real and not "merely a figment of the inquirer's imagination" (Schwandt, 1997, p.259). I engaged in multiple, lengthy discussions with my supervisors about the results from the children's work and the themes from the questionnaires and interviews with parents. Member checking is a way to further ensure credibility, however there were not any parents interested in meeting to discuss the transcripts. Despite this, I will provide a one-page summary of the research and findings to each parent, along with my contact information in case they wish to read the full report.

CHAPTER FOUR: RESULTS

Overview

The *Eating Between the Lines* program was developed and implemented over the course of six weeks at Campus Kids Kindergarten at the UPEI campus. The children were engaged in many activities surrounding the topic of healthy eating. The EBTL program used a series of early literacy activities and was designed to enable children and their families to make informed decisions and nurture positive attitudes and behaviours essential to healthy eating. It was evident through observations in the kindergarten classroom and interactions between the ECEs and the researchers that these goals were being implemented by building children's vocabulary and enhancing their reading, writing and representation skills.

There were two phases to the data collection, as there were two distinct research questions to be answered. The first section (a) of the results chapter will highlight the activities and data collected to answer the first research aim: to discover how preschoolers were using technology as a literacy tool to learn about healthy eating. Data sources encompass document analysis (of student's work), audio recordings, and my field notes/ journal entries. The second section (b) of this chapter will highlight the results from the interviews that were conducted with parents, probing how kindergarten children who had participated in the program were applying their emerging literacies, knowledge of technology, and new healthy eating knowledge in their home and family life. In order to describe the early literacy activities that happened in this kindergarten, I have chosen to include a variety of images that will help paint a picture of what integration of technology in a healthy eating literacy program looked like.

Technology in Kindergarten – Section A

Technology was integrated into the EBTL program, which has been noted as an exciting and challenging task (Davis & Shade, 1994; Nelson, Duverge, Gary, & Price, 2003). The activities that focused on technology were designed within the EBTL program and implemented within the kindergarten context. They were planned using a learning stations pedagogical framework with specific goals or outcomes in mind. The main goal for the technology component was to determine how preschoolers could use technology as a literacy tool in the process of learning about health and nutrition. This became one of the foci of this thesis research which was built around these questions:

- *What is the role of technology in the healthy eating literacy preschool program?*

- *Which technologies support literacy learning at the preschool level/ in emergent curriculum?*

- *How do these technologies support the learning which occurs?*

- *How did the technology affect or enhance children's understanding, motivation, or literacy skills while they were learning?*

- *How can a program like this (using technology) support the acquisition of health literacy knowledge for young children?*

The research team wanted to engage students in a learner –centered way, to teach and/or reinforce the basic nutrition concepts of balance, variety and moderation and Canada's Food Guide. As well, I wanted to provide basic computer strategies and skills to the children, and to observe how these technologies best supported the learning that was going on. These goals were guided by current research in early childhood education on how computers can be effectively integrated into the curriculum and the classroom.

My research focus emerged from this wider research context and was aimed at exploring the emergent role of the technology and how students were transferring their learning to the home context.

Additional factors related to using technology in a healthy eating program for preschoolers were also carefully considered for planning and implementation. First, the physical considerations of setting up the computer station were important. Children's eyes should be level with the text or graphics on the screen of the computer, shoulders and arms should be able to be relaxed and comfortable (elbows level with keyboard), and children's feet and back should be comfortably supported in an appropriate sized chair (Staff, 1993). There should be child-sized chairs and desks set up for computer use as well (Nelson, et al. 2003). Additionally, safety needs to be taken into account: children should be protected from electrical outlets and cords.
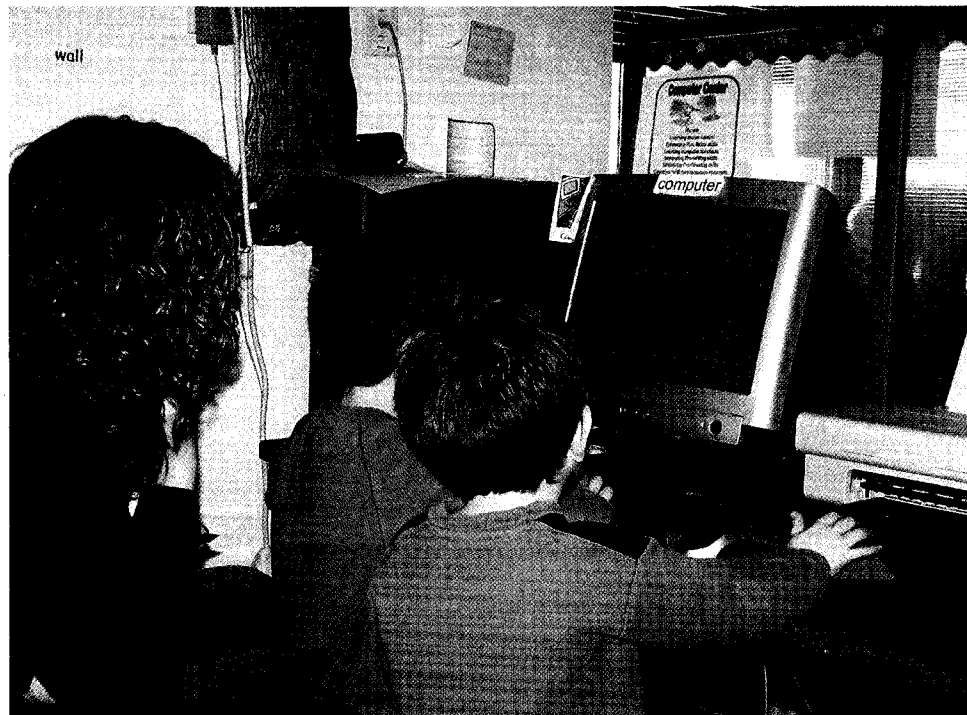
Figure 2. Physical consideration of the learning station.

Second, the technology activities that were introduced to the children were presented as an additional station in their regular rotation (resembling emergent curriculum) and were student directed, meaning that students could choose to go to the computer and choose the computer activity at their own discretion. The computer stations were set up to accommodate two students at a time, and they were encouraged to work in pairs so they could take turns and support each other. The computer was therefore set up as another classroom learning tool; its use was not based on reward or punishment, but as an integral part of the emergent curriculum.

Third, the teaching strategies used required students to take an active role in their learning. There were specific 'emerging literacy' activities presented for students which involved decision making and the exploration of new concepts and ideas surrounding healthy eating and technology. The teacher (I) was more of a facilitator or a guide in the activity as opposed to providing explicit instruction (direct teaching). Technology was integrated and used as a way to facilitate creativity, literacy skills, to apply new knowledge, and as a way to learn about balance and nutrition. The focus in the study was on how the children used the computer in three specific ways:

4. To create a painted adventure embedded in the *Eating the Rainbow* unit, EBTL

5. To create a shared powerpoint big book, embedded in the *Salads* unit, EBTL

6. To use the internet to explore activities and games, and to use Health Canada's 'build your own food guide' website.
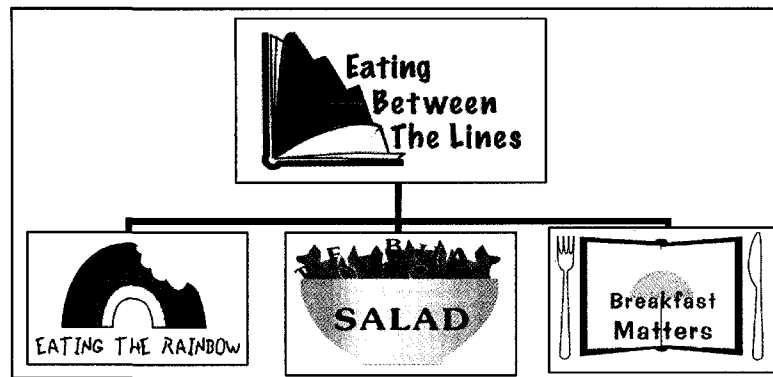
Figure3. Eating Between the Lines Program Units.

These activities were planned based on developmentally appropriate practice and were designed by the research team. It was important to use some activities that did not require expensive or specific software so that the activities could be replicated in other kindergartens at minimal cost. Children also used additional digital technologies during the EBTL program that were available through resources at UPEI and Campus Kids: a scanner to scan their artwork into the PowerPoint big book and cameras/ digital video to record the moment; both facilitated the use of the technology to express their creativity.
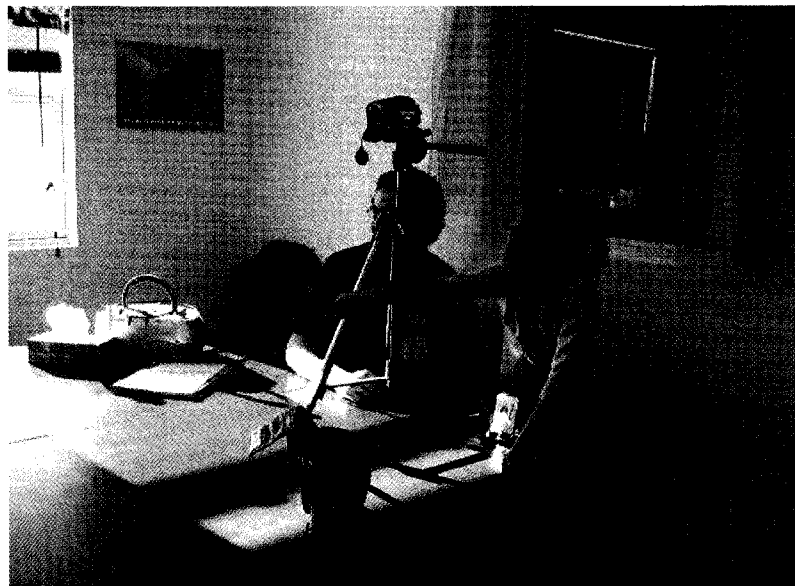
Figure 4. Child using additional digital technology during EBTL.

The activities discussed here are not necessarily reported in the order that they happened. It is also important to note that there were two computer stations in the kindergarten: one main computer station outside of the classroom, where I facilitated the designated activities; and a secondary computer station where children could choose to play Internet games and design their own food guide on Health Canada's website within the classroom. The secondary station (for internet and game use) did not require children to complete tasks in chronological order prior to visiting the station (as did the salad Big-Book activity). This learning station will be examined last as it was ongoing throughout the entire EBTL program. This station was supervised as well. I have also included a sampling of student work, and photographs that demonstrate some of the learning station work that was happening in the Campus Kids Kindergarten during the EBTL program.
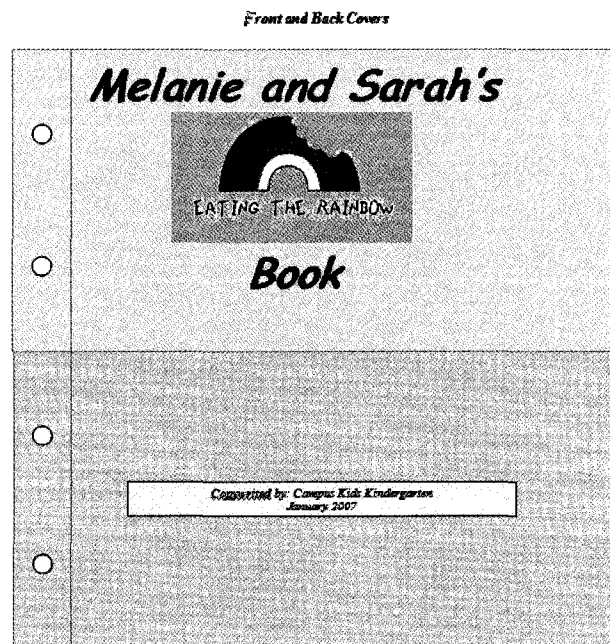
Figure 5. Adventure Book – Eating the Rainbow Unit (Book 1)

Adventure Book – Eating the Rainbow Unit (week 1)

Week one of EBTL was filled with 'piloting' technology ideas with the children, conducting an interest inventory (Cooper & Kiger, 2003), observing how they worked with the computer, getting to know the children, familiarizing myself with the concept of student-directed learning in the kindergarten within learning stations, and spending time setting up the second computer station in order to maximize the time we would spend there (making sure that everything- computer, programs, and scanner- worked properly). During this time, students were being introduced to the team of researchers (there were seven new faces to get used to, although not all of us were there all the time) and they adjusted quickly. I spent Monday through Thursday mornings with the kindergarten children, and this provided me with the opportunity to complete the activities that I had designed with the children.

Process

Creating an Adventure Book using the program *Paint* and *Microsoft Word* on the computer was a pilot activity I designed for the children. I thought this would provide a starting point to determine what children knew about using a computer, and to what degree they would be interested or motivated to use it within the EBTL program. This activity was designed to show me how children were able to manipulate the mouse (hand-eye coordination) and would also serve as an indication of how familiar and/ or interested they were in using the computer for this type of literacy activity.

The Adventure Books were a mediated literacy activity, where I sat behind two children (they worked in pairs) and we simply began to chat about what they had been learning about in the EBTL program, specifically, the concept of *Eating the Rainbow*. I

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had posted several posters of the food guide on the wall beside the computer to stimulate discussion, remind students of the focus of healthy eating, and provide a visual stimulus, in hopes of inspiring creativity. After a few minutes of discussion, I asked children if they would like to create a little book using a program on the computer and 'digital paint'. I suggested that it could be about an adventure involving food. I prompted the students with statements like, "If you were going on an adventure with food, what would it be like?", and "Today we are going to go on a picnic, an adventure of sorts. Let's make up a story about it and draw it on the computer!" Students responded positively and energetically to this basic suggestion by experimenting with colors and lines. They took turns drawing an image, making up stories and discussing whatever came to their minds along the way. "I think that they went on a picnic!" and "We are going to need healthy food, like strawberries, to take with us" were some of the comments that the children made while they were drawing their adventures.

Additionally, children would often find themselves surprised that their drawings in Paint did not quite turn out the way they intended. They soon learned the challenges of the Paint program; for example, if they did not connect all the lines in their drawing, the filling color would spread everywhere. They warned each other, "If you don't connect it, it will go out" and expressed slight frustration, wanting to know, right away, how to erase what they had done "How do I erase this?" Children often went through a repetitive cycle of draw, erase, draw, erase. It became a game. I discovered that the children were already familiar with basic terms like "click" and "drag" and they quickly learned new maneuvers and terms such as "double-click", "folder", "loading", "connecting", "back", and "icon". In addition, during their drawing of their food

adventures, they would talk and make up their stories while they drew, "See this, he's got a lot of vegetables", one student said. "Here, this is my soup, and these are your nuggets, and these are the steps [up the rainbow] and walking down. Here, when we walk down, we can take home our leftovers after the adventure" (see Figure 6).
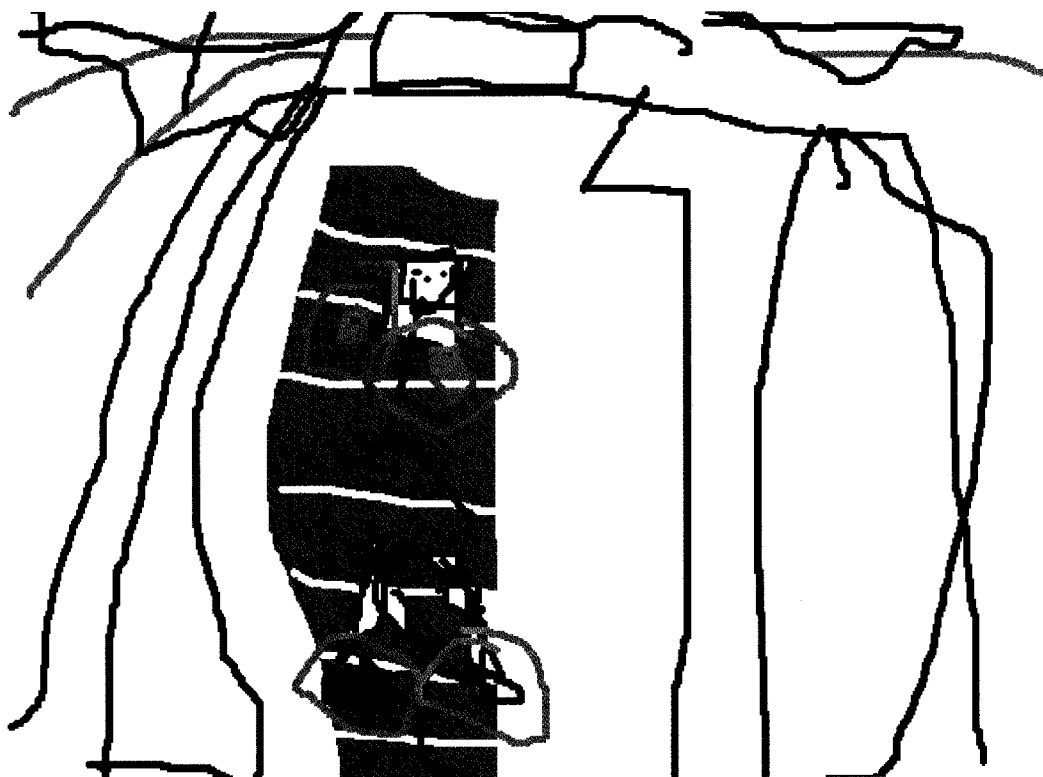
Figure 6. Drawing of Food Adventures.

Students continued to make up adventures, talk about food groups, and "play" with shapes, colors, and techniques. When they were finished drawing, erasing, and their oral storytelling, I would ask them to tell me the story that they would like to have recorded on their book. Children dictated their stories, which were often similar to the ones they had been discussing, and sometimes increasingly dramatic. I would facilitate typing whatever they said into their "manuscript". Children typed their own names, or various words intermittently throughout the process. Figure 7 is an example of a finished adventure book.

Eating the Rainbow
Written and Illustrated by Kiara and Gracie

Once upon a time, Kiara and Grace went to climb up the mountain and they saw a delicious picnic rainbow made of fruits and they scooped up some drinks from the water. It was rainbow juice! It made them healthy, it was made out of different kinds of foods. Cauliflowers, blueberries, grapes, oranges and Clementine's. Rainbow of spaghetti was good, it is a rainbow of spaghetti from the rainbow of foods: meatballs, and potatoes, and tomato sauce.

And then it had some delicious cookies in it and some pie.

And then they went home to pick some blueberries in the garden. And they lived happily ever after.

The end!

Figure 7. Example of a finished Adventure Book.

Observations and Reflections of the Adventure Books

The *Eating the Rainbow Adventure Books* created using Paint provided children

with the opportunity to be creative, making up stories of fairytales and fantasy as

preschool children love to do. It was a facilitated activity in which students began to use

the computer in different ways from previous activities, all the while playing with their

new knowledge of healthy eating. Most students reported that they had never used this

"game" before. However, they quickly and skillfully used the Paint program to create

unique drawings of their adventures, all the while talking and laughing at their playful

adventure stories involving many varied foods, animals, settings, languages, and

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cultures. For example, in one story the children went on a wild adventure where they

saw a "kyote and the bear, and then we saw a lion- but there is no wolves in Argentina.

We saw our cousins- we went all across the country" (Student, January 22, 2007).
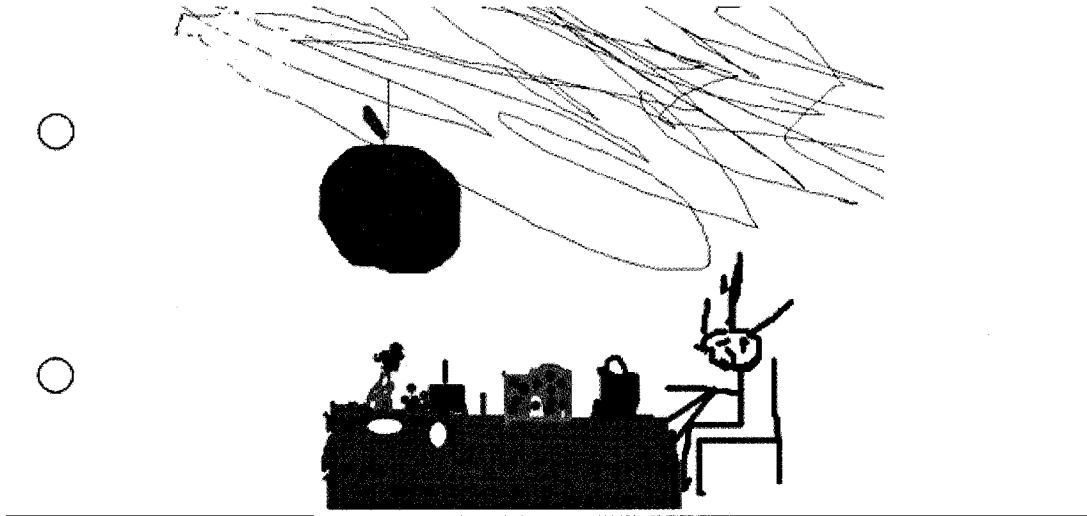
Eating the Rainbow
Written and Illustrated by Melanie and Sarah

There was a man eating some eggs and some carrots at the pink table.

