

**NUTRITION LITERACY:
TOWARDS A NEW CONCEPTION FOR HOME ECONOMICS EDUCATION**

by

Mary Anna Cimbaro

B.Ed., The University of British Columbia, 1992
B.H.E., The University of British Columbia, 1991
B.A., University of Victoria, 1980

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ABSTRACT

As a middle school home economics teacher, I teach foods and nutrition to grade seven, eight, and nine students. I have always strived to find new and innovative ways to teach nutrition to students in order to help them take nutrition knowledge and transform it into everyday nutrition practice. I had noticed, recently, that in the academic literature of other areas of study, the term literacy is frequently being used, for example, health literacy, ecological literacy, food literacy. I began to contemplate whether nutrition literacy might be a way to conceptualize the goal of curriculum and pedagogy in nutrition education. I began a conceptual quest by using health literacy, within the field of medicine, as my model, as well as, synthesizing the literature in nutrition and in literacy. The result was a conceptual framework for literacy which I used to elaborate nutrition literacy. This conceptual framework uses a Venn diagram that highlights the importance of the overlapping areas of language, action and ecology in designing nutrition literacy events that eventually lead to nutrition literacy practices for healthy living. The significance of the resulting conception of nutrition literacy for home economics educators, who teach nutrition, was then explored particularly focusing on the implications for curriculum and instruction. The framework has the potential to enlighten other areas of study that specifically use literacy as a goal.

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to my parents
who have always allowed me to be me and
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1. INTRODUCTION

In the past couple of decades there has been a great deal of interest in health and nutrition education (Brun & Gillespie, 1992; Nutbeam, 2000; Reynolds, 2006; St. Leger, 2001). Dr. Hiroshi Kakajima (WHO, 1997a) states that health is linked to educational achievement, quality of life and economic productivity. If health is such a powerful resource in helping people attain positive, long lasting intellectual, social and economic well-being, how do we empower young people, families and communities with the knowledge, values and practices that will promote better health? As a home economics educator, this question is of great import. I too am concerned about health, but more specifically in the area of nutrition health (CHEA, 1996; Ministry of Education, 2006). As a teacher of nutrition, I am always searching to improve my understanding of nutrition and nutrition education so that I can better guide my teaching in ways that promotes, in students, the development of their personal health.

1.1 Background

In order to further my understanding of nutrition and to further the development of my nutrition teaching practices, I feel the need to look to the past to the academic conceptual understandings of health, nutrition and home economics and how these understandings have led to the development of nutrition education programs and practices which are being implemented in today's home economics classrooms.

1.1.1 Health

Since the 1950s, it has been clear that schools have a considerable impact in creating population health (WHO, 1950). WHO claims that a school creates health by its culture and organization, the quality of its physical and social environment, its curricula and teaching practices, and the type of tools it uses to assess student learning. If the school helps to develop a healthy child, this child will in turn learn more effectively and hopefully develop long lasting values, skills and practices for good health (WHO, 1997a).

Health and health education have held different meanings over time. Health, in modern times, was defined as, simply, the body being free of disease (Capra, 1983) and health programs reflected this simple understanding of health. Traditionally, school health programs focused on providing interventions for certain diseases, meal

supplements, as well as, the dissemination of health information and technologies. By the 1960s, the developed countries' school health programs were moving towards the prevention of non-communicable diseases and the promotion of healthy lifestyles. However, due to the problem-based focus of health curriculum, a simplistic understanding of the relationship between communication and behaviour change, and a failure to take into account the impact of social and economic circumstances of the individual, these programs did not achieve the expected results of changing health behaviours (Nutbeam, 2000; St.Leger, 2001). The early 1980s saw the development of several theories of behaviour change such as the theory of planned behaviour and the social learning theory (Ajzen & Fishbein, 1980; Bandura, 1986). These theories helped health professionals understand the connection between knowledge, beliefs and perceived social norms and helped them to develop teaching strategies that would promote desired behaviour changes.

Although major advances were made during this forty year period in understanding the relationship between health and behaviour, as well as, in developing school based programs, the success of these interventions were sporadic and were only effective in more educated and economically advantaged segments of the population (Nutbeam, 2000). By the 1980s, health was being conceptualized as more than just being free from disease, but rather more as holistic well-being – physical, social and mental (WHO, 1997a). Along with this conception came the belief that health is created by people when they carry out their everyday life activities, when caring for oneself and others, when making informed health decisions, and when the communities people live in create conditions that promote health for everyone (WHO, 1997a). This new conception prompted the development of a new approach towards school health – health promotion. The Ottawa Charter for Health Promotion (WHO, 1986) and the Jakarta Declaration on Leading Health Promotion (WHO, 1997b), a decade later, prompted a re-conceptualization of public health education and a rethinking of how school health programs were designed and implemented. Health promotion became understood as the process by which people are empowered to increase their control over and to improve their health (WHO, 1986). Individual and community action is implied in this definition. Acting together by building healthy public policy, creating supportive environments,

strengthening community action, developing personal skills and reorienting health services, lifestyles can be changed and social, economic and environmental conditions that determine health can be impacted (WHO, 1986; WHO, 1997).

School health programs began to promote the concept of comprehensive school health that was defined to include eight components: school health services, school health education, school health environment, health promotion for school personnel, school-community partnerships and policies, nutrition and food safety, physical education and recreation and finally, mental health, counselling and social supports. These programs were seen as successful when they used a comprehensive, holistic and coherent approach to a wide range of health issues. Schools that use this approach to health are known as “health promoting schools” (Kolbe, 2005; WHO, 1997).