He was drinking some milk.

There were grapes.

There were also some sweet cherries beside the bread.

He is healthy!

Figure 8. A Child's unique drawing created with aid of Paint program.

The children were using many new words like "pomegranate", "mango", and "fila" (filo

pastry) to describe what these characters were eating and there was clear evidence of

increased positive attitudes toward healthy eating. "He is healthy!" and "It was rainbow

juice! It made them healthy, it was made out of different kinds of foods" were phrases

from their adventures.

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There is rich description in many of the adventures, using color and attention to details. While creating the adventure in Figure 8, the children explained "the carrots have green leaves on top, the sun is yellow, sky is blue, and even the bread is multigrain".

The technology supported the learning that was happening in the EBTL program by providing students with the opportunity to learn new technological skills and to apply what they were learning about healthy eating in new ways, such as telling stories and recording these in digital and print formats. Emerging from the Rainbow Adventure Books was the theme of positive attitudes towards food and health giving properties: the characters are "healthy" because they are eating a variety of foods from the food guide. There is also a theme of culture and celebration surrounding food in the children's adventures. Foods were not only part of everyday activities but were also part of great adventures such as picnics on a beach, a barbeque, a camping trip, a hike up a mountain, and going on a trip to Halifax. Other enchanting geographical places were mentioned during the brainstorming phase for their stories, specifically Argentina and Mexico as destinations suitable for adventure.

Furthermore, the stories were beyond the common narrative forms, woven within the fairytales ("once upon a time" and "happily ever after" were included within some of the stories) were references to trying new foods from different cultures, specifically Greek food in one case. Within this story, the concept of grandmother preparing traditional foods and knowledge of food preparation, ingredients, and traditional gender roles were also present (see Figure 9).

Adventure Around the Food

One day there was some hamburger and meatballs. The people who saw it, they used the hamburger to make fila with the onions and grape leaves.

They cook it on a small fire. And the meatballs were with the fila. They had strange little cups and they drank orange juice.

They mushed the fila with onions in it you squish your hands in it which mushes it, and sometimes the yaya squeezes lemon on it- she has fish with it too. (Ya means grandmother in Greek).

They lived happily ever after!

By: Michelle and Raven

Figure 9. Child's representation of Grandmother preparing traditional foods.

In sum, this technology activity appeared to enhance children's motivation and interest in storytelling, and it created excitement and stimulated their creative energies. The activity was fairly unstructured, and often moved in the direction that the children wanted to take it. Some children focused more on the make-believe and story-telling, immersing themselves in their "adventure", while others were very focused on the mechanics of drawing using the Paint program and learning new ways to represent their thoughts, stories, and new knowledge using the computer. The children were also able to experiment with the idea of eating a variety of foods, and the importance of nutrition – even when on an adventure. The children named foods that they were learning about,

and foods that they knew well from their every day lives. They wrote stories and woven through them were new nutrition concepts (health in general), cultural connections and celebrations, and global awareness.

The Powerpoint Big Book – The Salad Unit (week 2-5)

Often, in emergent reading (beginning stages of literacy), shared reading is fun and captures the attention of young children in order to share a book (Cooper & Kiger, 2003). Due to the fact that it is shared, a 'big book' (giant size book) is often used in a classroom setting. This was the inspiration for this lesson – sharing books, learning about nutrition and salads through the use of technology to create a new student designed 'digital' Big Book for the Campus Kids kindergarten.

Process

During weeks two, three, and four, the kindergarten children were immersed in the topic of *The Salad*. As an introduction to the unit, *Eating the Alphabet* by Lois Elhert was read aloud to the entire class (a shared reading) by one of the ECEs at Campus Kids. Additionally, the staff, research team, and I decided to integrate two of the student-led activities together for a station, including key outcomes from art, math, literacy, and technology. There were many days of discussions surrounding possible salads: pasta salad, Greek salad, Caesar salad, egg salad, veggie salad, and fruit salad.

Three days into the salad unit, after a shared reading, one of the ECEs explained during the morning routine which learning stations would be available for the children to choose from. I gave a step-by-step demonstration and explanation, modeling how to create a representation of a salad with the various shapes and sizes of colored paper. Children were instructed to first go to the art-station in order to best prepare for the

activity of creating their very own class salad big book. Using the model *Reading with a Writer's Eye* (which offers suggestions for teaching children to write through examining passages, phrases, or sentences modeled by the author), I reminded students to carefully consider how Lois made her book and the illustrations and visually told her story, using *Eating the Alphabet* as a model to inspire their work.

Figure 10. Children actively engaged at the art station.

The director of Campus Kids was actively engaged with the children at the art station. At the art station, children made their own representation of a bowl of salad (fruit, vegetable, pasta). *Eating the Alphabet* was close by, so that students could consult Elhert's work, if they wanted to. They had the choice of using various abstract coloured pieces of paper and materials to glue to a piece of construction paper. They choose different colours, size, and shapes to represent whatever fruit, vegetable they wanted and had the choice of adding pasta noodles to their salad if they chose. Raw macaroni, felt shapes, paper, and cardboard of various colors represented items they had been

discussing: red for radishes or cherries, orange for oranges or mangos, green for lettuce or kiwi, for example. One of the outcomes for math that month in the kindergarten was 'counting', so children were encouraged to take note of a vegetable or fruit (or something) from their salad, count it, and write a very short sentence about it beside their artful representation of a salad. I expected some children might copy my demo-salad, but most children created very unique, colorful, and different pieces of art.

Once the glue on their artwork was dry, the next step included team-work at the computer with one of their peers. They gathered their representations of their salads, and proceeded to the scanner. Children were very curious about the scanner and they were very cautious and careful in using it – handling it as if it were as delicate as an egg shell. Many of the children had never used a scanner before. Some reported that they had seen one, and were very interested in how it might work. I walked them through step by step, on how to scan their artwork into the computer. There were four key concepts or stages that I introduced and reviewed with the children (1) the meaning of the word scan, (2) the mechanics of scanning, (3) practicing how to scan an image and save their work, and (4) applying the knowledge of scanning in order to create a digitized big book and teaching others how to scan an image. I began with the following discussion:

First of all: this machine, which is hooked up to the computer is called a

scanner. What do you think the word scan means? [various response - discuss

"scanning" the room for your friend, or "scanning groceries" at the grocery

store]. Have you ever seen a scanner before? In this case "scanning" means

taking a picture of your representations of salads. The scanner takes a picture of

whatever we put inside and sends it to the computer. This is how it works. Watch

carefully......

One student inquired, "When we put the paper inside the scanner and push the button, is it still going to be there when we lift the lid after it's finished? Where does it go?" (Figure 11). I explained that the scanner was similar to a camera, and that it scanned, or took a picture of the image and then kept it in the computer. They expressed fascination and were very interested that their artwork appeared onto the screen of the computer.

Next, we discussed the mechanics of scanning. The children examined the glass and I explained that it was important not to touch it (fingerprints would be in the 'picture') and to place their artwork face-down on the glass because that was where the camera-like device "scanned" the image. The children experimented with this, placing the artwork face-up and thus understanding how the scanner worked.
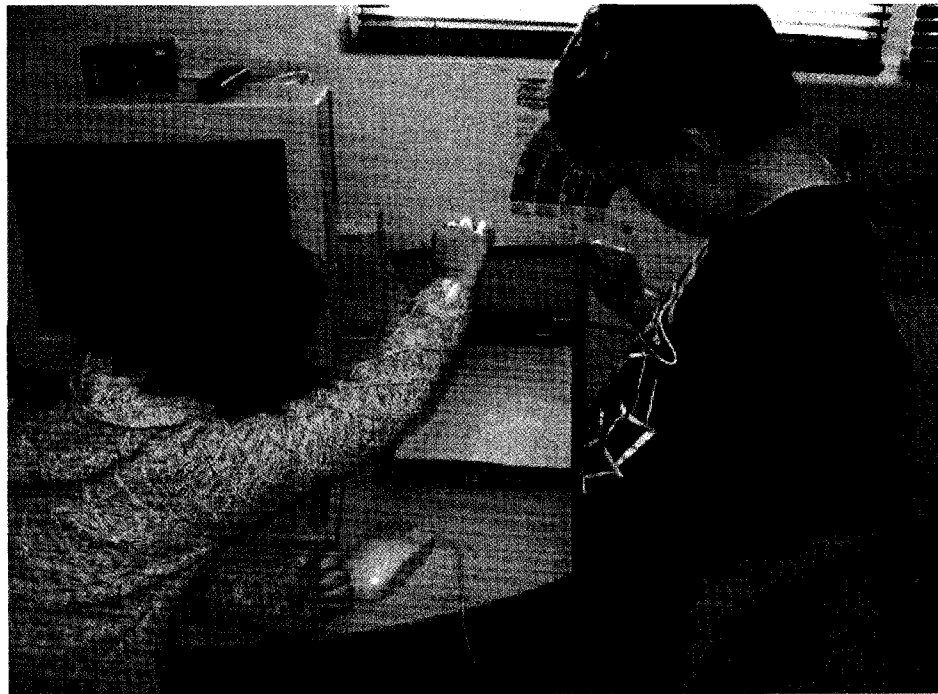

Figure 11. Children examining a scanner.

They also practiced rotating the images that came up on the screen. I taught them how to save their work, and the importance of doing so, when working on a computer. We saved the images and named them, and discussed why this is important. I showed them by closing down the program, and then re-opening it, asking them to find their saved image. They then understood how important it was to save and name their work in order to find it later. A few of the children collectively decided that this would be something that they would have to 'teach' the director of Campus Kids. She popped over to the station intermittently and the children taught her how to scan an image. In pairs, children scanned and saved the scanned images in preparation for the next step in the creation of the big book.

To create the Power Point Big-Book, we used photographs that I had taken of each child throughout the duration of the EBTL program. We created a blank Power Point, imported all of their photos and paired them up with their scanned salad images, in alphabetical order as in the book *Eating the Alphabet*. Then, each child took turns visiting the computer station in order to type in the sentence that they had hand-written on their salad-art. They were very excited at the possibility of projecting this big book onto the wall. We re-saved our work and once each child completed this task, the digital big book was born.
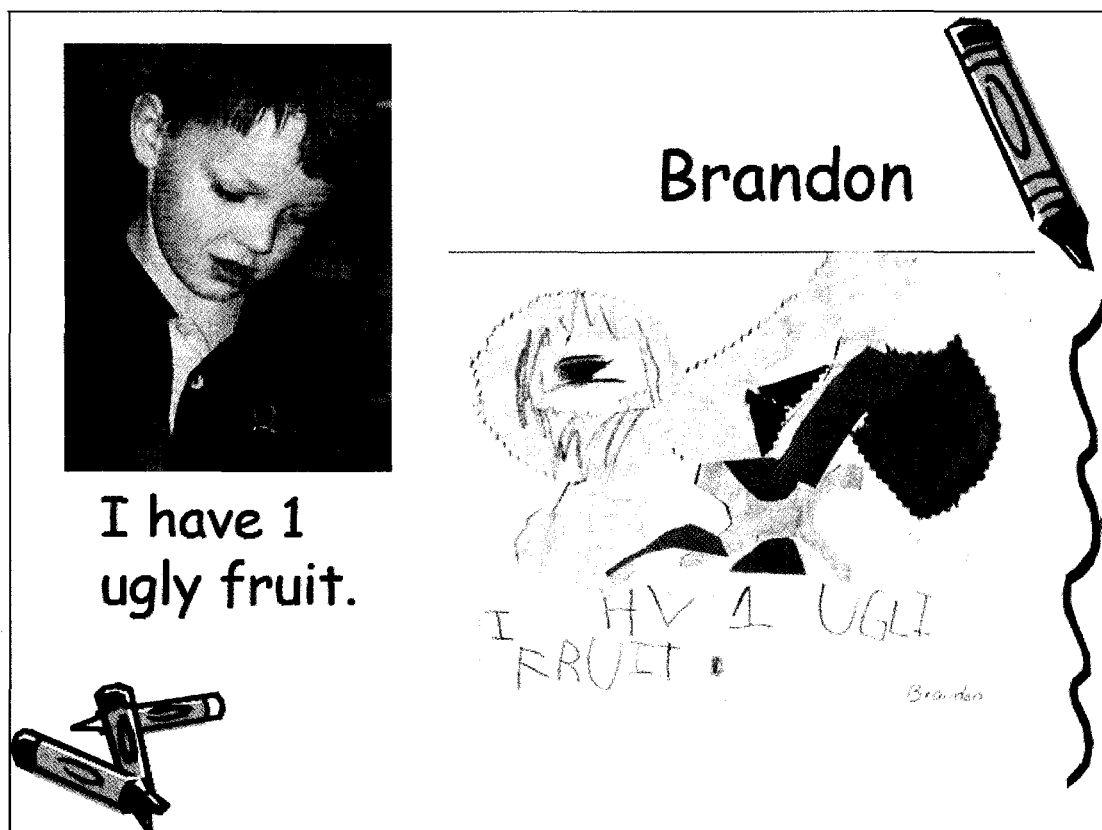
Figure 12. Example from digital big book.

As a class, we shared our digital big book together by setting up an overhead projector and connecting it to the computer. We dimmed the lights, and were able see that the big-book was then projected onto the wall of the classroom – it took up the size of the blackboard. I told them that this was "a new kind of big-book, one that they had never seen before". They were all silent as they waited for the show to start. I wrote a little introduction to their big book in the first few slides, (carefully integrating sounds and motion to get their attention). In this section, I explained how the kindergarten class had been learning about all kinds of salads by reading *Eating the Alphabet,* creating artwork, and scanning images into the computer in order to create a one-of-a-kind big book.

Once upon a time, there was a fantastic kindergarten filled with brilliant children who loved salads of all kinds...

00:03   1

The kindergarten children were learning about Canada's Food Guide, balance (eating a rainbow), nutrition, and how to make healthy choices!

00:06   2

They made a trip to the Superstore, and saw many kinds of vegetables, which is one of the things we put in salads!

3

One of the many books they read was: **Eating the Alphabet** by: Lois Ehlert

00:06   4

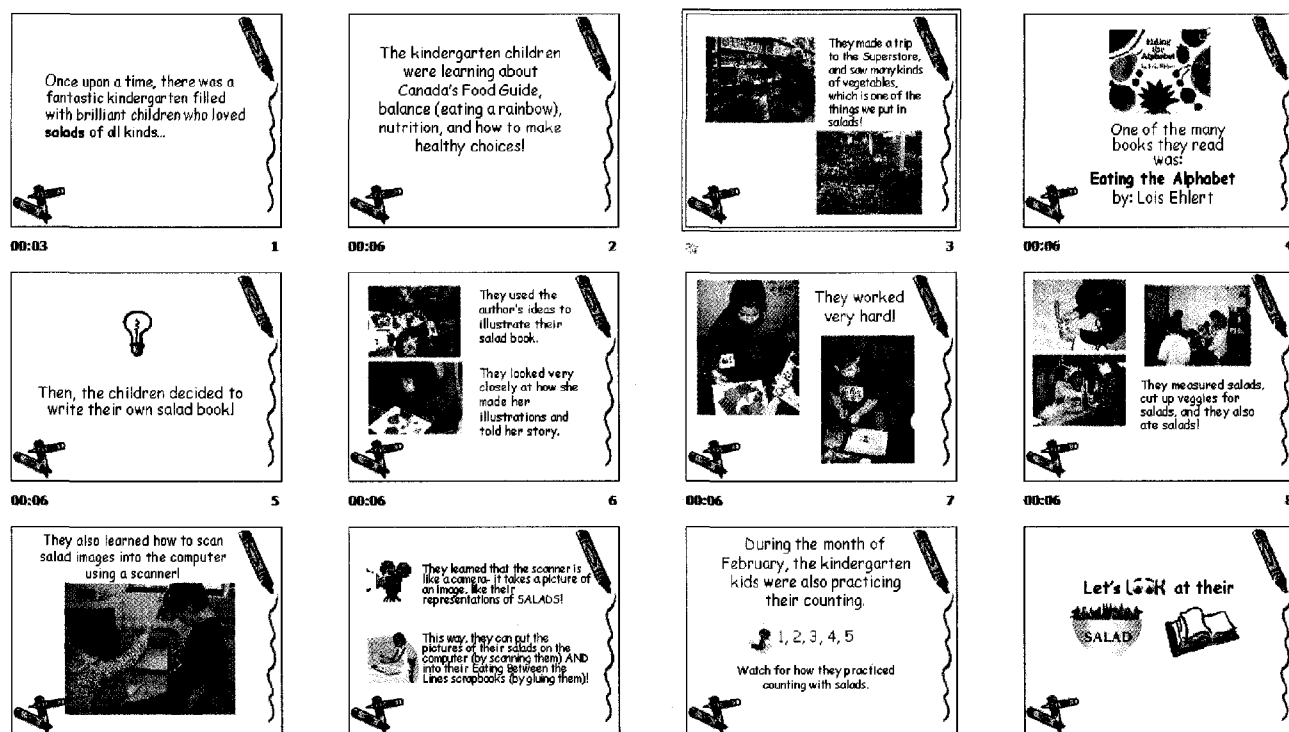Then, the children decided to write their own salad book!

00:06   5

They used the author's ideas to illustrate their salad book.

They looked very closely at how she made her illustrations and told her story.

00:06   6

They worked very hard!

00:06   7

They measured salads, cut up veggies for salads, and they also ate salads!

00:06   8

They also learned how to scan salad images into the computer using a scanner!

They learned that the scanner is like a camera- it takes a picture of an image, like their representations of SALADS!

This way, they can put the pictures of their salads on the computer (by scanning them) AND into their Eating Between the Lines scrapbooks (by gluing them)!

During the month of February, the kindergarten kids were also practicing their counting.

1, 2, 3, 4, 5

Watch for how they practiced counting with salads.

Let's Look at their SALAD

Figure 13. Introduction from the Shared Big Book Reading.

The children were captivated, listening intently and sitting up proudly as they

viewed what they had created and reflected on the long, step-by-step process (the entire

activity took three weeks in total). As a class, we played the slideshow and together,

read-aloud each student's sentence that s/he had written and typed, describing each of

their salads. Students were excited and very proud when they saw their photo of

themselves, their piece of artwork, and their typed sentences. They laughed and giggled

as they recognized new names of fruit and vegetables that they had learned, such as

"ugli fruit". Basic decoding and phonemic awareness were evident as they sounded out

the text aloud, some students leading and helping others along the way. They were soon

reading excitedly (and shouting out) the sentences they had written, over and over again.

Mid-way through the showing, students began to notice things about their collective

piece of work, and compared it to the original book (*Eating the Alphabet*) that had been

shared. They said, "Hey, look everyone: our book is just like the alphabet, it's in ABC order, just like *Eating the Alphabet*!" They also noticed other details; for example, they questioned why some photos of their peers were in color, while others were black and white. They also answered their own questions; one student explained "It's just like that. You can take a picture in black and white, or it can be in color".

Observations and Reflections of the Digitized Big Book

The salad art/technology activity provided students with an opportunity to participate in a variety of activities with a common goal: to create a shared piece of literature as a class, using art, literacy, math, and technology. Students also made some unique choices of what they would include in their salads, suggesting that they were learning about new foods, introducing new vocabulary into their repertoire, and beginning to apply them in a playful way to their lives. Many of these unique choices were foods that we had frequently presented to the children in the EBTL program, or on the trip to the grocery store. For example, "My salad has 2 eggplants" and "My salad has 1 hot pepper" (Students, February 18, 2007).

There was evidence that they understood the concept that salads vary in terms of a variety of foods such as fruit, pasta, egg, "I have a fruit salad". Also there was an enjoyment of this healthy food when students said "I like my salad", "I like lemons", and "I like lettuce" (Students, February 18, 2007). In the visual representation of salads students included a variety of colors, shapes, and sizes, thus demonstrating that they were applying their new knowledge of the concept of a salad.

In addition, in hand-written statements, students used invented spelling to describe many of the salads. This suggests that the children were engaged in the primary stages of decoding, phonics, and experimenting with oral language in general.
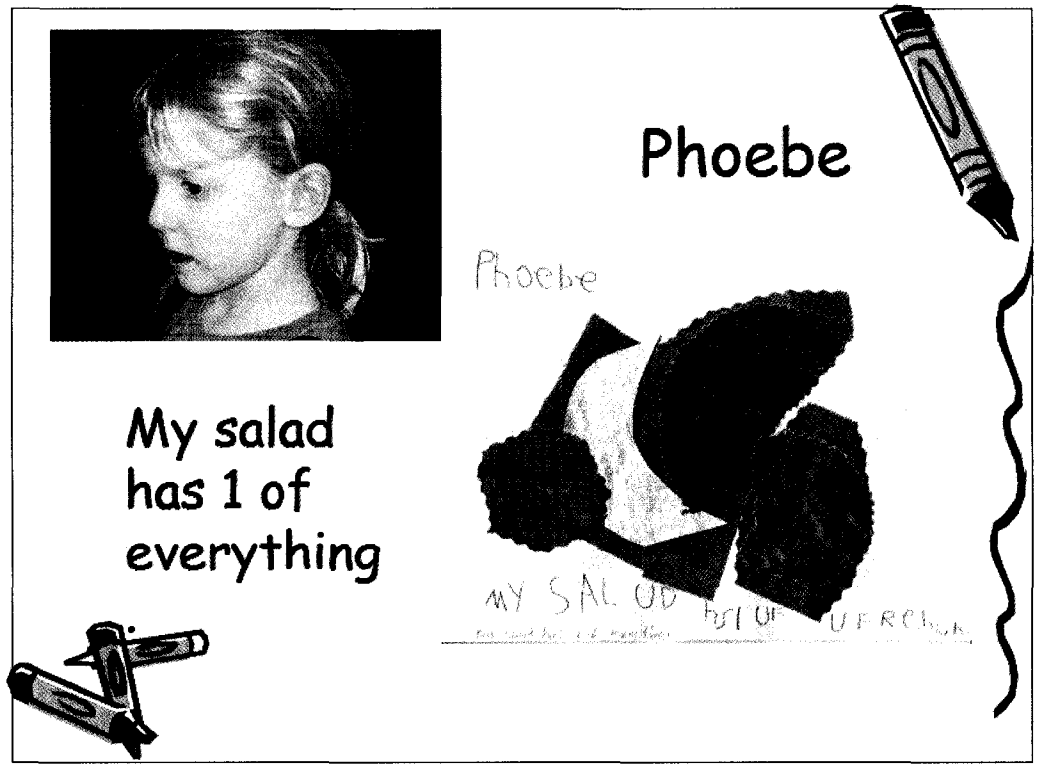

Figure 14. A Child's hand-written statement of a salad description.

In conclusion, the children started with art representation, added print text (captions) for the art, digitized that image, typed the caption into the scanned image, and published it as a slideshow of the pages in a Big Book. They also carried the authorship process through to the showing of the text with an audience, celebrating their piece of literature together as a class. In addition, a print version of the Big Book was published, bound, and added to the classroom library of literature for future reading.

The World Wide Web and Online Learning

The inspiration for this section of activities was two-fold. First, there is an assumption that, for children to participate socially, economically, and politically in the

current world, "they must acquire a certain level of comfort and competence in using computers", principally internet use (Sheilds & Behrman, 2000, p.5). In this case, there were several developmentally appropriate games that were available on the internet, which reinforced some of the healthy eating concepts that were being taught in the EBTL program. These internet games were intended to focus on the development and improvement of fine and gross motor abilities (use of mouse, hand-eye coordination, and so forth). In addition, this type of activity serves to encourage self-regulatory behaviours and approaches to tasks or problems (e.g. attention, motivation, curiosity, exploration, and persistence) by increasing the opportunity to apply knowledge about nutrition, moderation, balance, and maintain a general interest in the topic.

Second, there was a timely launch of a new Canada's Food Guide during the implementation of the EBTL program in February/ March of 2007. Along with this, Health Canada developed an interactive web tool designed to help people apply and personalize the information found in Canada's Food Guide. In addition to English or French the tool is available in the following languages: Arabic, Chinese (traditional or simplified), Farsi, Korean, Russian, Punjabi, Spanish, Tagalog, Tamil or Urdu, this makes it possible for any preschool community in Canada to use it (Health Canada, 2007a). This was integrated into the internet learning station in the final week of the EBTL program, during the Breakfast unit.

Process

Internet Games. There were three main internet sites from which children could choose during the EBTL program: (1) two games from the Nutrition Explorations website: *Feed the Monster* and *Breakfast Detective* (National Dairy Council, 2008). The

other two internet activities were: (2) *The Salad Factory* (Dole Food Company Inc., 2007), and (3) *Happy Healthy Songs* (PBS Kids Ready to Learn funded by the US Department of Education, 2007).

Monster Nutrition and *Breakfast Detective* were two games (of many) from United States National Dairy Council's website: www.nutritionexplorations.org. The goal of *Monster Nutrition* is to feed the monster a food from each food group in the food guide. Once sections of the food guide have been filled, the player moves onto another level. The player has to position the "catapult" in front of an assembly line of food (which is constantly moving), click once to choose the food, aim the catapult at the monster using the mouse, and click again to throw the food at the monster. The player can also choose to use the keyboard, using the arrow keys to position and the spacebar to throw the food.
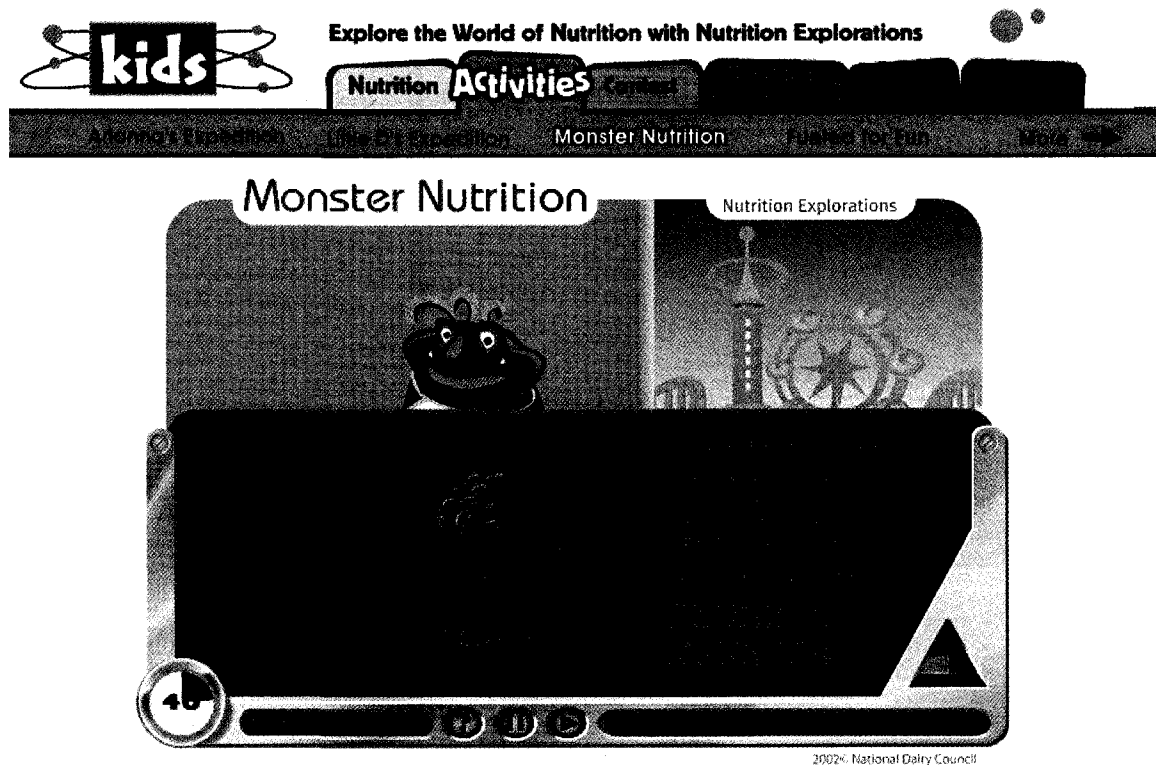
Figure 15. Screen shot of the game *Monster Nutrition.*

The game is full of color and lively excitement; the monster wears a bib (in case the player misses) and happily chews away when the food hits the target: its mouth! When it is busy eating his food, an x-ray version of its stomach shows up on the screen, showing the name of the food, which food group it belongs to, how many servings are needed daily, and why it is important to eat that food (Figure 15). The children responded well to this game; they enjoyed reading the messages that popped up as they moved through the activity. I found that it was best to have them experiment with this game on their own first, leaving it as a student-directed activity. I also found that it worked better if there was a facilitator available to help the children when they needed it. They seemed to be capable and enjoyed figuring out the logistics and rules of the game.
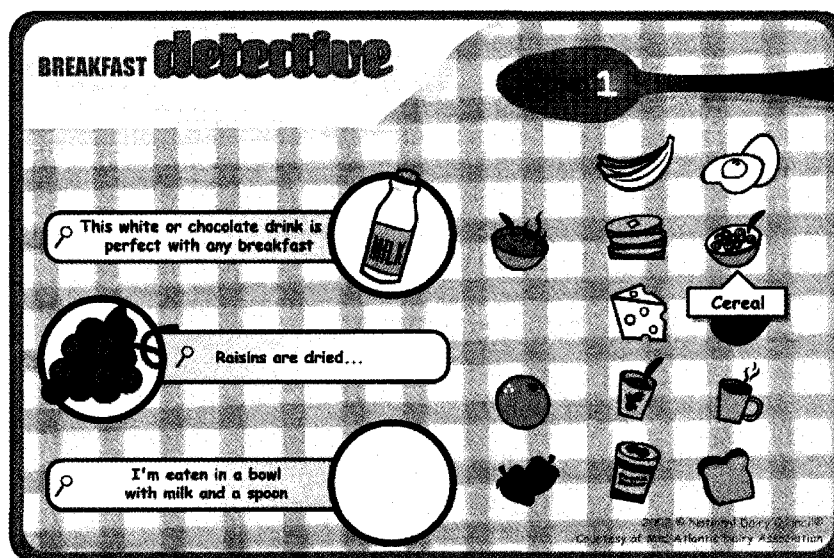
Figure 16. Screen shot of the game *Breakfast Detective*.

The Breakfast Detective game was an interactive drag and drop (matching) game

where players get a clue about a food and they have to match the food to the appropriate

clue. For example, students would read "this white or chocolate drink is perfect with any

breakfast" and CORRECT would appear when they dragged and dropped the image of

milk into the box (Figure 16). It was a fun way to encourage the reading and visual clues

with an internet site that was focused on nutrition and food, and safe for kids to use.
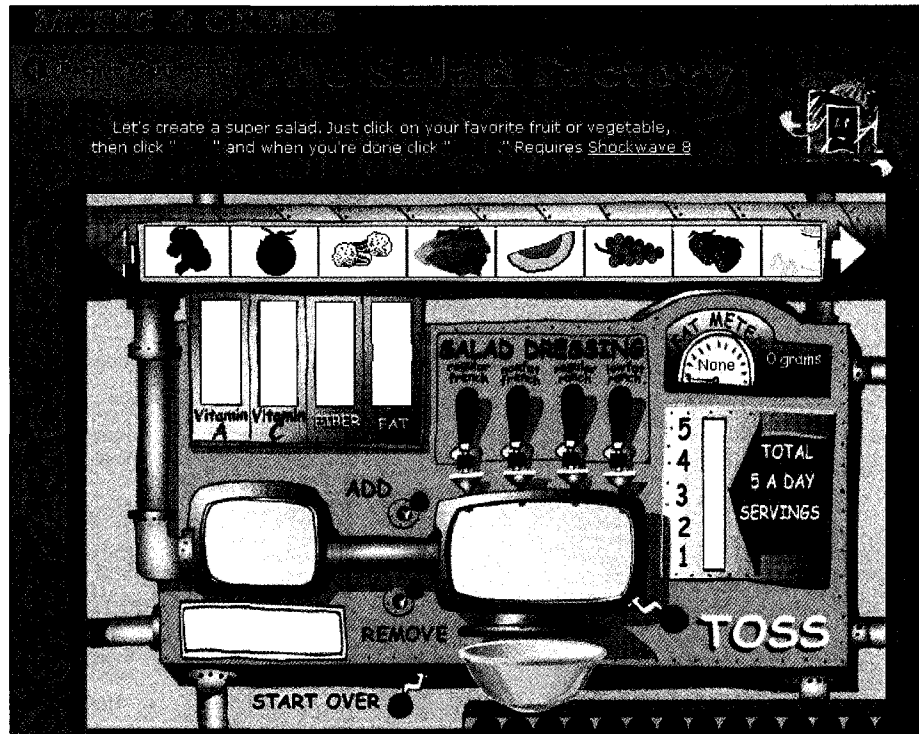
Figure 17. Screen shot of the game *The Salad Factory.*

The Salad Factory was a game from the Dole Food Company website:

www.dole5aday.com. The goal of the game was to create a "super salad" and the game

encourages the use of fruit or vegetables that are high in vitamin A, C, and fibre, and

salad dressings that are low in fat (the player gets more points with less fat). When

participants finish making a salad, a screen pops up congratulating them on their salad

or "super salad", and explains in detail each healthy property of the salad (e.g. apples are

high in vitamin c and fibre, and low in fat, or the salad dressing chosen was high in fat,

etc.).

Figure 18. Screen shot of *Happy Healthy Songs.*

Happy Healthy Songs (http://pbskids.org/sesame/songs/index.html) was a

listening activity where children could read and listen to songs about healthy eating,

sung by Sesame Street characters. For example, moderation was one of the key concepts

that were taught in the EBTL program, and children were encouraged to become

conscious about eating certain foods only "sometimes". On this site, the Cookie Monster

sings "Cookies are a Sometimes Food" and explains that even though cookies are

yummy, bananas, apples, oranges, and melons are "anytime" foods.

Another song on the site was, "I Eat the Colors of the Rainbow" and the children

enjoyed reading along, listening, and humming along with this catchy tune that playfully

talked about many of the same fruits, vegetables, and concepts that they were learning

about in the" Eating the Rainbow" unit of the EBTL program.

My Guide: Canada's Interactive Food Guides. Teaching the children in the EBTL program about Canada's Food Guide was an integral focus throughout the program; this activity seemed appropriate to culminate the technology component of the program. The first unit, *"Eating the Rainbow"* began teaching the children about the importance of identifying and eating foods from each food group, the awareness of a variety of foods in each group, balance and moderation, and physical activity each day. This particular activity allowed the children to explore the Health Canada's interactive food guide using the internet, to practice their computer skills, to work in pairs, and to make decisions about healthy eating and exercise based on what they learned.

When children chose the secondary computer station in the classroom during the final week of the EBTL program, they chose to complete the interactive food guide activity through Health Canada's website. The website was already selected for them, and they just had to follow the directions to complete it. An adult (myself, one of the researchers, or one of the ECEs) mediated and facilitated the activity, reading the instructions aloud with the children, discussing new words and ideas, and addressing questions along the way.

My Food Guide

As a boy aged 4 to 8 years old, this is how many Food Guide Servings you need from each food group every day.

Grain Products   5
                  4
                  2
                  1

Back   Next

Figure 19. Interactive food guide activity.

Children entered personal information, such as age and sex, and then were able

to see the total number of servings they needed from each of the food groups (Figure

19). They selected various items from the four food groups (Figure 20) and chose

different types of physical activities (from the list of choices given on the website),

creating their own customized food guide (PDF version), which they printed off and
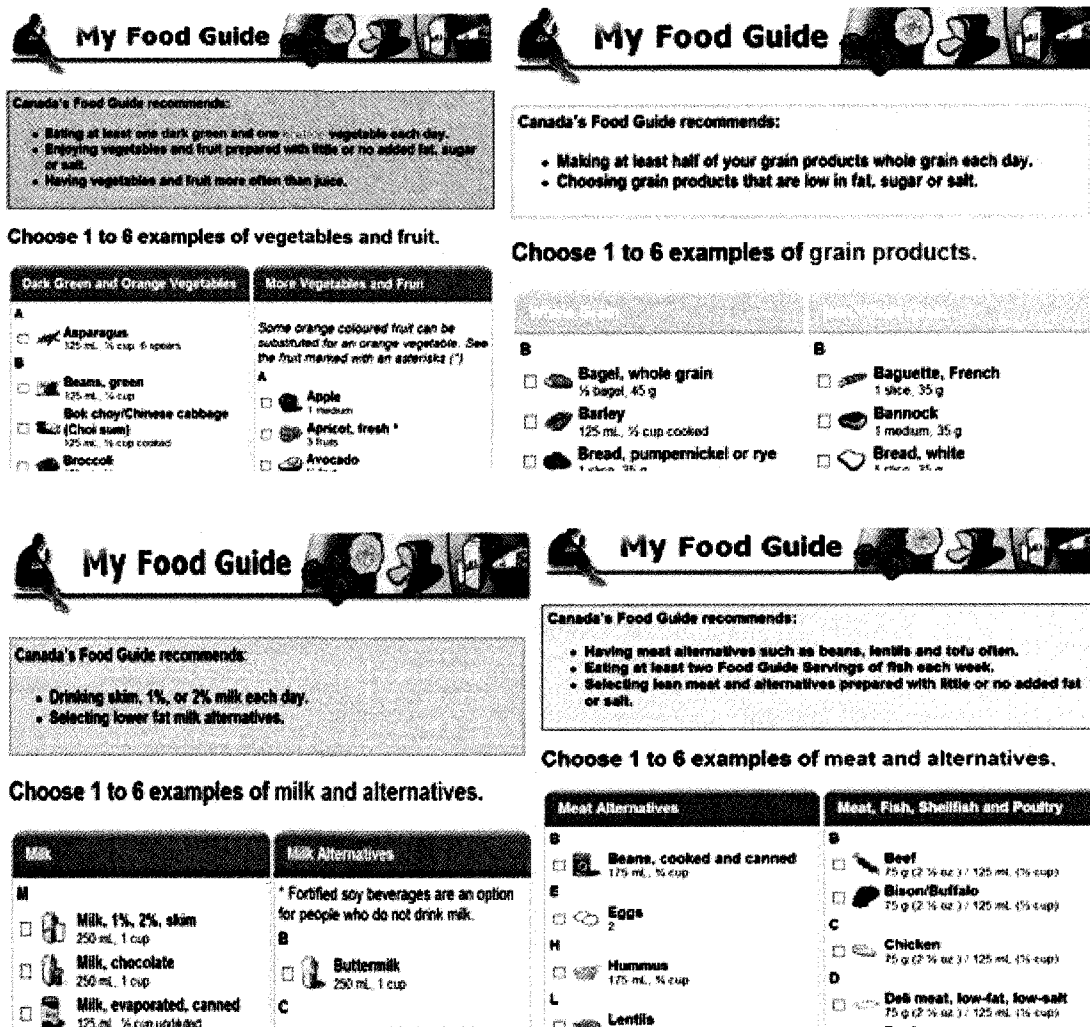
kept in their logs (Figure 21).

Figure 20. Interactive food guide activity.

Observations and Reflections of the Internet Activities

Children asked many questions during this activity about vocabulary,

specifically the food names they did not immediately recognize in the interactive web

tool. They queried bok choy, edamame, fiddleheads, and plantains from the Vegetables

and Fruit group; couscous and bannok from the Grain Products group; and hummus,

lentils, and bison from the Meat and Alternatives group. These questions provided a

platform for many other conversations about various geographical places in Canada, and

different cultures and the ways in which food is celebrated. Many of the students got to

know each other even more by informally sharing their own food traditions and practices. For example, one student did not eat meat, and was very excited to find beans, lentils, and hummus (items that she consumes frequently) in the Meat and Alternatives group, and thus was able to personalize her food guide. The children discussed with each other what types of bread they liked, and they recounted the trip to *The Superstore*. During the discussion they recognized many of the fruit and vegetables on the list such as mangos, avocado, kiwi, and zucchini. Students felt proud to have chosen their own foods on the food guide, and were happy to show their products off to their peers and ECEs.

Figure 21. "My Food Guide" personalized for a 4-8 year old girl.

Students also practiced reading aloud throughout this activity. They decoded aloud and asked for help when they did not recognize a word on the list of choices. They excitedly recognized basic foods such as apples and carrots and broccoli. The pictorial representations of the food choices paired with print made it easy for children of this age (in the emergent literacy stage) to interact with the web-based tool. The pictures also provided a visual cue for children, and even if they could not read the word, it gave them an opportunity to participate, using (visual) prior knowledge in order to speculate what the name of the food might have been.

Summary of Technology Activities in the Kindergarten

Children openly and actively embraced the integration of technology in the EBTL program. The "digital technologies" did not appear to inhibit learning and were not a distraction for children. They did not find it difficult to use such literacy tools, and it did not impede any learning that was happening. In fact, it enhanced the learning. Children engaged easily with these digital technologies, and learned new ways to use these tools in a social mediated learning environment.