St. Leger (2001) believed that health education within health promoting schools also needed to re-align itself with this new approach. He argues that health education needs to equip young people with life long learning (knowledge and skills appropriate to the life stages and life events), health competencies and behaviours that lead to healthy actions like eating a balanced diet or participating in physical activity, specific cognate health knowledge and skills which aide in accessing and using health information and services, and self attributes which help in the maintenance of interpersonal relationships, all of which will enable students to become better participants in the shaping of policies and practices that impact on their health and the health of their community.

Nutbeam (2000) states, that in order for health promotion to be successful, three types of interventions need to occur – education (schooling and communication), social mobilization (partnerships and community involvement), and advocacy (policy development). He further elaborates that health literacy, a health promotion outcome of education, is vital in the achievement of all three interventions. Nutbeam defined literacy by what it enables people to do in everyday life. His health literacy model is composed of three levels. Level 1 consists of functional health literacy which includes basic reading and writing which allows for the communication, to individuals, of factual information about health risks and how to utilize the health system. Level 2 consists of interactive health literacy. This type of literacy focuses on using knowledge for the development of personal skills that will enable an individual to live autonomously. Level 3 consists of

critical health literacy. This type of literacy focuses on developing knowledge and skills in order to develop social and political action that will benefit the individual or the community. Critical health literacy empowers individuals by helping them to recognize that social, economic, and environmental factors that influence health.

From this review, it can be demonstrated that the definition of health and health education have developed from a disease, information and problem based approach to an approach that is focused on the holistic nature of health (social, physical, mental and environmental) which, in turn, creates health education programs that focus on promoting health in both individuals and communities; and focuses on using literacy to build health competencies, skills and knowledge that are life long, as well as, critical thinking and problem solving skills.

1.1.2 Nutrition

The definitions of nutrition and nutrition education have followed philosophically and practically in the footsteps of health education. Early in the twentieth century, nutrition was defined as the study of the biological processes of using food and the chemical composition of food and how the resulting knowledge could be used to treat disease (Lusk, 1928; Taylor & Pye, 1956). Nutrition education focused on improving the well being of individuals by assisting them to make decisions about their eating practices through the transmission of nutrition and biological knowledge (Anderson, 1994; Gong & Spears, 1988). School based programs, such as home economics, focused on the transmission of food values, nutrient information and methods and recipes for preparing food (BC Department of Education, 1957). But the success of these programs, just like health education, came into question when nutrition behaviour was not changing (Anderson, 1994).

By the 1990s a new approach to nutrition health was evolving. Nutrition was no longer defined simply by the chemical composition of food and the biological processes of humans consuming food, but also by how the environment and human behaviour affected these processes, as well as, by how social, cultural and psychological factors impacted food and eating (Cataldo, DeBruyne & Whitney, 2003; Whitney & Rolfes, 2002). As a result of this new way of conceptualizing nutrition, nutrition theory and program development began to focus on the impact that behavioural, social and

environmental influences had on nutritional choices. Anderson, Stanberry, Blackwell and Davidson (2001) found that nutrition knowledge in students increased with nutrition education but knowledge did not alter food selection. They suggested that other factors influenced selection like peers, convenience, taste and accessibility and that by using strategies such as prestigious role models to deliver nutrition messages and problem solving activities might prove more effective in altering eating patterns.

Young and Fors (2001) concluded from their research on the influence of certain demographic characteristics and family factors on the consumption of healthy meals and fruits and vegetables, that for nutrition programs to be successful they needed to have the cooperation of parents and families and needed to focus on elementary and middle school aged children, as this was a time when eating habits were formed and students could more readily be influenced.

Massey-Stokes (2002) acknowledged that transmission of nutrition information was important but interventions also needed to be skill based and include life skills, critical thinking and problem-solving (meal planning and food preparation). Health promotion strategies should be developed using social cognitive theories; ecological models that recognize the effects of culture, social, interpersonal and environmental factors on behaviour; strong community support and finally, effective teaching resources. Story, Lytle, Birnbaum and Perry (2002) developed a peer led school based nutrition intervention for young teens. They found that peer led education is feasible in the delivery of nutrition education. It is a means of using peer pressure and peer involvement in a positive way. Teens felt empowered as they had more control over their learning environment and teen interventions were likely to be more effective than teacher led ones.

Despite this innovative theory and program development, the impact these programs have had on children is questionable due to recent studies (Canadian Diabetes Association, 2006; Hedley, Ogden, Johnson, Carrol, Curtin & Flegal, 2004; Shields, 2006; WHO, 2005) showing the unprecedented rise of obesity and diabetes rates in children in developed countries. As early as 1984 Peters, like Nutbeam (2000), recognized that in order for significant changes to occur, health practitioners need to insure that the populace they serve receive basic educational skills, so as to acquire

enough technical nutrition and health knowledge to help them change the social structures and political systems which prevent them from achieving nutritional health. The American Dietetic Association (ADA) (1990) and Anderson (1994) also recognized that nutrition education plays an important role in developing nutritionally literate individuals. By having a populace that is nutritionally literate, this in turn influences health promotion, disease prevention, and health maintenance. However, unlike Nutbeam (2000), ADA and Anderson did not define nutrition literacy. Without a conception of what makes a person nutritionally literate it is difficult to develop education programs that promote nutrition literacy.

From this brief review, it is evident that the definitions of nutrition and nutrition education philosophically have shifted from a disease and information based approach to a more multi-disciplinary and holistic approach to nutritional health. The field of nutrition education has also recognized that literacy plays a vital role in achieving the knowledge and skills needed to attain nutritional health. However by never conceptualizing nutrition literacy, the ADA fell short of providing the conceptual framework needed by educators to further nutrition literacy education and therefore improving nutrition practices.