Oral language was clearly being developed and enhanced through the technology activities; they were telling make-believe stories and invariably engaged using new vocabulary. They were reading, writing, and representing while using the technology. They were having a lot of fun learning a new "technique" in a safe environment (paint/ erase/ repeat). To a certain extent, this development process modeled emergent curriculum, in that the activities were guided by their interests and were developmentally appropriate (Wien & Stacey, 2000). The technology (computer, scanner, camera, and video) was a medium by which they could make new knowledge

meaningful through play. Literacy was being modeled as more than simply reading

books in the traditional print format. In this study, the children were reading and writing

digitally.

Children were also practicing cooperative learning. They were working together

taking turns, waiting patiently while the other person navigated the activity, and

coaching each other when required through various tasks. They were content to watch,

and talked patiently, telling stories all the while, whether they had control over the

mouse or not.

The concept of health was being formed and reinforced through these social

processes of using the computer in the kindergarten environment. They used many

forms of representation to develop their understanding of the four food groups; the

importance of balance and variety in their diets; the role of food in celebrations and in

everyday life; the diversity of foods (such as salads); and the importance of healthy

breakfasts.

Knowledge Transfer at Home – Section B

In addition to documenting the learning that occurred in the classroom and

exploring the hands-on approach in the kindergarten with the children, I was also

interested in whether the children were applying these new concepts in their home lives.

It was important for me to talk to parents in order to discuss this idea of the children's

application of new knowledge and to probe their perspectives on the healthy eating

literacy program.

Therefore, approximately 25 parents and guardians of the children who

participated in *Eating Between the Lines* were invited to take part in follow-up

questionnaires and interviews about the program, in order to address the second research aim of investigating how kindergarten children transfer their emerging literacies, knowledge of technology and healthy eating to their family/community life. I wanted to know: (1) What is the evidence that the knowledge exchange process took place? and (2) How were the kindergarten children who had participated in the program applying their emerging literacies, knowledge of technology, and new healthy eating knowledge in their personal family life?

Of the 25 parents* who were invited to participate (through a sign up sheet in the kindergarten), eight filled out a questionnaire and seven took part in a telephone interview. Parents were asked about what they remembered best about the program; to describe how their children continued to apply what they have learned about healthy eating or literacy in their daily lives; to discuss the program's impact on trips to the grocery store; and on computer use; to describe what they thought about educating preschoolers about healthy eating; and generally to share their thoughts, feelings, and any personal stories that they had. Questionnaire data was combined with interview data in the end due to the similar themes that emerged.

The subsequent analysis of the data was informed by interpretive phenomenological analysis (IPA). The four distinct parts of IPA are: focusing on the lived experience of participants; trying to make sense of the meanings of particular experiences to participants themselves (observing their children applying new concepts); involving a naturalistic, qualitative methodology; and emphasizing that this involves a process of interpretation by the researcher (Smith & Osborn, 2003). This method was

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* From now on, parents and guardians will be referred to as parents

used in the analysis because I was interested in learning about the lived experiences of parents by gaining an understanding of how their children were introducing and applying new concepts surrounding healthy eating and technology at home and in their family lives. Three defining features of data collection using interpretive phenomenological analysis are: using a purposive homogeneous sampling technique; using interview schedules that are flexible and semi structured; and transcribing interviews verbatim (Smith & Osborn, 2003).

This thematic analysis first involved a systematic search for themes which then led to forging connections between the themes (coding), and theme development. The general aim was to establish a set of master themes (Smith & Osborn, 2003). The data analysis was a complex process involving immersion, coding, and theme development (Smith & Osborn, 2003). A constant re-evaluation of the coding structure occurred as I worked through each of the transcripts.

As noted by Holloway and Valentine (2001), it is important to become immersed in the data through analysis before structuring the argument. The goal of this immersion is to maintain the individuality of the interviews while finding commonalities among them. The first time I read the transcripts, it was just to increase my familiarity with the data (the transcripts) prior to coding. No notes or coding took place at that time. In total, I read the interview transcripts three times: first, to obtain a general overview of the data; second, to identify key words, phrases, and themes from each interview, (first line by line, then paragraph by paragraph); and third, to further focus those key concepts into large codes, then finally key themes or general ideas.

Each transcript was analysed individually at first and then collectively. At the beginning, each transcript was read and coded independently of the others. This is unique to this type of thematic analysis. That is, the interviews are considered to be autonomous and hold merit in and of themselves without being connected to other transcripts (Smith & Osborn, 2003). This form of analysis does not start from a predetermined theory. At this initial stage, there were some underlying themes evident within the transcripts (for example, the ability and desire of children to use their new knowledge of the food groups to classify their meals at dinner time into appropriate food groups) but these were not physically noted until the second reading.

During the second reading of the transcripts, I made written records using open coding. Coding refers to the development of categories within the research data (Smith & Osborn, 2003). I used hand-written margin notes to highlight the points of the transcripts that appeared relevant in answering the research question(s). For each transcript, a table was created by highlighting the quotes that were representative of the respective transcript, and which were important to the research question(s). Each transcript yielded its own set of themes which were also recorded in this table. This document was a detailed description of the supporting quotes that corresponded with the themes in each transcript. From these tables, codes were developed and then master themes were easily identified. The individual themes that were identified from each transcript were combined to create these master themes. These themes are discussed in subsequent sections of this paper.

Interview Themes

Overall, parents were very pleased with the EBTL program and its unique use of

literacy and technology to teach children about healthy eating concepts. Parents made

comments like "I'm thrilled"; "I just really want to thank you" (Parent No. Six, May 24,

2007). "The program was amazing…absolutely amazing" (Parent No. Five, May 25,

2007). Parents had no hesitation and were very honest in recounting their stories of

conversations and dinner-table happenings with me during the one-on-one interviews.

From the interviews, the following four themes emerged: evidence of children's new

knowledge, knowledge transfer and exchange, home-school connections, and

suggestions for the future.

Evidence of Children's New Knowledge

Literacy. Across much of the interview data, there was one clear theme that

prevailed: that of the development and rich use of oral language and literacy, not only

within the EBTL program at Campus Kids, but, additionally, through the application of

new health awareness of the kindergarten children continuing in settings outside of

school. Children talked about new foods and the food groups, they asked questions in

the grocery store, they taught their peers and siblings about their new knowledge, and

they played with new words in discussions with their parents and grandparents.

Children were discussing their new nutrition knowledge, articulating their

decision making, and engaging in conversations about why it is important to eat healthy,

all the while experimenting with new vocabulary and reading and writing in innovative

ways. One parent told me that each time her child eats something healthy, he says "have

to eat to grow big and strong!" She recounted that,

...He has mentioned trying different kinds of fruits and the occasional vegetable. He drinks milk and says it's making his teeth strong...he's very aware of the fact that milk is good for him and he's drinking milk and he's drinking white milk and he wants to get big and strong" (Parent No. Five, May 25, 2007).

Another parent wrote,

...I think awareness is the key, both for children and parents. We still make the choices of what to feed our children and ourselves, but they should be informed choices. With respect to literacy – our schools teach children to read and write using themes. I think the food guide was an excellent theme for this age group – they understood what they were drawing, reading, writing, etc. and they were interested! (Parent Questionnaire, March, 2007).

These conversations between children and parents (and thus oral language acquisition, and concept/vocabulary development) are evident throughout the four themes.

Oral language and new vocabulary. Parents were surprised and pleased with use of new vocabulary. Many parents reacted with amazement, thinking "what did you just say?" when children were telling them that the food on their plates belonged to the "meat or alternatives group". One parents stated:

"...You know he'd never said 'grain' before...Even the word 'product' for that matter he'd never said 'product' before.

Researcher: He says it now and understands it?

Parent 1: I think so yeah (Parent No. One, May 22, 2007).

Two parents made comments about how the use of literacy from the EBTL program was affecting their child's reading, "She was doing a lot of little books...which

I didn't realize it was actually because of the program" (Parent Questionnaire, March, 2007). Another parent noted that her child's literacy was very strong and that she had noticed that she had begun reading cereal boxes with an increased interest. Another parent said,

> ...I have noticed that when we go to a grocery store or he's looking at a label or something he will say to me oh Mommy there's only 0% vitamin C in this", or "Oh look, Mommy, there so and so percent of vitamin C. This is a good food" (Parent No. Six, May 24, 2007).

The same parent commented that her child is increasingly interested in reading labels for the nutrients, and "Pleased with what he is eating", and overall she says that EBTL was "A very good experience for [child] because he's now more aware of the food he is putting into his body".

Application of new knowledge and negotiation with parents. Parents were seeing their children becoming more "aware of what they were putting into [their] bodies", and having a "Heightened sense about the foods [they] put into their bodies". One parent commented that her daughter "Is very aware, she knows exactly what healthy eating is now" (Parent No. Seven, May 28, 2007). One of the reasons this parent knew this was because her daughter would negotiate with her: "If I eat this orange...can I have this cookie?" and "Mom, I can eat popcorn for breakfast if I have an apple with it?". While this shows that children were gaining new knowledge and classifying foods, regrettably, it also is a clear example of what Satter (2007) terms "hurdling": children were agreeing to consume the healthy food in order to eat the less healthy food. This practice

has been shown to increase preference for the less healthy food and decrease preference for healthy choices (Satter, 2007).

Sometimes foods: the concept of moderation. There was a clear message that reportedly came home with many of the children. Numerous parents commented on the children's use of the phrase: *sometimes foods.* Even though the kindergarten facility was "junk food free", the children were learning that treats were "sometimes" foods in the EBTL program and thus practicing this in their life outside of school. One parent stated that "He's pointing out stuff that he's eating and "sometimes" foods. Now there's another phrase that he never used before and I think it gave him a better understanding that some food is junk food" (Parent No. One, May 22, 2007). Another parent thought that this was the biggest learning from the program: the concept of a "sometimes food". She said, "The biggest thing instilled upon them from my perspective anyway is they know what sometimes food is and they understand the importance that it is a sometimes food" (Parent No. Four, May 23, 2007). Another parent found it easier to have conversations with her son around healthy eating and explained it like this:

> ...I think you know, as far as trying to curb him eating you know too much junk
> or whatever that...he understood what a sometimes food was and you know
> because he had that knowledge of the food groups I was able to say to him you
> know, Ok at breakfast you should pick food from three of the food groups
> (Parent No. One, May 22, 2007).

The food guide. Parents observed children continuing to use the new nutrition knowledge with an ability to classify (and identify) food into the food groups, often at the dinner table. "He talks about the food groups at meal times when he's eating with his

brothers"; "at supper she is telling us what food group and what "color" each food group belongs to. She has taught her grandparents this as well". Another parent commented that "we have had more "food" discussion while we ate dinner" (Parent Questionnaire, March, 2007).

The grocery store. The grocery store was another key setting for the application of new knowledge. Parents offered the following comments, "In the grocery store, she is pointing out healthy foods and looking for items on the food guide" (Parent No. Three, May 18, 2007).

> ...Anytime we went to the grocery store...He pointed out groceries on the shelf, and telling me that's from this food group. He was straightening me out a couple of times at the grocery store too. He would ah say something and I'd say 'no' that's from such and such a group. 'No it's not. It's from the meat and meat alternatives group" [the child would say] (Parent No One, May 22, 2007).

Technology and the use of computers. Parents expressed interest and provided positive feedback on the ways in which information was taught to the children using technology and hands-on activities. Parents thought that, in general, children remembered and applied the information well. Parents found that the use of technology was positive in increasing motivation and enjoyment of learning. However, they voiced concern/ awareness surrounding the implications of increased lack of physical activity due to computer time. They alluded to the fact that computer use and technology is a way of life for their children and that they have the potential to be great tools for literacy.

...I think it should be something that every kid should know about...Within a

year, she will be plugging away better than I am. And definitely the technology

and the literacy really helps, because they are on there playing these little games,

and they are clicking on something, and image, and there might have an image

that is related to the word, and the word is still there. And they are going to

recognize it eventually, especially at a young age when they are talking about

sight words, and letter recognition (Parent No. Seven, May 28, 2007).

Another parent reported,

...My philosophy is computers are now are an excellent tool. I find people I

think have greater expectations of what the computer is going to give the child

but, like I mean, some people think the computer is going to teach them how to

read or teach them how to write it's just basically the taking the pen and paper

away and putting it in a digital format" (Parent No. Four, May 23, 2007).

Parents also voiced need for resources surrounding internet safety and literacy -

age-appropriate, 'good books' for kindergarten children.

Knowledge Transfer and Exchange

Teaching others. It was evident even before the data collection phase had ended,

that there was application of knowledge within the small community of kindergarten

children. Children were applying their knowledge by teaching others about healthy

eating (as seen above), at the grocery store, and in an increasingly global way. One

parent noted that, "children feel good when they can 'teach' the parents about eating

healthy; children take pride when they can teach the parent" (Parent Questionnaire,

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March, 2007). There was a real sense of pride in the children's new knowledge, they were teaching their siblings about the food groups at the grocery store and dinner table,

...You know he would be pointing stuff out and ah they'd kind of have a little conversation about it and he'd be saying stuff to his younger brother (who was three at the time he's now four) and you know I think he'd kind of like to show off a bit. When they are that age and they learn something they feel pretty proud of themselves (Parent No. One, May 22, 2007).

In addition, while at the dentist one day, I had a conversation with the hygienist. The following vignette was captured from my reflective journal:

I was at the dentist today and my hygienist asked me how I was, and what I was doing. So, I told her I was working on my Masters degree and what it involved (briefly) and that I was working with the Campus Kids Kindergarten children. She said "you are the ones working with the Campus Kids? On the healthy eating program? Well, let me tell you, we know all about it!" I asked her "which child is yours?"

She said,

...No, no, no, my child doesn't go to Campus Kids, but her little friend from swimming lessons does. And do I have a story for you: the other day we were at swimming lessons and after they swim they always have a snack. The girls were sitting in their snack circle and [child] who goes to Campus Kids was teaching them all about the food guide! She was sorting everyone's snacks into the appropriate food groups and telling the kids where their snack belonged! It was so cute, I was really impressed. What a great program – they need more like that,

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you know? Would that program ever come to my daughter's kindergarten? (Researcher's journal, February 5, 2007).

Trying new foods. Parents said that the program offered an environment and new knowledge and experiences that were not typically available at home. They found that their children were not only more open to trying new foods, but quite eager and informed by various new types of food. One parent commented that she found that "through that period of time, every time I introduced something new, it was more easily received" (Parent No. Four, May 23, 2007).

Other parents made comments like: "She did ask me to buy dates and cucumbers which she had tried at school and decided she liked" (Parent Questionnaire, March, 2007). "The only other thing she tried new was salad, which she had always refused to try up to now" and "She will now eat radishes and kiwi".
Children reported the activities surrounding the experience of trying new foods:

> She told us about the activities tasting different foods such as star fruit, avocado, banana 'circles', kiwi, pineapple, dates, coconut, coconut milk, nectarines, tangerines, etc. Most of these we had not previously tried. Since this activity, they are open to try different foods like pomegranate, for example (Parent Questionnaire, March, 2007).

In addition, children were making the connections between themes and activities: "My child was talking about the food guide and 'eating the rainbow' new foods: cranberries and coconut". Another parent reported that her son now "asks for coconut and pineapple" (Parent Questionnaire, March, 2007).

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Less pressure needed to eat well. Parents also reported that during and after the implementation of the program, that it was easier to reinforce and discuss positive food choices with their children, and less persuasion was needed when it came to their children making healthier food choices and eliminating or reducing junk food. Parents stated that because the children understood the concept of a sometimes food, the food groups, and why it was important to eat healthy that it was easier for them to discuss making healthy choices with their children. One parent reported, "He tells his brothers which food groups foods belong to. He is better aware of the reason for "sometimes foods" instead of his mother "being mean" and not giving him something he's asking for" (Parent No. One, May 22, 2007). Another said, "The argument sort of disappears with them because you know they realize that what 'sometimes' means now" (Parent No. Four, May 23, 2007). Another parent (No. One, May 22, 1007) elaborated:

> …He understood what a sometimes food was and you know because he had that knowledge of the food groups. I was able to say to him "you know ok at breakfast you should pick food from three of the food groups…say what would you like to have", and he might say you know, "cereal and milk and milk to drink"…So we kind of figure it out together that it was only two food groups, and I would say "what else would you like?" and you know he would try to pick something else so it was from a different group or whatever so… It just kind of made it easier for me to say you know you should instead of saying, "you should have a banana cereal and milk"…Understood what I was talking about…When I'd say "should be something from at least 3 food groups", he understood why he

should have cereal, milk and a banana or something you know…It's just… in my

opinion it made it much easier.

Parents theorized that:

> …It hits home a little more than having me natter at him and nag at him all the
> time I think it had more of an impact on him than me just... nattering at him here
> at home saying "No you shouldn't be eating that… it's junk food or whatever".
> But, to actually learn about it…I think he had more of an understanding than just
> the "no you can't have it because"…which makes it easier for me (No. One, May
> 22, 2007).

> *Variety.* Parents seemed to really appreciate that their children had increased

exposure to different types of foods and also the variety of these foods had an impact on

their eating,

> …Because I found that it gave her more experiences that what I am offering here
> like she ate fruit one day that was, you know, that we don't usually buy…you
> know something other than apples, oranges, and pears, peaches and watermelon.
> I think they had brought some food from groups from other countries (Parent No.
> Two, May 17, 2007).

> Another parent made a similar comment that they had just been at the grocery

store and her child was picking out all the "passion fruit ….the tropical stuff… all the

different fruit she didn't know about before" (Parent No. Three, May 18, 2007),

demonstrating that there was an interest and children were continuing to apply what they

had learned during EBTL.

Home – School Connections

Parents felt an impact from the EBTL program within their homes. They reported that messages were not only being transferred into their family home life, in fact, it had a positive effect on their own awareness of eating healthy. According to the parents interviewed, the children were not only teaching siblings and peers about what they were learning, but they were also teaching their parents and grandparents too.

The desire to be a good role model for their child was also articulated by parents: "You know it made [him] eat better... my husband...Yes , yes, he was definitely made more aware of what he should be eating... He was being a better role model because of the program" (Parent No. Five, May 25, 2007). A few of the parents guiltily confessed that they did not "practice what they preached". One parent said, "For me it's sort of like second nature. I don't always practice what I preach, I sometimes, you know, I don't always eat the food. I eat the *sometimes food* more than sometimes!" (Parent No. Six, May 24, 2007). This guilty feeling, and the parent's efforts to eat better, reflects a wish to model positive behaviours to their children, and that they felt the concept of healthy eating was worth the investment.

Parents expressed a concern that they had been unaware of the details of EBTL until the day of the celebration and showing of the children's work "I wasn't fully aware of the extent of the program as it was happening. It was more the final presentation there I realized you know really what all was going on" (Parent No. Four, May 23, 2007); they wanted more information exchange between school and home; and there was a desire for increased communication in their efforts to reinforce concepts and attitudes. Parents really wanted to know what was being taught so "Then it would prompt us to

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start the discussion because they are great to talk about it..." (Parent No. Four, May 23, 2007). Parents wanted to strengthen and reiterate the learning at home, they sought after a partnership in the learning process.

Implications for the Future

Timing. Many parents reinforced "the earlier, the better" regarding education about healthy eating with preschoolers.

> ...Children absorb so much information. What a terrific time to educate them about healthy eating. They take things literally and have so much enthusiasm. When they hear information from someone other than their parents, it may mean a little more to them, instead of just their parents nagging them. I think it's a great idea to offer this program. Especially when the obesity factor is on the rise and lifestyles are becoming more hectic, yet less active (Parent Questionnaire, March, 2007).

Another parent reiterates the importance of timing,

> ...I think this is perfect time... because they're old enough to understand um that their bodies need nutrition. And they're young enough that they don't have as many bad habits as maybe teenagers would with respect to eating that they're very open...and I find in all facets with this age They're so open to positive ideas and if you're going to convince them of something it's now because then they'll carry that with them (Parent Questionnaire, March, 2007).

Long term: Less intervention. Parents expressed a desire for longer and continual programming in the system (K-12) surrounding health information (less intervention-like). Parents said things such as,

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...It was excellent and I almost wish it could be like you know almost a year

long thing... because it made a difference in my opinion for him and his

understanding of what to eat. Not that he you know does a great job every day

but like I said it sometimes I think if it was continued on a longer basis then

instead of just a you know a six week stint or whatever that he might even carry

on with eating (Parent No. One, May 22, 2007).

Parent voiced that they would "love to see something like that even in the school

system" and one said, "I would so hope it would be in grade 1 and 2 and 3 and you

know something all up the line because it.... Oh the crap they're eating at schools..."

(Parent No. Five, May 25, 2007).