1.1.3 Home Economics

The definition of home economics and home economics education has evolved philosophically much like health and nutrition. Since its inception in the late 1800s, the field of home economics made it implicit in its mission statement the need to help individuals and families with the perennial problems of every day living. Among the goals stated was the need to help families secure maximum health by helping them to gain the knowledge and resources needed to this end (Vaines, 1981). Imbedded within the definition of health was the establishment of good dietetic and hygienic habits (Hoodless, 1908). Early educational programs were in part developed to impart scientific information that would solve every day problems related to the attainment of health: how to free milk from harmful bacteria and disease, how to prepare nutritionally balanced meals for the family, and how to preserve food safely.

By the middle of the 1900s, home economists recognized that the information and problem based approach to health was not fully addressing the complex nature of health

and other family problems resulting from ongoing global, political and social upheavals. These types of problems were evolving from problems that could be addressed by practical skills and technical knowledge to problems that are more social and communication based. In order to address the individual needs of families and their members, educational practice also began to focus on using communication skills to identify and resolve more specific health problems by understanding human behaviour from the point of view of the person experiencing the behaviour – what it means to be diabetic or what it means to be anorexic (Hultgren, 1989; Peterat & DeZwart, 1995). Home economists also recognized that many health and other family problems were systemic in nature. Social, political, cultural, historical and environmental factors had implicit or explicit controls over the family's ability to attain goals. The purpose of home economics education refocused on helping individuals and families learn to access knowledge to help identify these controls and then find ways to free themselves from these controls so that they could meet their own health and other family goals –for example how do free trade agreements affect availability of food?

With a deeper understanding of the complexity of perennial family problems, home economists recognized the need to revisit the aims of its practice. Brown and Paolucci (1979) conceptualized a new mission for home economics

To enable families, both as individual units and generally as a social institution, to build and maintain systems of action which lead to maturing in individual self-formation and 2) to enlightened, cooperative participation in the critique and formulation of social goals and means of accomplishing them. (p.23)

With a new mission in place, home economists also needed to redirect their conceptualization of home economics education. Brown (1980) stated that to help individuals and families with everyday life problems, home economics education should focus on building and maintaining three systems of action 1) technical action – which focuses on providing the technical skills to produce a product or reach a goal, for example preparing food or reducing body weight; 2) communicative action – which focuses on developing linguistic and communication skills to create meanings and understandings about the histories, cultures, traditions, values that individuals, families

and other social groups live daily, for example understanding reasons for choosing a vegetarian diet; and 3) emancipative action – which focuses on using communicative competence to critique those beliefs, values, traditions, social pressures, laws, policies that interfere with the individual's and/or the family's ability to meet their intended goals, for example only thin women are beautiful or golf courses are more important than farms.

It is difficult to know how effective this educational framework has been in effecting nutritional health practice in home economics educational programs because Brown's and Brown and Paolucci's philosophical conceptualizations have not been fully embraced by or implemented in the field of home economics. Strom and Plihal (1989) reflected that research in the field of home economics had predominantly focused on physical and social entities ignoring human behaviour and consequences. They claim home economics ignores the real problems of families that are embedded in the critical realities of today's worlds and, as a result limits the kind of knowledge obtained and the possibilities of moving beyond the status quo.

To conclude this review of the definition of home economics and home economics education, it can be demonstrated that, like health and nutrition, both concepts have moved from information and a problem based approach of solving individual and family health problems to, at least philosophically, an approach that is systemic and holistic. Like Nutbeam (2000), home economists have recognized, at least philosophically that to be educated in home economics, and more specifically in nutrition, involves the acquisition of practical life skills, communication skills and critical thinking skills, where it falls short is in the teaching and application of these skills in its everyday practice.

1.1.4 Summary

The intent of this background search was to help me get a better perspective of where my understandings of nutrition and nutritional educational practices have come from and where they need to move if I am to effect lasting nutritional health in the students I teach in my home economics classes. I have learned that the fields of health, nutrition and home economics have evolved from a simple, linear approach on finding the physical cause of the nutritional health issue (disease) and disseminating information to cure the problem to a more complex yet holistic approach that recognizes that to

achieve health, in this case nutrition health, a deeper understanding of the causes of the health issue are needed and that the cure is imbedded in multiple and varying understandings and actions. Of the three fields reviewed, both health and nutrition recognize that to be educated one needs to be literate, however, nutrition does not define what this means. Home economics recognizes the same attributes of being educated as health but does not identify them as literacy. So here lies the pedagogical conundrum – which field of study is better able to help me improve my teaching practices in nutrition?

1.2 Statement of the Problem

As a home economics educator, I teach nutrition as part of Food Studies. My approach has been to engage my students in a critical dialogue that encourages them to examine their food and nutritional practice for its impact on their health. Typically I cover the prescribed curriculum that includes the Canada's Food Guide to Healthy Eating (1996) group names and serving amounts; the basic nutrients; doing a daily food intake analysis; and practicing food and meal preparation. I am concerned, however, that this information base and skill set is not sufficient for my students to cope effectively with the volume of information that is being delivered via the media, governments, business or research agencies. Further, my hunch is that it is not effective in creating behavioural changes that will assure a healthy lifestyle. In light of these concerns and the literature presented above, a new approach to nutrition education, within home economics education, is needed.