The EBTL model. Parents found the ways in which information was taught were

effective and children were remembering the information well (hands on, including the

technology component). They liked that their children were being taught in meaningful

ways:

I think it's really great – experiential learning is extremely effective and

necessary... To tie that into reading makes learning reading more fun too. I think

it's good. I really enjoyed the presentation [referring to the celebration] you guys

did and I think that I think it's really great that that you know you're

experimenting with things and trying to teach in different ways (Parent

Questionnaires, February, 2007).

Another parent elucidated,

...I'm thrilled.... I'm thrilled because [my child], I mean I try to tell him this is

good you know, this is good... there are fruits and they are very good for you

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and it's important to have a balanced meal because you get big and strong but I think for him to see the... to be involved in interactive activities ...to really understand what is ... what the reason behind why it's important... And I think because he's having fun as he was learning that what he was learning was more deeply ingrained ... into his mind because he remembers in very positive experience that he has positive memories. It's been a very positive experience for [child] (Parent No. Six, May 24, 2007).

Summary

Parents were very supportive of the program and were very eager to become more involved in the experience of learning about healthy eating with their children. They voiced clearly that they expected homework to come home with the children and that is how they would broach topics of healthy foods and nutrition in an easy way. Parents were very supportive of the EBTL program and they articulated that they had observed many different facets of children transferring and applying new knowledge. They also voiced the desire to be more involved, and this will form part of the recommendations that emerge from this study.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Eating Between the Lines: A Healthy Eating Literacy Program for Preschool Children and their Families (EBTL) was a large two-year research project using children's emerging literacy to build preschoolers' nutritional health information and help them become informed decision makers. It included a sample of 25 children ages four to six (and their parents/guardians), who attend Campus Kids Kindergarten, located at the University of Prince Edward Island, in Charlottetown, Prince Edward Island. The goals of the EBTL research project were to develop a unique literacy and healthy eating program for preschool/ kindergarten children and their families, and enhance understanding of the effectiveness of such a program on the key outcomes of 1) vocabulary development (word recognition and word meaning); 2) writing and representing skills; 3) oral language skills; and 4) basic nutrition knowledge.

The project engaged two university researchers and several early childhood educators (ECEs) in developing a unique program which included many rich tools and resources (including technology) for teachers, parents, and the community. The program included literacy activities such as reading about nutrition (e.g. eating the alphabet), grocery shopping, writing, playing in the sandbox, taking photographs of fruit, taste testing, and numerous digital technology activities (the focus of this thesis) in its approach. All the while, children learned basic concepts like word recognition, balanced nutrition, the concept of food groups, salads, eating a good breakfast, moderation, and the reasons why it is important to eat healthy. Focus was placed on cultivating an exciting literacy learning environment through various means, and, specifically, through technological integration.

Based on the premise of literacy as a social practice, and that active learning is most effective in early childhood education, the goal of my research was to include technology as an integral component of the meaningful literacy practice (within the EBTL program) and to examine how preschoolers use technology as a literacy tool in the process of learning about health and nutrition. Specific research inquiries included:

- What is the role of technology in the healthy eating literacy preschool program?

- Which technologies support literacy learning at the preschool level?

- How do these technologies support the learning which occurs?

- How did technology influence children's understanding, motivation, or literacy skills while they were learning?

- How can a program like this (using technology) support the acquisition of health literacy knowledge for young children?

While there is very little research which examines the use of technology as a literacy practice with children under the age of eight years of age (Leu, 2000), and none that explores the use of technology in nutrition, my research connected both of these areas and added dimension and new insights in the overall EBTL Program.

Overview

The purpose of this study was twofold: (1) to examine the role of technology within the context of the EBTL (healthy eating literacy) program for preschoolers and (2) to investigate how children used and applied new nutrition information in their home lives. A series of technology-based activities were embedded within the development of the EBTL program where children gained experience and new knowledge using slideshows, internet programs, scanners, drawing, and word processing programs.

Interviews with parents probed what evidence existed to demonstrate that knowledge exchange was taking place, and parents described how they observed the transfer of new knowledge from kindergarten context to the home environment. In this chapter, the two components of this research will be discussed with implications and recommendations for practice, limitations of the research, reflections as the researcher, and possibilities for future research.

Technological Literacy in the EBTL Program

In this component of the research, document analysis along with audio recordings of time in the field, field notes and observations were used as sources of data. Twenty-five children enrolled at Campus Kids Kindergarten, aged 4-5 participated in the EBTL program and thus engaged with technology through the two learning stations which mirrored an emergent curriculum model.

The National Centre for Family Literacy developed broad outcomes for preschool children (Nelson, Duverge, Gary, & Price, 2003); the activities chosen for this research were based on some of these outcomes, including making developmental progress in cognitive and language, social and emotional, physical and motor areas. Areas specifically targeted included:

- Increasing language and literacy abilities

- Increasing self esteem and initiative

- Develop/ improve fine and gross motor abilities (use of mouse, hand-eye coordination, etc).

- Improve/ increase self-regulatory behaviours and approaches to tasks or problems (i.e. attention, motivation, curiosity, exploration, and persistence)

- Increase knowledge about nutrition, moderation, balance, and general interest

  and commitment to learning and school (p.16).

Pedagogical Framework

A pedagogical framework guided the curriculum of technology practices. First, the

physical considerations of setting up the computer station were taken into consideration

as important to ensuring children's success and safety with the computer (Nelson,

Duverge, Gary, & Price, 2003; Van Scooter & Boss, 2002). Second, the technology

activities that were introduced to the children were presented as learning stations in their

regular rotation and were student directed. Students could choose to go to the computer

at their own discretion. The computer stations were set up to accommodate two students

at a time, encouraging children to work in pairs so they could take turns and support

each other (Van Scooter & Boss), benefiting from an atmosphere that encourages

cooperation and problem solving (Murphy & Thuente, 1995). Third, the teaching

strategies used required the student to take an active role in their learning. There were

specific 'emerging literacy' activities presented for students involving decision making

and exploration of new concepts and ideas surrounding healthy eating, and technology,

and the teacher (I) was more of a facilitator or a guide in the activity as opposed to

explicit instruction model (or direct teaching). Fourth, the focus was on the student's

active literacy learning, not on the actual instruction of the technologies being used in

the EBTL program, which is an important key to successful technology integration (Van

Scooter & Boss). The technology was used merely to give children the opportunity to

use the literacy tools provided in order to learn about healthy eating and nutrition

concepts in a naturalistic environment. The learning was not about the technology, but

about healthy eating and nutrition, and this was fostered through a variety of literacy practices in which children applied what they learned in the EBTL program – in school and at home.

The Role of Technology

The role of technology in the EBTL program was guided by specific outcomes and a pedagogical framework; technology was seamlessly integrated into the developmentally appropriate curriculum at the kindergarten. Its primary role was not about teaching children how to use the computer (which happened inadvertently) but to facilitate learning about healthy eating through mediated learning activities grounded in a play-based, emergent curriculum philosophy, and fostering active engagement using a literacy focus. Children created a collage that represented their favourite salad, then scanned that representation into the computer and wrote about their salad. They included digitized photographs and worked cooperatively to create a slideshow of the class Big Book. It was through the EBTL program that children became excited about the new knowledge that they held, and were learning how to apply it in ways that they embraced joyfully. They created shared literacy experiences and taught others in their families what they had learned about healthy eating and nutrition with enthusiasm.

Technologies that Support Children's Learning in Preschool

In this study, it was evident that there were a variety of technologies that could support learning about healthy eating and nutrition. Van Scooter & Boss (2002) suggest six guidelines in order to ensure technology is being used as an effective literacy tool: (1) integrate technology into the classroom activities, (2) let students use technology regularly, for everyday tasks, (3) encourage students to work together, (4) make a

variety of tools available for student use, (5) do not teach technology skills in isolation, and (6) use technology to support active learning. These six guidelines were used in the design of the EBTL program and in the technology focus developed in my research. Technology activities were set up as learning stations (just like other literacy activities such as a listening learning station or math learning station). Students were encouraged to use the technology on a regular basis, whether it was to integrate it into classroom life, for example, the shared reading of the class Big Book on an overhead projector, or a group writing activity in which students wrote a group email home to their parents. Additionally, students worked together in pairs, and had a choice from a variety of technology activities (internet activities, Adventure Books, Salad scanning) which all with a common goal – to learn and apply knowledge surrounding the EBTL theme. Healthy eating was the "topic of study" (p.32) and used to practice skills and learn by doing. The experiential learning (such as the simulation of feeding internet monsters healthy food) enhanced the understanding in this diverse preschool classroom setting.

The technology activities that supported learning about healthy eating included the children using literacy skills (vocabulary, oral language), art (representation) and computer in three main ways:

1. To create a painted adventure embedded in the *Eating the Rainbow* unit, EBTL

2. To create a shared Power Point big book, embedded in the *Salads* unit, EBTL

3. To use the internet exploring activities and games, and to use Health Canada's 'build your own food guide' website.

How Technologies Supported Children's Learning in EBTL

Early research by Labbo et. al. (1995) explored the computer's potential as an 'informal tool' to promote literacy development in kindergarten-aged children. More than a decade later, results from my research support the notion that the computer can promote and enhance literacy in kindergarten-aged children. It further suggests that it cannot be viewed as an incidental or informal tool. In this study, technologies supported children's learning by providing meaningful and interactive tasks for young users, based on the guidelines and outcomes listed above. This research suggests that providing a computer environment that (1) ensures physical ease and safety, (2) is integrated into the everyday kindergarten literacy curriculum, (3) encourages paired, cooperative learning, and (4) has a topic focus (such as healthy eating) which facilitated high levels of engagement and learning, through mediated technology activities which allowed them to apply new concepts and knowledge.

For example, during the 'pilot' phase of technology activities (week 1 of EBTL), I noticed that children responded and actively engaged with the computer when there was an ECE in close proximity to them, sitting close behind or beside them at the learning station. If they were engaged in an internet activity, then this did not require as much facilitation after an initial familiarization with the game or activity. However, during the additional two learning stations (Adventure Books and Salad Big Book), the learning was enriched when an ECE or researcher was sitting behind the two students, actively engaging with them, coaching, and mediating the activity, all the while providing basic instruction on the logistics or technical aspects of the computer (see results section, p.81-83 for description of scanning).

In addition, the findings from this research study support the importance of mediated literacy activities using the technology as a tool, in the same way one would use a pencil or a blackboard in the acquisition and application of new knowledge.

How Technology Influenced Children's Learning in EBTL

There is some evidence to suggest that learners with limited prior knowledge of a topic tend to learn better with multimedia than conventional material, as do learners that identified as 'visual' or 'auditory' in learning styles (Kamil et al, 2000, p.775). In addition, there are isolated studies that suggest that young children with learning difficulties with writing can also benefit from the use of technology (Kamil et al.) and that computer play encourages longer, more complex speech and the development of fluency (Davidson & Wright, 1994). Other research suggests that animations, such as those on a computer screen with interactive games are superior for building mental models and comprehending stories (Kamil, 2000, p.776). In this study, children appeared enthralled with many of the activities that were provided for them to choose from. Technology influenced their learning by encouraging active learning, time on task, motivation, and cooperative learning. It also provided them with unique ways to participate in social literacy activities.

One particular child, John[2] was experiencing challenges in writing and seemed to have difficulty with attention and focus. He seemed to engage actively and enjoyed kinesthetic activities and experiential learning. The computer served as a way to build up his confidence (the computer print outs were his "best work" from his perspective) and supported his learning. Typing in letters took much less time than it did for him to write them, and he was very proud of his work. Research corroborates this, in that

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[2] Name has been changed to respect confidentiality

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students tend to produce better quality writing when they use word processing rather than pen and paper (Kamil, Intrator, & Kim, 2000). John also benefited, from cooperative learning: being at the computer was a way for him to work with a 'buddy' in a non-threatening social context, and I found him to be more willing to share his work with me if it was completed on the computer.

Beginning or emergent readers also use illustrations to make meaning from books before they engage in print (Parkes, 2000), often narrating what they are doing as they draw pictures or move objects and characters around on the screen (Bredekamp & Rosegrant, 1994. The *Adventure Books* provided this type of setting. Students who were at the very beginning stages of literacy participated in a meaningful social literacy activity where they could fully engage and make meaning of the information on *Eating the Rainbow* unit through the creation of fairytales and narrating their "adventures" for publishing (Bredekamp & Rosegrant, 1994; Carrington & Luke, 1997; Gee, 1990; Luke, 2004; Muspratt, et al., 1997; Neuman & Dickinson, 2001). Technology provided a medium through with students could engage in reading, writing, dialogue, representation, oral language and vocabulary development in order to create exciting "adventures" from the rich depths of creative young minds.

Motivation. Digital tools provide children with instant gratification and satisfaction when learning through the use of internet games or activities. In fact, Lankshear & Knobel (2003) have documented the effects of computers in increasing motivation, interest, and enjoyment of school work, involvement in tasks and time on task in literacy acquisition and practice as well as in other areas of the curriculum.

Throughout EBTL, students were consistently and actively engaged in learning

opportunities that included the computer as a tool, building on previous knowledge

(Vygotsky's theory of cognitive development) through a socially mediated process

involving scaffolding (Berk 1999; Bruner, 1986). For example, during the Big Book

activity, the children started with art representation, added print text (captions) for the

art, digitized that image, typed the caption into the scanned image, and had it published

as a slideshow. They also carried the authorship process through to the showing of the

text with an audience, celebrating their piece of literature together as a class. Despite not

knowing what their end product would look like, there was an excitement and

motivation surrounding the class project that included everyone and required the use and

exploration of technology as an important tool in this very meaningful literacy

experience. Each child made sure to complete each of the required steps of the activity

(from art to scanning) and many of the children asked frequently when our "special Big

Book" would be ready. Students invested in and were engaged in the activities and thus

time on task was supported.

Cooperative Learning for Literacy. Research supports the notion that during this

stage of early emergent literacy, preschool children (ages 3-5) are very interested and

have a natural curiosity about technology, letters, words, print, and oral language in their

social worlds (Barbuto, et. al., 2003; Bray & Lovely, 2002; Cooper et al., 2003; Heath,

1983; Piaget, 1965; Purcell-Gates, 2001, 1996, 1985; Yaden, et al., 2001). When that

natural curiosity is combined with opportunities to work and play with their peers,

children's learning is richer and more meaningful and is further reinforced by the social

world around them. It was obvious in this study that the technology-based activities

were influencing the children's cooperative learning skills as students worked in pairs, small groups and as a whole class. Lankshear and Knobel's (2003) review discusses the tentative possibility of having children use computers to foster "high levels of interaction and collaboration", especially within writing activities (Kamil et al., 2000, p.780). They specifically mention the role computers play in "facilitating complex language use" (p.780) and how children became involved in considerable talk surrounding their writing. The research reported here is a clear example of these principles, as children were working in pairs cooperatively, developing and telling stories orally while creating artful representations of their *Rainbow Adventures* and *Salads*. Additionally, throughout the use of internet games such as *Monster Nutrition* and *Breakfast Detective,* they practiced their new knowledge of nutritious foods as they excitedly proclaimed: "He's got a lot of vegetables there! Ohhh and what are those? Why they're meat! Yes, we need the meat". This demonstrates that they were indeed using nutrition vocabulary and concepts which were being presented and applied through the use of technology. The children were excited to discuss things with each other when they were sitting in front of the computer; they tried out new words and played with vocabulary such as "alternatives" and "rutabaga" while they were engaged in technology tasks, demonstrating that oral language and vocabulary development were being facilitated and nurtured through these meaningful activities.

In summary, technology provided an effective way for children to become excited and motivated about healthy eating and new vocabulary, as they engaged with the technological literacy activities in the EBTL program. They were not inhibited by the technology. It enhanced their learning and helped bring the *literacy as a social*

practice perspective alive in the kindergarten environment by enabling them to develop literacy skills in conjunction with a growing awareness and understanding of health in their lives. New ways of "thinking, acting, talking, and interacting" (Gee, 2001, p.31) were focused on meaning-making in order to critically evaluate and think about the world in the context of healthy eating, in the kindergarten and within the home.

<div align="center">Knowledge Transfer from Kindergarten to Home</div>

The second major thrust of the research was to address the following key question: How do kindergarten children transfer their emerging knowledge of technology and healthy eating to their family/community life?

- *What is the evidence that the knowledge exchange process took place?*

- *How do families report the transfer of new knowledge from kindergarten context to the home environment?*

To explore these questions, self-administered questionnaires and semi-structured telephone interviews were used as the principal source of data. The questionnaire consisted of six descriptive, open-ended questions and two close-ended (checklist) questions which prompted parents to describe what their child had applied in their life at home, and also invited their feedback on the EBTL program. The interview questions further probed about how and what information their children were sharing about the EBTL program at home. Seven parents responded to the questionnaires; eleven additional parents volunteered to participate in the follow-up interviews. In the end, seven parents (out of the original eleven) participated in the telephone interview. The parents who participated in the interviews were not necessarily the same parents who participated in the original questionnaire, as there were different sign-up sheets in the

kindergarten for each. Themes are derived from the questionnaire and interview data combined.

Findings reveal that kindergarten children transfer their emerging knowledge of healthy eating concepts to their family life in a number of ways: (1) through oral language and storytelling, (2) through practical everyday social activities such as dinner time and shopping at the grocery store, and (3) through 'teaching' others in the family and community (i.e. peers and siblings).

Evidence that the knowledge exchange exists

Parents reported evidence showing that knowledge exchange actively happened between home and school. Children were having very "grown up" discussions with their parents. For example, in the grocery store they were pointing out healthy foods and explaining to parents which food group they belonged to. At home, at the dinner table, there were similar discussions, and in the community the children were also teaching these new concepts to their siblings and peers (e.g. the 'swimming lesson' vignette). Children were learning through a variety of literacy activities in kindergarten and transferring their nutrition knowledge and skills to the informal home environment; thus concrete acquisition of knowledge was happening within the social context (Gee, 2000, 1996).

Children were, in fact, exhibiting an emergent sense of health literacy: obtaining, processing, and understanding basic health information (about the food guide and nutrition/ label information) in order to make appropriate health decisions, in this case, in a basic sense, about healthy eating (CPHA, 2007; Holt, 2005; Centre for Literacy, 2006). This demonstrated how children indeed have the ability to make health-related

decisions at a very early age as soon as they begin choosing foods they would like to eat and activities in which they want to participate. One parent made this clear by explaining:

> ...he's always asking questions about...are there a lot of calories in this? he's more checking for the nutrients, 'there's no vitamin A in this Mom', 'there is no vitamin C in this' ... so the next time he looks for something if there is more a vitamin A or more vitamin C in it then he's more interested in [it]" (Parent No. One, May 22, 2007).

By fostering this sense of health literacy (learning and applying health knowledge in order to make decisions) in an emergent home/kindergarten literacy environment at an early age, the EBTL program provided children with the knowledge that is required to make informed decisions about their present health, thus preparing them to continue to do so in the future, as dietary behaviours in childhood are construed to track into adulthood (Berenson & Pickoff, 1995; Kelder, et al., 1994; Thomas et al., 2003).

How families observed knowledge transfer

Parents observed knowledge transfer in a variety of ways: through family literacy practices (storytelling), through social practices (dinner time and the grocery store), and through informal teaching (peers and siblings). In addition, there were several parents who alluded to how they had an increased awareness about being a role model for healthy eating behaviours and how they tended to "nag" their children less about what they ate.

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Family Literacy Practices. Families were experiencing and observing the transfer of new knowledge from the kindergarten context to the home environment through informal and very rich dialogue. Children were showing off their new knowledge about nutrition and exhibiting a level of comprehension that was promising. Children were discussing their new nutrition knowledge, articulating their decision making, and engaging in conversations about why it is important to eat healthy, all the while experimenting with new vocabulary and reading and writing in innovative ways. Children were engaging in informal discussions at the dinner table and at the grocery store about healthy foods and Canada's Food Guide, reinforcing the notion that family influences (and thus this type of knowledge exchange) with children are paramount to successful learning (Willms, 2002).

Research also shows not only nutrition being influenced in a community and social context (Davison & Birch, 2001), but also literacy evolving in the context of the family (Purcell Gates, 2000). Oral language, cultural stories, and informal learning happens when children and parents engage in meaningful social exchanges (Gee, 1996, 2001; Heath, 1983; Shapiro, et al., 2002; Street, 1984) and it is through these conversations that parents observed their children's new nutrition knowledge growing and being applied to their lives. Parents were the audience for many of the new words (vocabulary) and concepts that the children were playing with. For example, one parent reported, "Oh, I thought it was great [referring to the use of literacy]. Like it was just so cute to hear him saying meat and meat alternatives" (Parent No. One, May 22, 2007).

Social Activities. Research has also shown that children will model the behavior of other children in social settings, such as schools and day care centers (Lytle et al., 2002).