If conceding from the literature review above, that education helps create change and that to be educated one needs to be literate, whether this be in health, nutrition or home economics, I need to understand the conceptual framework of this term, how it relates to the study of nutrition and the implications it has for home economics pedagogy. Literacy might be the new approach I am seeking.

The purpose of this study is, therefore, to develop and defend a conception of nutrition literacy, to explore the implications of this conception in terms of pedagogical approaches and to justify and defend the integration of nutrition literacy in the home economics curriculum.

1.3 Research Questions

The focal questions for this study are:

1. What is nutrition literacy?
2. What kinds of learning (knowing) and pedagogy are enabled through the concept of nutrition literacy?
3. What are the implications for home economics education of adopting the concept of nutrition literacy

1.4 Conceptual Framework

Short (1991) states that the purpose of curriculum research is to conceive, express, justify and enact an educator's program. When choices need to be made within and between programs, these choices must be made with all the relevant knowledge that relates to such choices. The researcher's task is to seek and justify the knowledge that is relevant. Inquiry is the process that produces this knowledge. The purpose of curriculum inquiry therefore is to produce knowledge that will inform curriculum action.

Philosophical inquiry aims to identify, examine, understand, develop or improve the attributes of a concept or set of concepts. This form of inquiry is important in curriculum development because concepts help researchers to build conceptual frameworks which may contain defining attributes (what the concept is "like" or "not like"). If our concepts are incoherent, poorly understood, or have blurred attributes, educators will have difficulty translating them into adequate research tools or curriculum policy (Coombs & Daniel, 1991; Walker & Avant, 1995).

Concepts can be derived by modifying or reconstructing attributes of existing sets of concepts. New concepts are developed because the old ones are inadequate in allowing educators to perform the task for which the concept was created in the first place (Coombs & Daniel, 1991). Walker and Avant (1995) state that concept development is necessary when there are few or no concepts available in the researcher's area of interest. The researcher must, therefore, obtain or invent concepts that are relevant to the task at hand. Concept derivation, a form of concept development, allows the researcher to make an analogy between concepts in two fields. One begins by determining if there are any parallels between the parent and new field and if new conceptions of the new field can be

created. As well, further concepts can be created if old conceptions from the parent field are redefined to fit the new field. The resulting newly defined conceptions are not dependent, for meaning, on the parent field.

This process of concept derivation is appropriate in this study, because my purpose is to create a conception of nutrition literacy relevant to home economics education. I will, however, modify Walker and Avant's model (1995) slightly to accommodate the two worded concept of nutrition literacy. The concept derivation will begin by defining health literacy within the field of health. Health literacy will then be transposed to the field of home economics to determine what parallels exist between health and home economics. The concept nutrition literacy will be redefined by initially defining each concept separately (nutrition and then literacy) and then combined and redefined as a unit (nutrition literacy). Lastly, nutrition literacy will be examined for its fit within the field of home economics.

1.5 Procedures

The procedures used to develop the concept of nutrition literacy will follow these steps:

1. Reviewing the existing literature on health literacy, within the field of health. This will involve a computer search using the key terms: health, education, literacy.
2. Reviewing the existing literature on the concepts of health and nutrition within the field of home economics. This will involve a computer search using the key terms: home economics, education, health, nutrition.
3. Examine the field of home economics as an analog to the field of health to see if there is a fit with the concept of health literacy. (1, 2, 3 will be accomplished in the background section of this chapter).
4. Review the existing literature on nutrition and nutrition science to determine how they have been defined in the past and present. This will involve a computer search using the terms home economics, dietetics, nutrition and nutrition science (Chapter 2).

5. Review selected literature on literacy to determine how it has been defined in the past and present and create a conceptual model of literacy. This will involve a computer search using the terms literacy, reading, and writing (Chapter 3).
6. Combine the concepts of nutrition and literacy to create a conceptual model of nutrition literacy (Chapter 4).
7. Elaborate the implications of this new concept of nutrition literacy for the field of home economics education (Chapter 5).

1.6 Significance of the Study

This study has both theoretical and practical significance. Theoretically, it will propose a concept of nutrition literacy appropriate for home economics curriculum in schools and will have the potential to shape curriculum documents in the future. Concepts and new ways of thinking are essential to re-think practice. Practically, the proposed implications of using the conception of nutrition literacy in home economics curriculum will be available to practitioners for the re-thinking of their day to day teaching practice.

1.7 Overview of Thesis

In Chapter 1, I set the context for researching the concept of nutrition literacy. In Chapter 2, I synthesize the literature on nutrition to create a more elaborate conception of nutrition to better guide my nutrition education practice. In Chapter 3 I explore the current interest in literacy and the way the concept is being framed and I create a conceptual model of literacy that moves beyond the common understanding of reading and writing. In Chapter 4, I combine the model of literacy to the concept of nutrition. In Chapter 5, I discuss the implications of a conception of nutrition literacy for home economics education. Finally in Chapter 6, I reflect on the process of conducting this research, the implications this conception has already had on my teaching practice and I make suggestions for further research.

2 NUTRITION: A CONCEPTUAL DEFINITION

2.1 Introduction

To develop a conception of nutrition, I will in this chapter be surveying both historical and recent uses of the term nutrition. Healthy eating. Healthy foods. Healthy nutrition. These are the ‘buzz words’ floating around government offices and school districts as they develop and implement policies, initiatives and programs that deal with the childhood obesity crisis in British Columbia (Select Standing Committee on Health, 2006). As a home economics educator, I see myself as a front-line worker in the battle against obesity. The provincial curriculum mandates that I teach nutrition to my students (Ministry of Education, 2007). But how do we define nutrition? Is there a relationship between eating, food, nutrition and health?

I turned to the dictionary as a starting point to examine the meanings of nutrition. Three dictionary sources from two different time periods were used to see if there were consistent definitions and meanings in use.

By combining the definitions of eat (p. 327), food (p. 408), health (p. 495) and nutrition (p.750) from *The Concise Oxford Dictionary* (1976) nutrition can be expressed as the study of human nourishment, (food or substances which are taken into the body through the mouth, chewed and swallowed) which helps to maintain life and growth in the body.

By using the *Collins Gage Canadian Paperback Dictionary* (2006) the definition of these same words – eat (p. 292), food (p. 356), health (p. 416) and nutrition (p. 598) can be combined to express nutrition as nourishment (that which animals take into the mouth and swallow and plants take in to live and be well – a condition of the body or mind that is free from sickness or health).

Lastly, by combining the definitions of eat, food, health and nutrition from the *Cambridge Advanced Learners Dictionaries Online* (2007) nutrition can be defined as the scientific study of food (substances that people and animals eat or plants absorb to keep them alive) that is taken into the human body through the mouth, chewed and swallowed, as well as, the process by which the body uses it to influence the condition and development of the body system, or health, to the degree that it is free from illness or is in a state of being well.

Upon analysis, these three statements are similar. They each connect nutrition with food, eating, the body and sustaining life. However, the Collins and the Cambridge dictionary statements are broader and incorporate other concepts or meanings. Firstly, they include not just the scientific study of food, but also the process by which the body takes in and uses the food. Secondly, they connect food with well being or health. Food, not only sustains life, but just as importantly can influence illness (positively or negatively) and promote well being. Thirdly, they recognize that food is not only a human resource, but also that animals and plants require it for survival. The Cambridge statement sees the body as a system. A system, with many parts that function individually and in tandem, and which changes and develops as it consumes food. As part of the food chain, people rely on animals and plants for sustenance. If the food supply causes illness or well being in plants and animals it can also have the same consequence in humans. Food is part of an ecological system. A thirty year span seems to demonstrate a marked philosophical shift in how society defines nutrition by its inclusion of concepts such as processes, ecology, systems, and health. Perhaps society has come to see nutrition as more holistic or integrative. Is this the conception that I should use to build my nutrition curriculum? I question whether this shift has created a truly new or revolutionary conception of nutrition— perhaps we are simply remembering the past.

2.2 An Ancient Perspective

The connection between food, the body and health is not new. The Egyptians were the first to connect food and medicine 6,000 years ago (Cannon, 2005). Ancient philosophy, rather than science, guided the Chinese and Indian dietary patterns (Colbin, 2002). These two cultures believe that health is dependent upon the human being maintaining harmony within the body systems, within nature, human relationships and relationships with the cosmic or spiritual world (Capra, 1988). When illness occurs it is due to an imbalance between people and their natural, social and cosmic environment. Many techniques are used to restore balance including massage, acupuncture, exercise, herbal remedies and dietary counseling (Capra, 1988; Colbin, 2002).

Dietary advice, in Chinese culture, in particular, was based on consideration of the balance of Ch'I "the various patterns of flow and fluctuation in the human organism,

as well as the continual exchanges between organism and environment” (Capra, 1988, p.314); the persons’ constitution, the season, and the taste, heating or cooling and medicinal qualities of food (Colbin, 2002). System harmony is the desirable state and the philosophical underpinning of nutrition and health.

The ancient Greeks’ approach to health was based on the achievement of a balance between prevention and therapy (Capra, 1988). These two elements were governed in the spiritual realm by two sister goddesses. Hygieia (health) personified the wisdom that people needed to live a healthy life. Panakeia (all-healing) specialized in the knowledge of remedies derived from nature. This balance between prevention and natural therapy became known as *diaita* – meaning way of life or way of being (Cannon, 2005; Capra, 1988). Hippocrates, who was the founder of western medical science, took this approach, from the spiritual realm, believing that illnesses were natural phenomena that could be observed and treated therapeutically, as well as, by wise management of one’s life. The well-being of any individual was maintained by a balanced interrelationship between environmental factors (the quality of air, water and food, the topography of the land, and lifestyle), the body and the mind (inclusively known as human ecology) (Capra, 1988). Galen, a Greco-Roman physician, saw the same need for balance but with six cultural aspects that he saw as a part of the overall way of life: the environment, diet, rest and exercise, evacuations and the mind (Meyer-Abich, 2005). It was the role of the physician to help maintain this balance and this was done in one of two ways. Firstly, the physician needed to educate humans in the wisdom of leading a healthy life. Hippocrates believed that animals had the innate ability to lead a balanced life but that humans were born without this instinct and needed to be taught this wisdom. Secondly, when an imbalance (illness) did occur, the physician needed to create favorable conditions (therapy) for healing to occur (Capra, 1988; Meyer-Abich, 2005).

In summary, these three ancient cultures –Indian, Chinese and Greek - all shared an ecological and systemic approach to health. They believed that a balance needed to exist between nature (environment), the body and the mind (spiritual realm) in order for health to occur. Illness was a result of disharmony between these elements and it was the medical practitioner’s role to restore balance. Food was seen as an integral means to this end. Although a scientific method of studying food and its effect on the body was not

developed at this time they trusted their cultural wisdom to guide them in their use of food as therapy. This ecological and systemic approach to health was to predominate in medical practice until the 17th century when changes began to take place in Europe.