The same was found in this study with children also exhibiting an understanding of new concepts and using them in practical, everyday occurrences. A good example is when the little girl taught her fellow swim-mates about the food groups during snack time after swimming lessons, showing that the outreach of EBTL went beyond the kindergarten into a community setting.

Additionally, the children participated in a field trip to a local grocery store in the larger EBTL context, and as a result they were even more interested in what their parents were purchasing. In fact, they were instructing their parents on which foods were nutritious and which category they fit into in Canada's Food Guide. This is encouraging since research shows that children and youth play an increasingly significant role in deciding which foods are actually purchased and consumed (Borzekowski & Robinson, 2001; De Bourdeaudhuij & van Oost, 1998).

Teaching Others. In addition, research suggests that siblings play an important role within the familial literacy context, often acting as literacy teachers (Gee, 1996; Gregory, 2001). Interestingly, in this study they acted as nutrition educators, teaching their siblings (and peers, see previous example given on page 130) which foods belong to each "color of the rainbow" in the food guide, and that it was important for them to drink milk in order to "grow big and strong". In addition, children were taking turns teaching each other; in fact, one parent mentioned how her child was teaching his younger, four year old brother about the food guide. Gregory highlights that siblings often do act as what Padmore (1994) calls "guiding light" contributing to each other's social, cognitive, and emotional development (Azmita & Hesser, 1993; Gregory, 2005).

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Serendipitous Findings ~ Additional Knowledge Exchange and Application

As a result of the knowledge exchange that parents were experiencing with their children, there were additional serendipitous findings that emerged through the parent interviews. In addition to the sibling teaching (knowledge transfer), children were teaching their parents as well, and, as a result, the parents' views of their own eating practices were also affected. Furthermore, parents reported that they "nagged less" in order to get children to eat healthy foods, and children were more apt to try new foods during the EBTL program where they were being exposed to a variety of foods that were not usually available at home.

Parents as role models. Parent's inherent desire to become better nutritional role models for their children was clear from the interviews, and reflected in a feeling of guilt from some parents. Research supports the notion that it is important for parents to role model positive health behaviours for their children, including healthy eating and regular physical activity (Davidson & Birch, 2001) and these parents felt the need to improve their own modeling of healthy eating.

Less nagging. Family meals are viewed as an ideal opportunity for communication within the family and are the key means by which food-related aspects of culture are communicated to children (Taylor et al, 2005). In this case, it was not only parents communicating key information, but children were reciprocating as well. Children were engaged in consistent and prolonged discussions (well after the program culminated at the kindergarten) at the dinner table, talking about the food groups with their families consistently, suggesting that the EBTL program effects extend beyond the children involved in the program and that its effects are sustained, at least in the short

term. EBTL is also distinctive in its approach to building on the assets (positive reinforcement) of the social context of learning and family instead of blaming parents or didactic teaching (Timmons & McBain, 2007). As a result, parents experienced a perceived benefit resulting in less need for them to "nag" at children in order to eat well. The real accomplishment was the evidence that the children were engaged and had moved forward with new nutrition knowledge that was meaningful to them. They felt that it was easier to reinforce and discuss positive food choices with their children and less "nagging" was needed when it came to their children making healthier food choices and eliminating or reducing "junk" food. This was especially noticeable throughout the duration of the EBTL program.

Parents reported that children made healthier food choices on their own and ate fewer "sometimes" foods. One parent said, "the argument sort of disappears with them because you know they realize that what 'sometimes' means now". In fact, this was one of the most mentioned phrases by parents as the "biggest learning" from the program: "sometimes foods" taught the importance of limiting foods high in sugar and fat and low in nutrients. This concept is also referred to as "moderation", a key concept in nutrition education, and in Canada's Food Guide (Health Canada, 2007b).

Variety and trying new foods. Children do not tend to try the foods their parents dislike, and, as Eertmans, Baeyens, and Van den Bergh (2001) found, there is a strong association between parent-child food preferences. Parents control the availability and accessibility of food and tend to not bring home the foods they dislike themselves, limiting their children's exposure to, and availability of, the disliked food. However, parents in this study felt that EBTL provided increased exposure to and availability of a

variety of new foods that they did not usually have at home. Not only did the EBTL program provide new foods, but Campus Kids Kindergarten cultivated a safe environment where children could choose to try new foods in a unique and safe environment. In addition, many of the children were trying new foods in the kindergarten setting, which was pressure-free and filled with many choices. Parents reported that their children were more open to trying new foods at home as well. Children were asking to try new fruits and vegetables, which is promising, given that most PEI school children do not consume the recommended number of servings from Canada's Food Guide, especially for "Vegetables & Fruits" and "Milk & Alternatives" (Evers, Taylor, Manske, Midgett, 2001). Furthermore, children are less likely to be overweight or obese if they consume fruits and vegetables five or more times a day (Statistics Canada, 2005).

Parents felt that their children's exposure to different types of foods in the EBTL program, had an impact on their eating at home and choices at the grocery store: children were asking for tropical fruit and naming the countries from which they originated. This increased exposure and associated awareness of food varieties available suggests the potential for the development of healthful dietary patterns in young children, and reinforces the notion that preschool children are ideal for health prevention strategies (Nahikian-Nelms, 1997; Sellers, Russo, Baker & Dennison, 2005; Taras, 2005).

In summary, the findings reveal that kindergarten children were not only transferring their emerging knowledge of healthy eating concepts to their family life in terms of oral language, social activities and through teaching others, but that the EBTL

program was, in fact, a unique new way of developing health literacy through socially constructed practice in the kindergarten's literacy-rich environment. Young children were learning how to make decisions concerning their health (through nutrition), they were acting as informed partners in applying this new knowledge, and setting the stage for success for their future.

Suggestions for Practice

Suggestion 1: The role of technology in EBTL needs to be increased and enhanced in the transfer of knowledge from school to home. The interviews with parents revealed that children did not use the computer at home very much and parents reported two views or reasons for this: (1) parents assume that more computer equals less physical activity for their child, and (2) parents are fearful about their own technological skills and unsure about how it can enhance their child's literacy learning.

Marsh (2005) and Springhall (1998) say that these fears are nothing new, with parents saying, "I am trying to limit his computer time or TV time because he really is addicted to it. I try to get him more active". Another parent stated,

> I don't have internet at home and I know I'm frightened to death of when she gets on the computer and does more than me. I'm not going to have a clue where she's been or what's she doing... I'm freaked out a little bit about that, but I figure I will learn when she learns (Parent No. Five, May 25, 2007).

These fears reveal that parents need to be supported in their desire to do what is right for their children and shown that the role of technology at home can be positive. This points out the importance of Hall and Higgins' (2002) view of technology equipment for early childhood education in the same light as books, pencils, worksheets,

Lego, jigsaws, junk modeling, role play, and circle time, and that it is "the way in which they are used which is meaningful" (p.301).

In fact, research suggests that there is an association or relationship between computer use and slightly better academic performance, and that computers can have a positive impact on children's social and emotional, physical well-being and motor, language, cognitive, and general knowledge development (Haughland, 1998, 2000 cited in Murphy, et al., 2003; North West Regional Educational Library, 2001; Shade, 1996; Subrahmanyam, Kraut, Greenfield, & Gross, 2000; VanScooter, et al., 2001).

Suggestion 2: There needs to be a parent resource created to support the learning at home. This may include a brief explanation and outline of the EBTL program, its goals and outcomes, and key concepts that are explored. In addition to a project launch and celebration (sharing) with parents, they would have a resource to take home and refer to throughout the duration of the EBTL program. This recommendation is based on a request from parents to have:

> …just half a sheet or half page itinerary of what you plan to do with them that day. Like, notices are always great to come home to the parents, the kids may forget to tell you about it, but the notices are posted by their jackets when they go pick them up so you always get that. And then it would prompt us [parents] to start the discussion (Parent No. Five, May 25, 2007).

In addition, some of the principles and activities in the EBTL Program could be adapted to an online environment and parents and children could reinforce the nutrition knowledge acquired at kindergarten on their computer at home.

Suggestion 3: Increased professional development and support are required for the ECEs to effectively implement the EBTL program given that this model of technology integration is not just an 'incidental' happening in the curriculum, but part of the daily routines and learning stations. Teachers have typically not grown up with technology (Turbill, 2001) and as a result, need time for planning effective integration of technology in regular classroom activities. This was evident from my reflective journal entries, where I made a note in week three of EBTL,

> [ECE] noted today that she does not feel comfortable with the technology stuff, she asked me if I would spend some time 'teaching' her how to use the Power Point, Paint, scanner, and how to save and copy images. She asked "where I learned how to do this stuff". She is reluctant to act as the 'mediator' at the computer learning station until she has a little better knowledge of these things. It seems as though she doesn't think that she can help if she doesn't know how. It is clear to me that we need to support ECEs if they are going to use this again (Researchers Journal, February 27, 2007).

Teacher training is essential for computers to be an effective, integrated teaching tool (Haughland, 2000). Research also supports that even when educators have been involved in professional development in the use of a computer, "they need time to use the computer in the daily ebb and flow of classroom life" (Turbill, 2001, p.273). Time is really the key for teachers; they need time to learn about the tools themselves before teaching and using the computer as a regular teaching tool in a seamlessly integrated fashion.

Research has also shown that if the professional development that educators are receiving does not have immediate application to the classroom, many find it difficult to sustain the level of commitment needed to implement new practices (Travers, 1999; Turbill, 1994). The professional development must be relevant to their everyday practice, and doable.

Mediated Facilitation of Technology and Literacy Practices

Furthermore, in order for ECEs to effectively integrate technology and computer use within an emergent curriculum, there is a need for more than one computer to be available to students, and the ECEs need to continue mediating the activities. Research suggests that in order for "the computer to play a far more active role in fundamentally shaping orientations to learning, content, and tasks" (Labbo & Reinking, 1999, p.483), it is ideal to have five or six computers (with an ECE facilitating). This way, more than two children at a time are engaged in regular use of technology within the literacy curriculum, and it is further reinforced that the computer can be used as a way to facilitate active learning and increased interest. An ECE from Turbill's (2001) study illustrates this by explaining: "one computer in a classroom is better than none, I know, but it is about as useful as one container with three pencils when I have 27 children in the room", implying that the teacher's focus will rest with the majority of the students who are not using the computer.

Considerations

Socio-economic Status (SES)

In qualitative research, specifically involving interviewing, there may be a situation where information provided by a participant does not fit into any common

theme with the other participants but may be very important to the particular interviewee. In this study, one parent raised a legitimate concern about implementing this type of program in another facility where families and parents are from lower socioeconomic status or education:

> ...I think it was a fabulous program to have. Now I think if you were to bring this program of kids whose parents who didn't have a whole lot of education and then the kids are bringing home this knowledge and expecting their parents to provide this particular type of food that they are not familiar with ... that could cause tension...because the child is saying I need three food groups, I need more fruits and vegetables or eeew yuk ...this stuff's not good for you...it may come across to the parents that um... those people educating my kids ...they're telling them what I'm doing is wrong as a parent... like the parents could be upset or feel like they are being challenged or insulted or um... told they are not doing a good job raising their kids (Parent No. Five, May 25, 2007).

This comment was fair, and the literature reflects that there are direct links between SES, education, and subsequently parenting. The impact of socio-economic status on learning is evident for many populations; high rates of adult unemployment and single parenthood mean that more than four in 10 children are growing up in poverty, in combination with poor nutrition and health, and often inadequate housing (CCL, 2007, p.7).

Socio-economic status (SES) also has a direct impact on higher levels of achievement and is correlated with higher levels of depression of parents, which heighten dysfunction, increase hostile parenting, and diminish children's learning

environment at home (Raphael, 2004). Since SES needs to be respectfully considered and EBTL could benefit from increased involvement with the parents, a potential partnership could include an introductory or basic nutrition education with families (parents, children, and so forth). In addition, suggestions could be provided so that families can eat healthily even if they cannot have access to the fresh fruits and vegetables promoted within EBTL. Parents may tend to feel more involved and included in the learning and thus be increasingly invested, reducing the risk that they would feel insulted.

In addition, there was an observed higher level of SES at Campus Kids Kindergarten. This could be viewed as a limitation of this study, and it must be taken into account when considering the success of the EBTL program, as it may influence the impact of the program in another setting.

Hurdling

In addition, one parent mentioned that their child exhibited the formation of a "barter system" or what nutrition expert Satter (2007) refers to as *hurdling* ("if I eat this orange, can I have this cookie"), which was a result of a heightened awareness about healthy foods. Parents are not recommended to encourage this in child feeding practices since it has been found to increase children's preference for the food they are bartering for (cookie) and decrease preference for the healthy food (orange). So, regrettably, while children were indeed gaining new knowledge about nutritious foods, it is important to provide education to parents so that they avoid this practice.

Reflections

Any research project invariably leaves the researcher with questions about the focus, the process, data analysis and the implications of the findings. Often there are interesting "findings", the researcher did not set out to find, leading to new questions that emerge from this "residual" data. This was much the same for me as I came away more enlightened about the research questions I had targeted for this study, but left with new questions for further research and new insights into myself as a researcher.

Methodological Appraisal

What I would do similarly. I would use a similar protocol for observation because I believe it is useful to think about your thinking, and also about your role as observer prior to entering the field, which can potentially enhance the richness of the field notes. I would also conduct multiple observations (and in multiple ways, salience hierarchy and comprehensively) because I think that this enabled me to reflect more, and extract important information from both types of field notes.

I would also use a similar approach if I was conducting PAR in another study as well. The prolonged observation and participation in the day-to-day activities of the kindergarten culture was extremely important to the richness and extensiveness of the data that I collected. I was able to collect varied and multiple sources of data, thus making the study rigorous. I became part of the culture in the kindergarten and a contributing member of the instructional team. The extent of time in the kindergarten also allowed me to forge trusting relationships with the children, the ECEs, the director, and even the cook!

What I would do differently. I know that the intent for this research was to produce "distinctive resource for preserving experience close to the moment of occurrence, and, hence, for deepening reflection upon and understanding of those experiences" (Emerson et al., 1995, p.13) and I believe I have engaged in an experience that has enabled me to connect with the literature surrounding qualitative methodology and as a result have experienced a deeper, concrete experience of how difficult it is do be a good interviewer and also a reflexive researcher. I have also gleaned an increased understanding of how information exchange surrounding literacy and learning, in this case about nutrition, can impact the family. I feel much gratitude to parents for sharing their child's experience in the *Eating Between the Lines Program*, highlighting how they applied their new knowledge at home and in their community. They took time out of their very busy schedules and welcomed my intrusion of their evenings to talk with me about their children's learning through the EBTL program at Campus Kids. I had experienced interviewing in the past, but furthered my understanding of this deceptively difficult (Hermanowicz, 2002) and patient technique. I learned to listen more, not only in research, but also in life. What I would do differently next time, is conduct some of the interviews face-to-face, and others on the telephone, as I would be interested to compare the transcripts and the information gleaned from them. In hindsight, this is what I originally had planned for this study, but due to the nature of the busy lives of the participants, they requested to have the interviews take place over the telephone. In addition, I would practice the interviews on a colleague or friend in order to test out the questions, prior to conducting the interviews.

Personal Reflection

During my first practicum teaching grade three, I remember posting Canada's Food Guide (CFG) on the blackboard, level with students' eyes. Several children gathered around me and asked what this poster was about. I told them that it was a poster that explains the healthy foods that we should eat to grow big and strong. At lunchtime and recess, I started asking children informally, about the foods that they were eating. I realized that many of the foods (chips, candy, and chocolate) were not on the food guide, so I asked children to show me where their snacks belonged on the foods guide. Some would walk up to the blackboard where the CFG poster was taped, figure it out, and inform me that it belonged in the "vegetables and fruits" or "milk and alternatives" or whatever food group it happened to be classified in. A few students looked puzzled when their junk food snacks were not even on the food guide. I soon noticed in coming weeks that these students began to arrive with different snacks for recess and lunch. One student's mother even reported to me that "this was the first time [her daughter] had ever asked her for green peppers... it was the first time she ever expressed an interest in healthier snacks". It was then I realized I was passionate about providing young children with core knowledge and understanding about healthy eating. I knew the PEI Healthy Eating Alliance was working on improving children's eating habits, because they were the ones who had dropped off the box of food guides to our school. Soon after, researchers Drs. Taylor and Doiron from UPEI were forming a research project using literacy to teach children about healthy eating in a preschool setting. I wanted to be a part of it.

Throughout this research project, I have attempted to remain conscious, aware, and grateful for the experience that it has afforded me in professional and personal realms. First, I thoroughly enjoyed "data collection" at the kindergarten. From my very first day, I was aware that the children were the first and foremost focus and reason for this research study. The entire reason I wanted to conduct this research was because I wanted to be a part of a team that was devoted to improving the health of children and enrich their literacy experiences in order to foster a love of learning that would hopefully follow them for years to come.

The Director of the kindergarten was wonderfully informative on a day-to-day basis and our informal talks at lunchtime were invaluable to my experience and professional development at the kindergarten level. As in the primary grades (my previous area of experience), the children were so full of life and wonder, and are very competent young people. I am amazed at the rich learning experiences that children experience at Campus Kids Kindergarten. The kindergarten has its own cook for healthy meals on site, as well as state-of-the-art facilities to house teaching and learning. The Campus Kids facility is a wonderful leader in our province where kindergarten is not part of the formal school system yet, and they show the endless possibilities for rich learning. I have learned so much about yet another component of education through the use of action research in a qualitative study. I learned that it was building relationships with children and their parents that were most important in this process. I also learned the importance of design and conducting rigorous research in order to affect change at local and policy levels.

Refection on Pedagogy

The ECEs were very open to my ideas for technology learning stations and I felt like a valued part of their team. They often came to me looking for information and I frequently consulted with them in various stages of my lesson planning. It was an authentic exchange and sharing of professional resources and time, and long-lasting relationships were built with all of the staff at Campus Kids.

Throughout the EBTL implementation – the data collection phase of this research, I also became very interested in the emergent curriculum model. Wien (2006) describes accurately many of the thoughts I had during the research and observation/ participation phases, including self-questioning as an integral part of practicing emergent curriculum. She explains the "challenged teacher" (who likes the idea of emergent curriculum but is unable to fully visualize how it might play out in her classroom) and the "novice" (who begins to document but still does not see the connections yet). Like Turbill (2001), I was enjoying this process at the beginning but I often felt through the "pilot" phase that I was finding out little about my research questions or how I was going to answer them.

I can identify with each of these phases throughout the lesson planning, data collection, and the final celebration week of the EBTL program. Additionally, Wien explains the third and fourth stages as the "practicing teacher" (who has learned how to dialogue with children and parents, hypothesizes, and constantly assesses the environment and children's reactions to the learning), and the "master teacher" who carefully documents, reflects, works collaboratively, and prepares the learning

environment, anticipating children's requirements. I can only hope to become a "master teacher" one day.

<div align="center">Future Research</div>

An EBTL @ Home Program

Successful nutrition interventions in children have been characterized by a tailored approach (Baranowski, et al., 2002; Perry, et al., 1998) and a high degree of parental involvement (Manios, et al., 2002; Summerbell, et al., 2005). Given the positive feedback from the parents regarding the EBTL program, and their desire to become more involved in the reinforcement of the ideas and concepts, it is clear that there needs to be a "parent /home component" developed through research, and evaluated within the future EBTL program.

As described in the Results, parents voiced the notion that they thought they could have helped reinforced the learning more if they had known more about it during the program. With increased communication or with tools to use at home, it would prompt parents "to start the discussion cause the [children] are great to talk about it" (Parent No. Four, May, 23, 2007). With any type of family learning model (in addition to a resource), supports need to be developed by evidence-informed models in the literature and based on the needs voiced by parents, and it also has to be evaluated by parents. Children gain their early literacy experiences and prepare themselves to be lifelong learners as a result of familial influences, thus families have a special role to play in early learning (Willms, 2002), which needs to be incorporated into future research and evaluation of the EBTL program. After all, encouraging positive attitudes toward reading at home have been shown to have a significant impact on children's

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literacy learning (Morrow & Paratore, 1993; Neuman & Gallagher, 1994), so why can't this model be used to encourage healthy eating with young children as well?

Additionally, the EBTL @ Home component needs to reflect the needs of parents, and it also has to be socio-culturally sensitive and relevant. For example, the new Canada's Food Guide can be used as an appropriate resource, and can be easily used to inform parents and adapted for use by parents from different ethnic backgrounds and varying levels of SES (Health Canada, 2007a).

Parents should be engaged as partners in the process, and SES needs to be taken into account for the program to be meaningful to all Canadian families. Because of its very nature, an EBTL @ Home research component will also uniquely contribute to the growing research body in the area of knowledge transfer and exchange.