2.3 A Modern Perspective

The 17th century was known as the era of Enlightenment. It brought tremendous philosophical changes in how people thought about and interacted with the world. Descartes believed the world was conceived as one enormous machine, made up of many small parts and all of these parts were governed by mechanical laws – a paradigm known as reductionism (Butts, 1955; Capra, 1988). It was up to science to discover these laws. The world was further conceived as orderly, systemic and knowable through the investigation of science (Butts, 1955). Bacon, and then Comte, stated that knowledge comes from experience, through controlled methods of investigation (plan, observe, collect facts/data, use reasoning to make generalizations/hypothesis/theories) (Mautner, 2000; Zimmerman, 1989). There was only one possible truth or knowledge – scientific – and this truth was the same for everyone (Sipe & Constable, 1996). This paradigm of thought became known as positivism (Gay & Airasian, 2003).

With positivism, conceptions of the body changed. The body began to be seen as a machine and it too could only be understood by the studying of each of its biological parts (Butts, 1955). As a result of this type of study, the branches of science grew beyond physics and chemistry, to include more specializations such as anatomy, physiology, microbiology and bio-chemistry from which nutrition evolved (Cannon, 2005). The relationship of the body to the mind also changed. For some like Hobbs, the mind, like the body, was made up of matter and was subject to the same mechanical laws; while others, like Descartes, saw the mind and body as two separate entities (Butts, 1955). For Descartes the mind was a spiritual substance not subject to mechanical laws. It was free to make its own choices and did not influence the body (Butts, 1955). Dualism, as this became known, taught philosophers to see the human being as an isolated ego living inside a body (Capra, 1988). The body-soul connection, believed to be so necessary for health by the ancient philosophers, was now severed.

Ahn, Tewari, Poon and Phillips (2006) describe a reductionist medical model that is predicated on the assumption that the body is a machine. All parts of the machine must

work in equilibrium (homeostasis) in order to maintain health. When parts of the body break down then illness occurs. It is the physician's role to diagnose the illness. As illness is deterministic (caused by certain previous events or factors), as well as predictable, the doctor would use a variety of technologies to collect and classify data to make a diagnosis. The resulting treatment prescribed, surgical or pharmaceutical, would be specific to the body part not functioning. This linear process to healing caused the physician's focus to move away from the patient to the illness, and as such, caused treatment to be similar for each illness and for each person (Capra, 1988).

This focus on illness and specific body parts lead to specialization such that the study of the biological function of food became an entity unto itself disconnected from the patient. The science of nutrition and the applied science of nutrition (dietetics) were the result of these endeavors (Pattee, 1945). Both these sciences had as their goal the utilization of food in building health and in the prevention or cure of disease in the body (Bogerty & Porter, 1940). It should be noted that as physicians began to rely on pharmaceuticals and technologies as the cures for disease, food began to play less and less of a role in healing and health. This change in health treatment was evidenced by reduced training in nutrition by doctors (Capra, 1988).

As reductionist and positivist thought came to dominate scientific study, the concept and practices of nutrition were clearly impacted. The study of nutrition focused primarily on experimentation in humans, animals and plants and focused on the specific biological processes occurring in the body during the consumption of food: "the digestion and absorption of nourishment, its storage in excess, and finally, the elimination of the products of wear and tear of combustion and of nutriment or waste which cannot be utilized ... [termed] metabolism" (Pattee, 1922, p. 25). Post-secondary nutrition texts, receptacles of accumulated knowledge, of the early to mid 1900s (Lusk, 1928; Rose, 1929; Taylor & Pye, 1956) reflected this positivistic knowledge base by the content of their chapters – digestion, absorption, metabolism, body usage of food by composition (carbohydrates, fat, protein, vitamins and minerals), deficiency diseases and what constituted a healthful diet.

For knowledge to become part of everyday living, it needs to move from the academic to the public domain. The knowledge developed by the scientists who study

nutrition became generally inaccessible to the public. To make information accessible the field of applied nutrition was developed. Dietetics and home economics were the venues through which applied nutrition became accessible for everyday use by people (Willard & Gillet, 1930). The reductionist view of the body and its relationship with food was evidenced well into the 1950s and its acceptance as public knowledge is demonstrated in this excerpt from a high school home economics textbook:

The working of the human body may be compared to an automobile. The auto needs gasoline or fuel, so the body needs fuel foods such as carbohydrates (sugar and starches) and fats. The gasoline makes the car go and the sugar and starches furnish the body with the needed energy for work and play. The automobile needs oil to lubricate its machinery, so the body needs regulating foods such as mineral salts, water and cellulose to regulate its processes. Sometimes the auto has to be repaired and new parts have to be bought, so the body needs protein foods to repair its tissues and to build new tissue. The automobile engine needs the ignition-spark to start it, so also the body needs vitamin foods for growth and normal development. (BC Department of Education, 1941, p.29)

Aside from the biological processes of using food and the chemical composition of food, dietetics and home economics texts also focused their information on food values, methods and recipes for preparing foods, and in dietetics texts only, the development of diets specific to disease (Bogerty & Porter, 1940; BC Department of Education, 1941, 1957; Pattee, 1905, 1922, 1945).

In summary, these three philosophical approaches – reductionism, positivism and dualism – coalesced to form the underpinnings of the applied sciences of nutrition and dietetics. These new sciences, along with new methods of scientific investigation, helped to discover and accumulate copious amounts of theoretical and practical knowledge about how food is processed in the body, which chemical components in food are necessary for health and how to select and prepare food for a healthy diet. The treatment of disease, through food, became linear and deterministic. Diagnosis and treatment focused on the biological point of illness and not on the whole person. As scientists created technologies

and pharmaceuticals to control the body's natural tendencies towards disease there was less and less of a reliance on the benefits of food to maintain health. In spite of all this advancement, however, food related illnesses and diseases have not been eradicated (for example obesity, the effects of chronic under nutrition, osteoporosis etc.) and the overall health of individuals had not been improved, rather new diseases are being diagnosed that had not been present before (Capra, 1988). Weaknesses in the old paradigms were becoming visible and new philosophical approaches were on the horizon.

2.4 A Post-Modern Perspective

By the 1900s scientists had made tremendous strides in understanding the mechanics of matter – how the individual parts are put together, how they function independently or in a linear cause and effect fashion (Lin, Hu & Li, 1997; Von Bertalanffy, 1950; Williams, 1997). However, an unforeseen side effect of the reductionist's perspective was that in the act of reducing matter from its larger to smaller components, the component to component interactions were ignored, as well as the resulting dynamics that shaped system wide behavior (Ahn et al, 2006). This behavior could be characterized by many cause and effect chains – what became known as a system (Lin et al, 1997). Biology, psychology and sociology were among the first sciences to move toward system thinking as a new paradigm (Von Bertalanffy, 1950). This new conception brought fundamental changes to how scientists began to view matter in relation to its environment, which in turn, led to the development of three related theories: general systems theory, critical theory and complexity theory.

Von Bertalanffy (1950, 1951) was the first to conceptualize general systems theory – a contra-reductionism perspective. The central concept of systems theory is wholeness. Von Bertalanffy defined a system as “any arrangement or combination, as of parts or elements, in a whole’ applies to a cell, a human being, a society, as well as to an atom, a planet, or a galaxy” (1951, p. 303). In other words, the whole system is greater than the sum of its parts. Capra (1988), Flint (1997), and Kast and Rosenzweig (1972) summarized the key concepts of this theory as follows: A system has its parts (sub-systems) organized in an interconnected hierarchical fashion. The boundaries between the system and its sub-systems must be permeable (open) to facilitate the exchange of information, materials or energy (resources) with its environment. In order for the

system to exist it must remain in equilibrium – which means that the needs (goals) of the sub-systems and the needs of the system must be met at the same time. Cyclical patterns of communication (feedback) facilitate the exchange of resources as goals fluctuate. This form of communication creates a dynamic and transformative relationship. This relationship helps all concerned meet their intended goals in many different ways by using resources creatively.

Many different factors in the environment can interfere with the communication process that assists the system with the exchange of resources, with the ability of meeting its intended goals and ultimately its existence. Conflict theory specifically proposes a conception of how this occurs in social systems and how to possibly restore balance.

Conflict theory came about in the 1950s in Germany as a contra-positivist theory. Habermas (1973), and others at the Frankfurt School, challenged positivism's belief that science was the only means to truth or knowledge. They proposed the origin of knowledge was much broader, and that it was conceived as coming from three basic interests – control, understanding and emancipation. The following researchers (Brown, 1980; Coomer, 1989; Crossley, 2005; Fontana, 2004; Habermas, 1973) provide a summary of this broad perspective.

In order for humans to survive in the world, they need to develop knowledge that will help them control the physical environment and to develop methods for predicting how it behaves. This knowledge is production or 'how to' based. For example – how to predict and control energy, the weather and plant growth for improved food production. This type of knowledge falls within the realm of science and critical theorists would concede that this knowledge is necessary to meet human needs and wants, but that it is overly present in modern society.

However, humans also live in a social environment and they require knowledge that will assist them to understand the social structures that allow them to live in cooperative community. Social structures include elements such as traditions, norms, values and morals. The knowledge needed to maintain these structures is socialization or 'what does it mean' based. For example – what does it mean to eat a healthy diet? What does it mean to eat ecologically? Socialization is dependent on the ability to communicate. Language, a communication tool, assists people to create meaning or

understanding through self-reflection or through dialogue with others. Language helps humans to negotiate the social structures that they require to preserve their society.

When there is a breakdown in the equitable distribution of the control of the physical environment and/or in the mutual understanding of which social structures are needed to preserve society, then conflict and struggle arise. Those individuals or groups who have less power or understanding in society require knowledge that will emancipate or free them from oppressive conditions that prevent them from living the life they choose. The knowledge needed to restore balance is autonomy or an understanding of 'in whose interest' our current beliefs and actions support. For example – in whose interest is it to follow the Canada Food Guide? In whose interest is it to encourage the development of genetically modified foods? Autonomy is dependent on the ability to 1) critique, through reflection and dialogue, the historical, cultural, political and economic forces that shape our knowing, and 2) reflection, to correct the distortions in control and understanding through discourse and creative action.

Carr (2000) summarizes critical theory as an approach which offers guides for human action that can lead to enlightenment and are inherently emancipative. Critical theory produces a multidimensional knowledge. It is reflective – it opens new possibilities by examining assumptions and comparing them to lived experience. Critical theory also seeks to understand what forces confine human existence and where reform in society is possible.

Critical theory still finds a place in educational research today but some theorists have begun to explore other ways to understand the world. Complexity theory arose from scientific discourse at the Santa Fe Institute (Colbin, 2002). This theory springs from systems theory, and attempts to capture the spirit of early twentieth century thinking (quantum physics, theory of relativity, chaos) on change, unpredictability, openness and impermanence (Morrison, 2002).