The School System

The health curriculum is being gradually revised in Prince Edward Island and includes a nutrition component. Grade 1-3 curriculum has been recently introduced; curriculum for grades 4-6 will not be introduced until 2009. There is nothing in the school system quite like EBTL, which utilizes a more intensive integrated approach to nutrition education. The Canadian Council on Learning (2007) positions schools as wonderful places for activity and play, and that they provide an optimal opportunity for modeling healthy eating and exercise, which was further supported by parents desires that this type of healthy eating integration would continue for longer, so it is less "intervention-like":

It [EBTL] was excellent and I almost wish it could be like you know almost a year long thing because it made a difference (in my opinion) for him and his

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understanding of what to eat. I think if it was continued on a longer basis then instead of just a six week stint that he might even carry on with eating better... for a longer period of time. I'd love to see something like that even in the school system (Parent No. One, May 22, 2007).

District level healthy eating policies have been adopted by all elementary schools in the province (PEI Healthy Eating Alliance, 2008) , but are less likely to have a positive impact on children's eating habits without effective nutrition curriculum. Another parent voiced hopes that EBTL "... would be in grade 1 and 2 and 3 and something all up the line because... Oh the crap they're eating at schools..." (No. Five, May 25, 2007) . Expanding this model of teaching children about healthy eating to the formal school system is another possibility for consideration future research and development.

Concluding Statement

There has been an 'under-realization' of the potential of new technologies to orient children toward literacy futures that will be very different from the past (Lankshear & Knobel, 2003, p.77). This study contributes to the research literature in order to promote the realization that literacy and technology can exist together in a social context with very young children. In addition, both can be used in a healthy eating emergent curriculum in order to make learning meaningful and improve the future health of our children.

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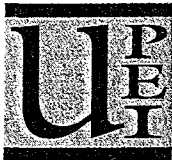
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Appendix A

Ethics

550 University Avenue
Charlottetown
Prince Edward Island
Canada C1A 4P3

March 1, 2007

To: Ms. Alaina Roach O'Keefe

Dear Ms. Alaina Roach O'Keefe ,

*Re: "Eating between the lines: An early literacy healthy eating program
for children and their families."*

The above mentioned research proposal has now been reviewed under the
expedited review track by the UPEI Research Ethics Board. I am pleased
to inform you that the proposal has received ethics approval.

The approval for the study as presented is valid for one year. It may be
extended following completion of the Annual Renewal and Amendment
Form. Any proposed changes to the study must also be submitted on the
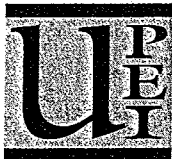same form to the UPEI Research Ethics Board for approval.

Sincerely,

Malcolm Murray, BA, MA, Ph.D.
Associate Professor of Philosophy
Chair, UPEI Research Ethics Board

cc: Dr. Katherine Schultz, Vice President, Research & Development,
UPEI

Dr. Jennifer P Taylor, Family & Nutritional Sciences

UNIVERSITY of
PRINCE EDWARD ISLAND

550 University Avenue
Charlottetown
Prince Edward Island
Canada C1A 4P3

University of Prince Edward Island
Research Ethics Board
Certificate Of Approval

Title of Proposal :   **Eating between the lines: An early literacy healthy eating program for children and their families.**

Protocol Number :   **1002057**

Name of Investigator: **Ms. Alaina Roach O'Keefe**

Date Submitted :   **15 January 2007**

Effective Date :   **1 March 2007**

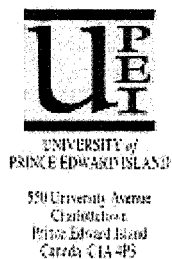End Date :   **1 March 2008**

Signature : _____ Date : Mr. 1/07

Chair, Research Ethics Board

cc: Dr. Katherine Schultz, Vice President, Research & Development, UPEI

Dr. Jennifer P Taylor, Family & Nutritional Sciences

March 1, 2007

To: Ms. Alaina Roach O'Keefe

Dear Ms. Alaina Roach O'Keefe ,

Re: *"Eating between the lines: An early literacy healthy eating program for children and their families."*

The above mentioned research proposal has now been reviewed under the expedited review track by the UPEI Research Ethics Board. I am pleased to inform you that the proposal has received ethics approval.

The approval for the study as presented is valid for one year. It may be extended following completion of the Annual Renewal and Amendment Form. Any proposed changes to the study must also be submitted on the same form to the UPEI Research Ethics Board for approval.

Sincerely,

Malcolm Murray, BA, MA, Ph.D.
Associate Professor of Philosophy
Chair, UPEI Research Ethics Board

cc: Dr. Katherine Schultz, Vice President, Research & Development, UPEI

Dr. Jennifer P Taylor, Family & Nutritional Sciences

Appendix B

Consent Forms

Parent/Guardian Consent Form (two parts)

Part One: Parent Interviews - FORM "A"

I, _____ agree to participate in a **2 page questionnaire and possibly a 15 minute interview** for the **"Eating Between the Lines: An early literacy healthy eating program for children and their families"** project.

- The *Eating Between the Lines* project has been explained to me in an information session and formal informational letter, and I have read and understand the material in the information letter.

- I understand that I will be given a **questionnaire** which will ask some questions about my child's literacy/ nutrition behaviours and my family's experiences during, or as a result of the program in an interview.

- I understand that I *may* **be asked to participate** in a follow-up interview (which will take about 15 minutes, to elaborate on some of the questions in the questionnaire) which will be recorded and transcribed (word for word). After it has been transcribed, I will be provided with an opportunity to review a written record of the interview for errors and to make corrections.

- My questionnaire and/or interview will be kept in locked cabinets and on a password protected computer at the University of Prince Edward Island, and only Jennifer Taylor, Ray Doiron, or Alaina Roach O'Keefe can see my answers.

- I have the freedom to stop (or not answer any question) on the questionnaire or stop the interview at any time, without penalty or consequence (punishment).

- I understand that the information I provide in the interview will be kept confidential (within the limits of the law), and although anonymity cannot completely be guaranteed due to the small sample size, my name will not be used in this study. Instead a pseudonym (a made up name) or a code number will be used to protect my identity where possible.

- I understand I can keep a copy of the signed/ dated consent form.

- I consent to participate in this study by signing below.

Signature: _____   Date: _____

Name: _____

Address: _____   Code No. _____

Please turn this sheet over for part two of the consent form

Part Two: Video/Photographs - FORM "B"

I, _____ give my consent on behalf of my child
_____ to have video/photos taken/ recorded during the implementation of the research project "**Eating Between the Lines: An early literacy healthy eating program for children and their families**".

- I understand that as a part of my child's learning experiences with literacy and nutrition, and upon my consent, the use of technology will be a part of the healthy eating literacy program. There will be stations at which my child will learn how to use various technology tools that will support and enhance their literacy learning about healthy eating [scanner, internet games (supervised), Microsoft word/PAINT, powerpoint, video, camera, communication (email), or CD ROM], under researcher's supervision to learn about nutrition and healthy eating.

- I have read the letter that was sent home and I understand the purpose of the study.

- I understand my child's participation in this part of the study is entirely voluntary and s/he has the freedom to withdraw from any aspect of the study at any point in time without penalty/punishement and without effecting my child's continued participation in Campus Kids programming or future research projects.

- I understand that any information gleaned from technology data collection/ observation will be kept confidential (within the limits of the law). After the study is complete, written results will be summarized and the findings will be presented to Campus Kids, parents, and other early childhood educators **via research reports and conferences**. Anonymity *(secrecy of who participated)* cannot be guaranteed in video/ photo data, so upon further consent to use photo/video, I understand the risk that participation would no longer be confidential.

- I understand I can keep a copy of the signed and dated consent form.

- I understand that if I have any questions I can contact Dr. Jennifer Taylor at (902)-566-0475, or Alaina Roach O'Keefe at 902-566-6009. I can also contact the UPEI Research Ethics Board at (902)-566-0637, or by email at lmacphee@upei.ca if I have any concerns about the ethical conduct of this study.

- I have read the information provided to me about this research study and understand the requirements, purpose of the study, potential benefits and risks associated with participating in this study.

- I consent to my child's participation in this study by signing below.

Signature: _____   Date: _____

Name: _____

Address: _____   Code No. _____

Appendix C

Information Letters

Parent/ Guardian INFORMATION Letter	
Research Project Title:	Eating Between the Lines: An early literacy healthy eating program for children and their families
UPEI Researchers:	Dr. Ray Doiron, Dr. Jennifer Taylor, Alaina Roach O'Keefe

Dear Parent/ Guardians,

I am writing to you to follow- up on an information night that was held at Campus Kids Daycare and Kindergarten in October, 2006. At this information night, Lynn Hogan, Director of Campus Kids, verbally informed you about a new research project that the preschool would be taking part in during the winter months of 2007. We are extremely excited to embark on this project called **"Eating Between the Lines: An early literacy healthy eating program for children and their families"** and we would like to provide you with a clear written copy of this information. We are glad to hear you are interested and keen to participate!

The purpose of this study is to develop and pilot a six week literacy healthy eating program for children at Campus Kids, and to assess its impact on vocabulary, reading, writing and drawing skills. The goal of the study is to offer an integrated component of literacy and nutrition education that will exist interwoven through school, community, and home experiences of preschool children so they and their families can lead healthier lives. The research study being led by UPEI researchers, and will include the use of technology and media **as a literacy tool** surrounding healthy eating.

The use of technology will serve two purposes:
1. It will meet the preschool curriculum outcomes for technology/ literacy for my child (using technology as a tool for literacy or or celebration tools, such as a DVD produced of children's plays, work, and activities, or as a keepsake for the children),
2. Secondly, it will be used by researchers as a tool for data collection (of literacy artifacts), **to analyse how children use technology to enhance literacy and learn about nutrition (for example, researchers may document various activities that children participate in during the program by taking photographs of them/ activities; video or audio recording may also aid researchers to go back and listen for key vocabulary and oral language strategies during the program, or watch for various literacy strategies that occur in this type of educational setting).**
Literacy artifacts, such as videos (oral communication), email (writing), internet (reading), and speaking will be used to implement the program, analyse the effectiveness of the program, and to identify best practices in the development of the healthy eating literacy program. **Sessions with your child may also be audio-taped and transcribed** in order for researchers to effectively gather data without interrupting the normal lessons with your child at the kindergarten.

Should you decide to consent, your child will participate in a six week program (schedule of learning activities) which focusses on literacy and healthy eating themes, for example: "The Salad"; "Eating a Rainbow", and will focus largely on "celebrating food through cultures around the world". This will be offered as part of normal programming (using stations and regular group lessons) at Campus Kids.

There is no known risk to children participating in the technology activities in the study (as all video/ photos will be kept private to Campus Kids, their families and the researchers- will not be publicized or put on the internet) and possible benefits to my child may include learning about

technology (**how to scan a photograph, to illustrate with PAINT, how to operate a camera**) and healthy eating, improving their vocabulary about healthy eating through discussion and videoed/ dramatic play, improving writing skills through email "did you know" messages, improving reading/listening skills through internet/ media supports, and general learning about various forms of technology used in the information society.

You and your child's participation in this study is entirely voluntary and you have the freedom to withdraw you or your child from the study at any point in time without penalty and without effecting your child's continued participation in Campus Kids programming or future research projects.

As part of investigating how well the program works, researchers will be asking you if you are interested in filling out a final questionnaire about your child's literacy/ nutrition behaviours and family's experiences during, or as a result of the program. You may also be asked if you are interested in participating in a follow-up interview (be a researcher) for 15-30 minutes, during which time you will be asked to elaborate on the questionnaire. You have the freedom not to answer any question during either of these interviews, and will be reminded of this before the interview.

You will have an opportunity to review a written record of the interview for errors and to make corrections. Your interview will be stored electronically on CD-Rs and on the hard drive of a password protected/fire wall protected computer at the Department of Family & Nutritional Sciences for five years and will then be destroyed. A paper copy of your interview, consent form, interview notes and tapes will be stored in a locked filing cabinet at UPEI, for five years and will then be shredded. The researchers and research assistants will be the only people who have access to this information during the study period.

Any information that you provide will be kept confidential. After the study is complete, results will be summarized and the findings will be presented to Campus Kids, parents, and other early childhood educators.

Although your child's anonymity cannot completely be guaranteed due to the small number of children participating in the program, my child's name will not be used in this study. Instead a pseudonym (a made up name) or a code number will be used to protect their identity. Upon your consent, any video/photo's taken/participated in by children will be used for the research project for **data collection (literacy artifacts such as stories written, plays, "did you know" informational clips for parents, field trips will be analysed for content-themes, use of nutrition vocabulary, and indicators of oral literacy strategies) learning (to teach new techniques via scanning class art projects, and incorporating them with pictures of children into literacy products) or celebration tools (such as a DVD produced of children's plays, work, and activities, or as a keepsake for the children).** These videos/photos will not be used for any commercial advertisements of the research, however, some photos may be used for conferences, reports, or knowledge exchange about the research project among educational professionals.

Our team is looking forward to working with your child at Campus Kids Kindergarten.
If you have any questions you can contact Dr. Jennifer Taylor at (902)-566-0475, or Alaina Roach O'Keefe at 902-566-6009. You can also contact the UPEI Research Ethics Board at (902)-566-0637, or by email at lmacphee@upei.ca if you have any concerns about the ethical conduct of this study.
Sincerely,
Alaina Roach O'Keefe   902-566-6009

Appendix D

Sample Lesson Plans

Sample of Lesson Plans

Part I Focus of Lesson:

Use of technology to enhance literacy and learning about "Salads"

My questions:
At which level do these children function with respect to technology?
This is my week to continue working in PAINT and creating stories on the computer. Children will also begin to work with Alex in filming and using the camera/video camera. I will also begin to use scanner and ppt.
I will focus an increased effort in serving as facilitator (more than teacher) in developing strategies while using technology.
Do children transfer the knowledge to real life effectively? How? Do they need prompting? How much? Do they seem to enjoy learning about the food groups? Do they enjoy using technology? Does it make it more meaningful when they can "use" the knowledge? How do they use the technology? What strategies do preschool children employ while using technology?
I set myself up as teacher (first- to connect them) and then as mediator, just helping them problem solve. What do these experiences mean to these children? I need to focus on providing parameters, and being flexible with their ideas.

Integrated thematic unit	Grade Level: Kindergarten	Topic: SALADS!

Part II Primary Lesson Objective *Students will be able to...*

•   curriculum outcomes here

Part III Learning Materials Needed

2 Computers, data sticks MS WORD/ PAINT internet access (PAINT)PAINTED SHEETS OF PAPER - ALL COLORS	WHITE PAPER NOODLE pieces, GLUE, PASSPORTS scrapbooks scanner

Part IV Learning Activities

ACTIVITY	Supporting Technology Activities	Data Collection Tools
Recipes PAINT ongoing 2 students @ approx 20 minutes Who will help teach/observe? Jo	• Children will sit at the computer, with Jo and illustrate using PAINT, their food from the recipe that they brought in. I will work with Jo to copy and paste images into their word files of recipes as a class collection...	Set tape recorder up at station to record conversations and story telling that exists around using the computer. This will also record and strategies that children verbalize in and any promting and support that Jo provides.
Internet sites: any of the games from http://www.dole5aday.com/Kids/K_Index.jsp	When Jo is not working with the kids on the recipes/paint, have the dole5aday website games up and available for the kids to play- there are some really fun games here and great to get them talking fruit/ veggie language with wonderful color and excitement around eating healthy.	

Sample of Lesson Plans

Part Two: CONTINUING Eating the Rainbow- PAINT/ WORD 2 students @ approx 40 minutes **Who will help teach/observe?** **ME, and perhaps either Jo or Angela - in the afternoons??? There are still about ½ of the students who have not had a chance to do this. Do we need everyone to have a chance? Perhaps not.... something to talk about.**	• Using the program PAINT and MS WORD on the computer, children will first, paint a picture using the mouse/ computer skills, surrounding how they would "eat the rainbow". They can make up an adventure, talk about food groups, and "play" with colors and techniques. • Children will then tell their stories, a facilitator typing whatever they say into their "manuscript". Children will type their own names, or various words intermittently in the process.	Students become more familiar with the concept of food groups and the metaphor: Eating the Rainbow Data collection will occur through tape recorded conversations and notes through the production of the literacy artifacts. Data collection will also occur through viewing the books and listening to the tapes and extracting themes that occurred.
Part Three: SALADS/ Superstore Trip 2 students @ approx 20 minutes **Who will help teach/observe?** **Alex (we need to get him a "station picture".**	• Using a video camera, children will learn with Alex's guidance, how to use the video camera. This will be helpful to glean information (similar to did you know video) from the children as they discuss things with Alex during their time together. He will capture this on camera (even if they are "behind" it) • I am interested in the strategies that they employ with the video camera. • EMAIL— we have to get to this later - work with the children to insert the video clip into an email to send home to parents. Perhaps Angela and Jo can also help with this.... could this be an afternoon activity?	Data collection: through reflection, and watching/ listening the actual product: the video. KEEP IN MIND: [Do children transfer the knowledge that they have learned effectively? Do they need prompting? How much? Do they seem to enjoy learning about the food groups? Do they enjoy using technology? Does it make it more meaningful when they can "use" the knowledge? How do they use the technology?]

Sample of Lesson Plans

ALAINA's NEW STATION TUES. JAN 30.		
Part Four: Literacy Connections Using Eating the Alphabet, by Lois Elhert to teach about SALADS **Who will help teach/observe?** **Lynn** ART (Student led) READING (Aloud) WRITING (Teacher help) TECHNOLOGY (Teacher help) (SCANNING, TYPING, PPT)	• Last week Jo read read the book, Eating the Alphabet, by Lois Elhert. • This week, since we are beginning the SALAD topic, one of the stations will be set up (child-directed/led) to create their very own salad using abstract shapes anf different colors of painted paper. • One of their outcomes for this month in math is counting, so they are encouraged to take note of ONE counting item in their salad and write a very short sentence to go with it. I.e. see Alaina's sample in the bin: *My salad has 1 eggplant in it*. Provide the Elhert book at the station as well, so they can use it and look at the illustrations to compare. When station is introduced, make sure that these illustrations are also pointed out in the book. • **Students will make their own representation of a salad bowl (fruit, vegetable, pasta) using abstract coloured pieces of paper that they will glue onto a piece of construction paper. They will choose different colours, size, and shapes to represent whatever fruit, vegetable they want and they will have the choice of adding pasta noodles to their salad if they would like. Once completed they will go into the technology area (with me). I will ask them to explain their picture - what does it have in it, how many (of certain fruits/vegetables/pasta), etc.** • Keep their "salads" and we will then scan them onto the computer. • I will teach them how and involve them in the scanning process, saving the image, and then import it into a class BIG BOOK: Power Point. Children may wish to type their sentence about counting in their salad (*in addition, they can state what place in the world it is from, and what food group it is from) into the powerpoint slide,	What types of literacy strategies are being used while creating the salad on paper? Are they copying Alaina's? Are they looking in the Elhert book to see what types of food they can include? Are they looking at Alaina's printed sentence to see how to spell Salad? It would be wonderful to have Lynn making notes on children's finished products about what types of strategies that she has observed at this station. Literacy artifacts, strategies on the computer, and conversations audiotaped. How does this type of integrated curriculum work for them? Is technology impeding or enhancing their excitement and learning experience? Is technology being woven into the tasks, or the tasks woven into the technology? CONTINUING: What messages about health are the children learning by this point? What do they know about nutrition, how much do they apply to their lives, and HOW do they do it? By playing, telling stories, playing teacher? By experimenting? How does technology positively influence their school experience, or their experience with health related topics?

Sample of Lesson Plans

ACTIVITY	Supporting Technology Activities	Data Collection Tools
Recipes PAINT ongoing 2 students @ approx 20 minutes Who will help teach/observe? Jo	• Children will sit at the computer, with Jo and illustrate using PAINT, their food from the recipe that they brought in. I will work with Jo to copy and paste images into their word files of recipes as a class collection...	Set tape recorder up at station to record conversations and story telling that exists around using the computer. This will also record and strategies that children verbalize in and any promting and support that Jo provides.
Internet sites: any of the games from http://www.dole5aday.com/Kids/K_Index.jsp	When Jo is not working with the kids on the recipes/paint, have the dole5aday website games up and available for the kids to play- there are some really fun games here and great to get them talking fruit/ veggie language with wonderful color and excitement around eating healthy.	
Part Two: CONTINUING Eating the Rainbow- PAINT/ WORD 2 students @ approx 40 minutes Who will help teach/observe? ME, and perhaps either Jo or Angela - in the afternoons??? There are still about ½ of the students who have not had a chance to do this. Do we need everyone to have a chance? Perhaps not.... something to talk about.	• Using the program PAINT and MS WORD on the computer, children will first, paint a picture using the mouse/ computer skills, surrounding how they would "eat the rainbow". They can make up an adventure, talk about food groups, and "play" with colors and techniques. • Children will then tell their stories, a facilitator typing whatever they say into their "manuscript". Children will type their own names, or various words intermittently in the process.	Students become more familiar with the concept of food groups and the metaphor: Eating the Rainbow Data collection will occur through tape recorded conversations and notes through the production of the literacy artifacts. Data collection will also occur through viewing the books and listening to the tapes and extracting themes that occurred.

Sample of Lesson Plans

Part Three: SALADS/ Superstore Trip 2 students @ approx 20 minutes **Who will help teach/observe?** **Alex (we need to get him a "station picture".**	• Using a video camera, children will learn with Alex's guidance, how to use the video camera. This will be helpful to glean information (similar to did you know video) from the children as they discuss things with Alex during their time together. He will capture this on camera (even if they are "behind" it) • I am interested in the strategies that they employ with the video camera. • EMAIL— we have to get to this later - work with the children to insert the video clip into an email to send home to parents. Perhaps Angela and Jo can also help with this.... could this be an afternoon activity?	Data collection: through reflection, and watching/ listening the actual product: the video. KEEP IN MIND: [Do children transfer the knowledge that they have learned effectively? Do they need prompting? How much? Do they seem to enjoy learning about the food groups? Do they enjoy using technology? Does it make it more meaningful when they can "use" the knowledge? How do they use the technology?]

Sample of Lesson Plans

| ALAINA's NEW STATION TUES. JAN 30.

Part Four:
Literacy Connections

Using Eating the Alphabet, by Lois Elhert to teach about SALADS

Who will help teach/observe?
Lynn

ART (Student led)
READING (Aloud)
WRITING (Teacher help)
TECHNOLOGY (Teacher help)
(SCANNING, TYPING, PPT) | • Last week Jo read read the book, Eating the Alphabet, by Lois Elhert.
• This week, since we are beginning the SALAD topic, one of the stations will be set up (child-directed/led) to create their very own salad using abstract shapes anf different colors of painted paper.
• One of their outcomes for this month in math is counting, so they are encouraged to take note of ONE counting item in their salad and write a very short sentence to go with it. I.e. see Alaina's sample in the bin: *My salad has 1 eggplant in it.* Provide the Elhert book at the station as well, so they can use it and look at the illustrations to compare. When station is introduced, make sure that these illustrations are also pointed out in the book.
• Students will make their own representation of a salad bowl (fruit, vegetable, pasta) using abstract coloured pieces of paper that they will glue onto a piece of construction paper. They will choose different colours, size, and shapes to represent whatever fruit, vegetable they want and they will have the choice of adding pasta noodles to their salad if they would like. Once completed they will go into the technology area (with me). I will ask them to explain their picture - what does it have in it, how many (of certain fruits/vegetables/pasta), etc.
• Keep their "salads" and we will then scan them onto the computer.
• I will teach them how and involve them in the scanning process, saving the image, and then import it into a class BIG BOOK: Power Point. Children may wish to type their sentence about counting in their salad (*in addition, they can state what place in the world it is from, and what food group it is from) into the powerpoint slide, | What types of literacy strategies are being used while creating the salad on paper? Are they copying Alaina's? Are they looking in the Elhert book to see what types of food they can include? Are they looking at Alaina's printed sentence to see how to spell Salad?
It would be wonderful to have Lynn making notes on children's finished products about what types of strategies that she has observed at this station.

Literacy artifacts, strategies on the computer, and conversations audiotaped.

How does this type of integrated curriculum work for them?

Is technology impeding or enhancing their excitement and learning experience?

Is technology being woven into the tasks, or the tasks woven into the technology?

CONTINUING: What messages about health are the children learning by this point? What do they know about nutrition, how much do they apply to their lives, and HOW do they do it? By playing, telling stories, playing teacher? By experimenting? How does technology positively influence their school experience, or their experience with health related topics? |

Extending the lesson

Expectations 10 minutes	Discuss some of the things that students have been doing. Remind them that they are totally capable of doing some wonderful work. Challenge them to commit to doing work that is their best. Tell them what they are going to be able to show you what they know.	This will boost their confidence, and also outline the expectations of their work. It also prompts creativity, in writing and artistic abilities. Share the literacy/ technology products on the first day of each week- i.e. Monday mornings or Tues (this might work with the station intros) with the over head projector. This did not happen last week. Perhaps on Monday morning during play time before stations I can have their work so far, playing on powerpoint so they can see it.

Part V What was the most innovative/ creative part of the lesson?

Part VI Inclusion

| **Peter - how can I connect with Peter?** The creative aspect of this assignment will give them all a chance to show their best work and the hands on art of the ticket will be beneficial to the KL's, like Peter. Peter really seems to shine (as any child will) when given praise. He is interested in trucks and really seems to like playing on the computer - so he will enjoy these activities. Perhaps involving him with a buddy will be good for him as well- he will sit up straight with a girl beside him!!! *Extra attention/ help with Peter while writing, it is really important for him to get his idea's down- but needs constant help.

Wk two: Peter still has not come to my station- he has gone to the internet stations. I don't think he realizes that this could be fun for him. I may try to encourage him to come with me this week. |
|---|

Part VII Assessment

Data sources- observations and notes.

Other things to keep in mind: Tuesday's: new stations are introduced for the week.

My questions:
Can Lynn be at one of the computers or station where the kids are making salads.... working with students and taking some notes? The internet station is student directed most often, so this is a great opportunity to work with some of the sites that I have found, and just get their reactions to them.

Any ideas on how to incorporate some additional kinesthetic activities into the technology piece? Emily has mentioned that she would really like them to make a human salad... I would love to record this, let the children watch themselves, and then give them a blank piece of paper to represent what they learned in the activity.

I would also like to connect as much as I can with books we have read / will read. Perhaps the brainstorming/webbing will be a connection to one of the wonderful books that the others will read.

How can I use the letters of the month more???

What else I plan to engage students in....
- some graphing activities using stuff from in class (such as taste testing) and then incorporate into a powerpoint- maybe this would be good as a final compilation. I have decided to use the question of the day as well- it would be great to simply capture this on camera and then graph it. Beside the graph, I can insert the pic of the qod and get kids to tell me something about it. Great for a final product, as I said before.

- some "kidspiration" webbing- brainstorming using kidspiration- graphics are neat and they can type onto the screen.
- more "did you know" video, perhaps a little less rehersed than this week- I would like to film them having a picnic, with real food, in a real setting. Is it possible to have a picnic lunch one day? Complete with tablecloths, props, and actual food. Let them tell stories and eat and enjoy some new foods in front of the video. Have Alex show some of the kids how to make the video, different techniques, rules, etc.
- Do we have any music yet???? I can also put this into the ppt. Micheal Pendergast- I am not sure if the others have a plan for him yet- The superstore trip is encompassing the focus Wed-Thurs- on.

- No new stations (other than the salad) this coming week - as of now anyways. Enough to focus on with the kids ETR book, Salad ppt, scanning, paint/recipes, video, and story telling through email to parents..... I think I will need Angela and Jo's help with this as it feels as though time is flying by! The emailing may have to happen in the afternoon, as stated above.

Websites:
Eating the Rainbow:
http://www.nutritionexplorations.org/kids/activities/monster2.asp

NEXT WEEK- ONGOING INTERNET LEARNING:

**** FABULOUS SALAD SITE- I WILL DEFINITELY USE THIS - PERHAPS EVEN INTRODUCE ON MONDAY OR TUES AT NEW STATIONS OR IN THE AM ON OVERHEAD******
http://www.dole5aday.com/MusicAndPlay/Play/P_SaladFactory.jsp

These are new sites: I would really like to Emily or I to work with the kids here at this site, it's great, but it really does need a teacher to read the pop ups to them. I would like the strategies used here to be recorded somehow- my recorder.

http://www.kidshealth.com/kid/closet/games/mission_nutrition.html

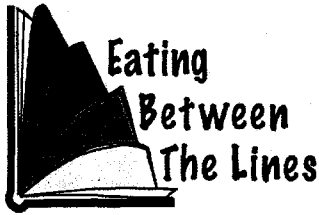Websites that might be handy for upcoming Breakfast unit:
http://www.nutritionexplorations.org/kids/activities/detective2.asp
http://www.missionnutrition.ca/missionnutrition/eng/images/pdf/k1_mission2.pdf

Appendix E

Self-Administered Parent Questionnaire

We would love to hear your stories!

Eating Between The Lines

As you know, we have been working on a project called *Eating Between the Lines (EBTL)*, and we are anxious to hear what your child has learned and shared about the program!

1. **How has your child shared the EBTL project at home?**

   For example:

   Is your child "teaching" others about healthy eating? Has your child tried to convince you to buy certain foods, or to eat certain foods at breakfast, lunch or dinner?

   Please tell us about it!

   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

2. **Have you seen your child trying new foods?**
   Talking about new foods?

   What new food names are they talking about that they might not have been familiar with before? Does your child talk about the four food groups (grain-yellow, vegetable/fruit- green, milk- blue, meat and alternatives- red)?

   Please tell us about it:

   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

EBTL Parent Questionnaire February 2007
We would love to hear your stories!

3. Please check words or phrases your child has mentioned at home

☐ Grain group
☐ Fruit and vegetable group   ☐ Breakfast
☐ Milk group   ☐ "sometimes foods"
☐ Colors   ☐ Salad
☐ Meat and alternatives group   ☐ Grocery store
☐ Eat a rainbow!   ☐ Other_____
☐ Food guide   ☐ Other_____

4. What are some of the kindergarten literacy activities your child has mentioned at home?

☐ Reading/books   ☐ Using PAINT computer
☐ Writing stories   ☐ Using a scanner
☐ Telling stories   ☐ Art
☐ Using computer   ☐ Other_____
☐ Using a camera   ☐ Other_____
☐ Using the internet

5. How has this project come up in your daily life? (What are some of the key health messages your child is bringing home?)
Please tell us a story!

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

We would love to hear your stories!

6. We need your ideas. What are some of the advantages or values of this EBTL program? How do you think this program is beneficial to families with young children in terms of nutrition and literacy?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you for providing us with some very valuable feedback.
We value your thoughts and your stories about your family, and your children.
We look forward to talking more at the celebration!

Thanks from the EBTL Team:
Alaina Roach O'Keefe
Jennifer Taylor
Ray Doiron

Appendix F

Interview Protocol

It's been a few months since we have worked with the children and we are interested in what has been going on in your lives since February!

Interview Sample Questions:

1. What do you remember best about the program?

2. How is your child continuing to apply what they have learned about healthy eating or literacy in their daily lives?

3. How did this project affect your home life (you, them, siblings, etc)?

5. How did this program affect your trips to the grocery store?

6. How do you think this program worked/ didn't work in educating preschoolers about nutrition?

7. How do you see using literacy and technology as a contributing factor? (Computer use in learning, your views, etc).

8. Is there anything else you would like to add?

(what you thought of the program, how you see it in the future, etc? your impressions, likes, dislikes, any cute/ funny stories about how your child has used what they have learned)

THANK YOU FOR YOUR TIME!!!

Appendix G

More Student Samples of Work

Campus Kids Food Fruit Festival

Once upon a time, Chad and Fran went to a picnic.

They were sleeping there for camping, and then Fran woke up and told Chad that he saw a kyote and a tiger. The kyote and the tiger rooted through the bag and by accident we through it out the window.

Chad brought chocolate milk, but they ate it. Fran brought some peanut butter and some spaghetti.

So we went hunting and we were going to hunt the kyotes and bears. And then we saw a bear and a wolf. But weren't in PEI, we were in Argentina. We went to a whole bunch of places and we knew how to speak the languages.

Then we saw the kyote and the bear and then we saw a lion- but there is no wolves in Argentina. We saw our cousins- we went all across the country.

We arrived home because we were full- we had been going to the picnic, and we found the food by throwing arrows and then we went to my cousins house and had a BBQ.   THE END

Read by Keiran Banana   Illustrated by Hunter Milk

Me and Hunter went on a picnic to the beach and then we saw a bird trying to eat our food.

And then I walked away from the table to find a crab. And then Hunter ate his apple while I was gone finding a crab. And then Hunter ate a fly in his ice cream, also had chocolate in it. And Keiran threw up.
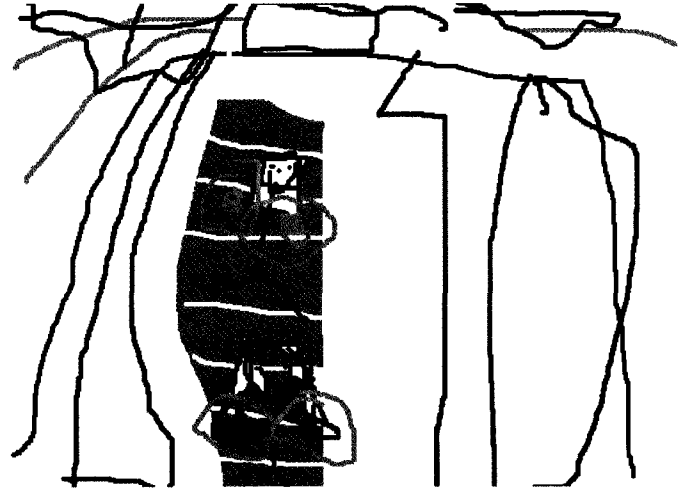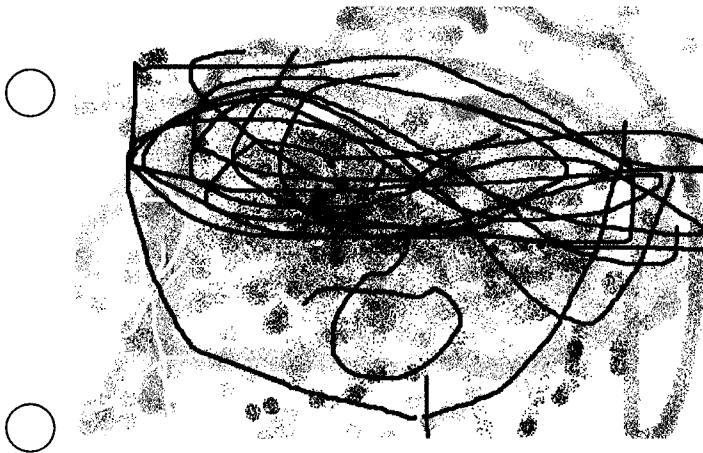
Then Hunter burped because he ate his ice cream too fast and then Kieran laughed. Oh and then we decided to go swimming. Then Hunter found a red piece of seaweed and picked it up and then we cooked it for dinner. And then he almost choked, but then the apple cleared his throat.

Keiran jumped on a surfboard and he went on the waves but he fell down on the waves but he was ok. Hunter ran in the water and Keiran came to help.

And then we were so tired and we had to have a drink – two glasses of water. All the stars were up on the sky, and a meterorite came down. And then we ate all our food because we saw the meteor in the water, what was stuck to it was our food, and it was hot, so we pulled it off and ate it.
THE END

Eating the Rainbow
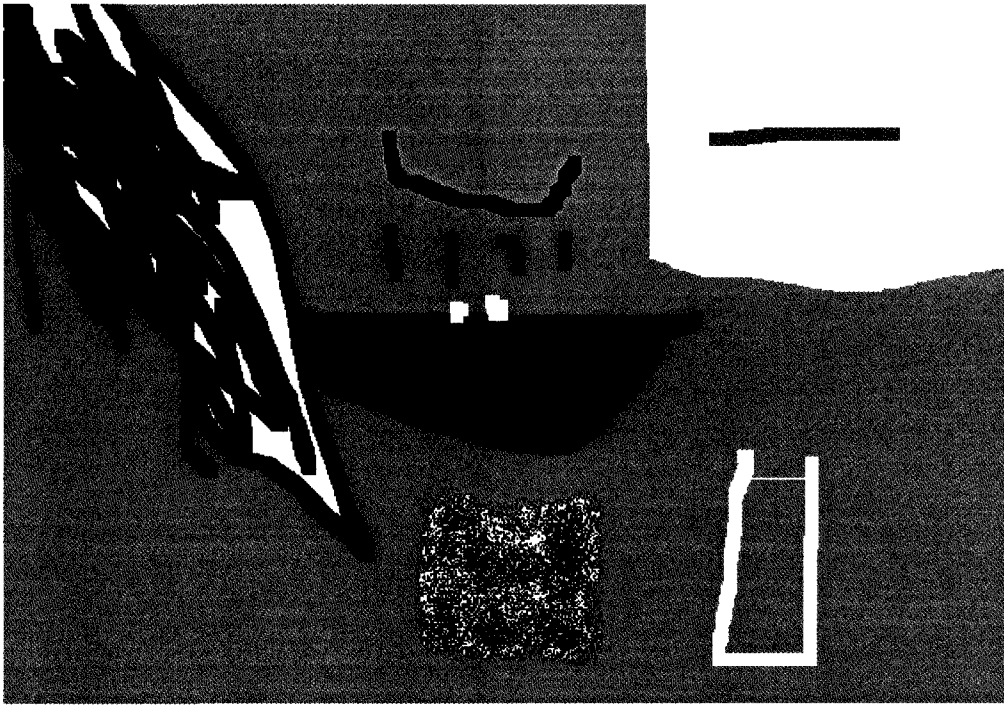### Written and Illustrated by Kiara and Gracie

Once upon a time, Kiara and Grace went to climb up the mountain and they saw a delicious picnic rainbow made of fruits and they scooped up some drinks from the water. It was rainbow juice! It made them healthy, it was made out of different kinds of foods. Cauliflowers, blueberries, grapes, oranges and Clementine's. Rainbow of spaghetti was good, it is a rainbow of spaghetti from the rainbow of foods: meatballs, and potatoes, and tomato sauce.

And then it had some delicious cookies in it and some pie.

And then they went home to pick some blueberries in the garden. And they lived happily ever after.

The end!

Adventure Around the Food

One day there was some hamburger and meatballs. The people who saw it, they used the hamburger to make fila with the onions and grape leaves.
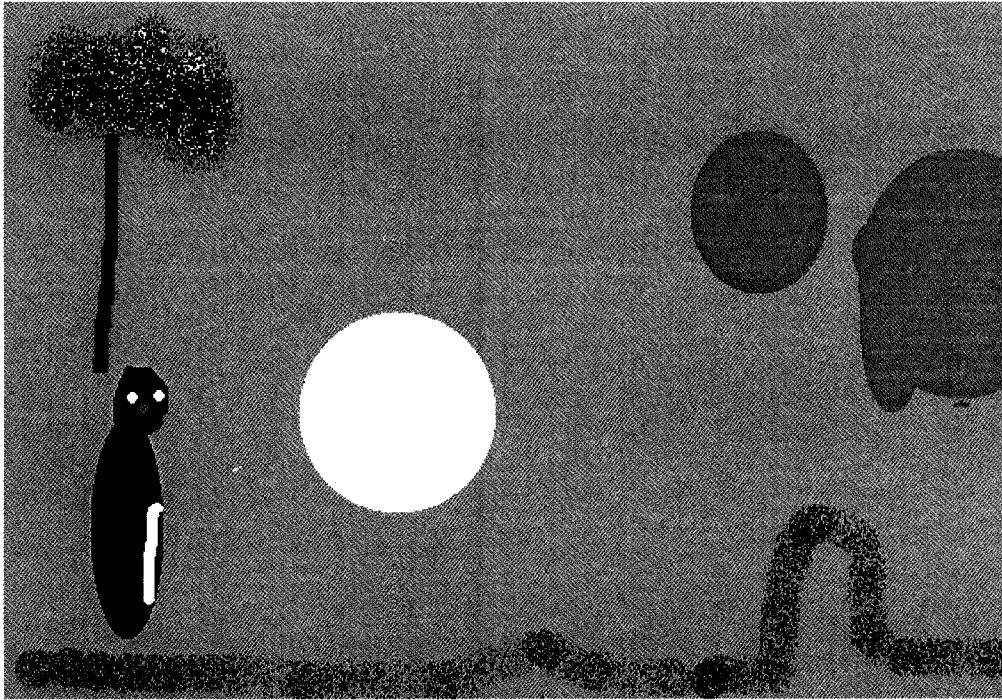
They cook it on a small fire. And the meatballs were with the fila. They had strange little cups and they drank orange juice.

They mushed the fila with onions in it you squish your hands in it which mushes it, and sometimes the yaya squeezes lemon on it- she has fish with it too. (Ya means grandmother in Greek).

They lived happily ever after!

By: Michelle and Raven

A Penguin Went On A Trip

Sally the penguin went to the market to buy in Halifax some clothes and a treat.

Then she got oranges and lemons. Then she ate them. Then she got carrots. Eggs too.

The End!