Cilliers (2000), Manson (2001), Morrison (2002) and University of Alberta (2007) identified the following characteristics of complexity theory. Like systems theory, complexity theory sees phenomena as embedded in a whole or system. The system has permeable (open) boundaries that allow for the exchange of resources (energy, matter or information) between subsystems or their environment. Feedback

loops or communication allows the open system or subsystems to adjust the exchange of resources as needs fluctuate.

However, unlike systems theory, complexity theory defines the internal structure of systems, subsystems and components as non-linear – a structure composed of a web of differing interconnected and interdependent relationships which allows parts of the system to support internal diversity. This diversity allows for relationships to shift creating new communication loops and new subsystems. Any component can belong to any number of subsystems thus creating complexity. Complex systems strive for disequilibrium as they must continuously act, re-act or anticipate the influx of resources coming from within or from the environment and how they will impact upon the system. Lack of diversity causes poor resilience and adaptability by the system and subsystem. A system's adaptability is dependent on knowledge gained through learning and retained in memory. A complex system does not have a deposit bank of knowledge; rather it distributes knowledge throughout the system in the memories of each subsystem and component. It is this complex exchange of knowledge or interaction between levels that allows a complex system to deal with new situations in a novel or adaptive manner. This complexity of interactions also makes outcomes difficult to predict. Simple cause and effect relationships are no longer the norm. Communicative relationships, cause, history and context need to be considered when attempting to predict a possible outcome. Morrison (2002) succinctly summarized complexity theory as “a theory of survival, evolution, development and adaptation” (p.6).

2.5 Theoretical Implications for Health and Nutrition

These three new theories have had a slow and sporadic influence on our perception of the body, health and nutrition, as well as, how knowledge is acquired. Observation, experimentation, along with reflection, extrapolation, and experience became acceptable means for acquiring knowledge (Brown & Paolucci, 1979; Margetts, 2006). By the late twentieth century, the dominant conception of the body as machine evolved to body as a living system. Capra (1988) sees human beings as made up of many components that are interconnected and interdependent and interact with larger systems such as the physical and social environment. These interactions are ecological – each affecting the other. Health is viewed as a state of well being. When there is balance in

meeting the needs of these three systems (human, physical and social environments) health is achieved ecologically; however, if there is disequilibrium in any part of these systems then ill health (disease, conflict, environmental degradation) occurs. Health maintenance becomes both an individual, as well as, a collective matter. Individual health is mainly determined by human behavior, the food consumed and the quality of the environment. Individuals are given the responsibility and freedom to look after themselves, but this freedom is often curtailed by social, cultural, economic and political factors. Health problems that arise because of these factors can only be addressed through collective reflection and action – such as education and policy change. Capra, continues with an example, in medicine, where the physician's role is no longer only diagnostic but more importantly educative; teaching patients the nature of illness and which lifestyle changes need to occur in order to improve health. Health and healing take on a more holistic approach.

The World Health Organization [WHO] (1978) changed its definition of health, from its focus on freedom from disease, to health being a state of complete physical, social and mental well-being. This conception, like Capra's, implies freedom of choice; interaction among human, spiritual, social and natural environments; and collective responsibility for creating conditions that secure health for all (WHO, 1997). Similar to ancient philosophies, this definition restores a holistic and ecological concept of health.

Nutbeam (2000) and St. Leger (2001) believe that to promote health, educative action needs to occur. To educate others for healthy living, it is necessary to communicate; to communicate knowledge of health, in today's society, it is necessary to be literate. Using principles from conflict theory, they propose three types of literacy – functional, interactive and critical. Functional literacy focuses on the transmission of basic health knowledge (for example hygiene, nutrition); interactive literacy focuses on developing personal skills which will enable individuals to derive meaning from health information and then apply the meaning to everyday living (for example food preparation, problem solving lifestyle changes for a low sugar diet); and finally, critical literacy which focuses on empowering individuals to critique information and practices so as to gain more control over life events and situations (for example vending machine

polices in schools, trans fat levels in processed foods, health claims attributed to certain foods).

Post-modern theories began, also, to influence the study of nutrition science. Nutrition science's knowledge base, even into the twenty first century, continues to be heavily influenced by reductionist and positivist research. This is evidenced in definitions of nutrition (Cataldo, DeBruyne & Whitney, 2003; Whitney & Rolfes, 2002) as the study of "the processes by which the organism ingests, digests, absorbs, transports utilizes and excretes food substances" (Hegarty, 1988, p. 12). However, these same definitions have begun to incorporate other knowledge into the study of nutrition. Post modern theories claim that the science of nutrition should not be founded only on knowledge derived from the basic sciences (biology, chemistry and physics) but should also include the social sciences (psychology, economics and history), the applied sciences (home economics, agriculture), and medical sciences (dietetics, nursing and dentistry). Nutrition scientists realize that nutrition health is complex and requires an interdisciplinary approach (Hegarty, 1988). These definitions also incorporate a more systemic approach to nutrition: "A broader definition includes the social, economic, cultural and psychological implications of food and eating" (Whitney & Rolfes, 2002, p.2) or "A broader definition includes the study of the environment and of human behavior as it relates to these processes" (Cataldo et al., 2003, p. 3).

Colbin (2002) used complexity theory to conceptualize a new definition of nutrition:

Whole nutrition (WN) is the study of how different foods, both whole and refined or fragmented, affect the various levels of the human being's bodymind (physical, mental, emotional, spiritual). It incorporates the information of standard nutrition ... In addition WN also utilizes systems theory and complexity theory to study the wholeness of the human system, and the context in which they are consumed. Wholistic nutrition proposes that food can be seen according to the concepts of quantum physics as both particle (nutrients) and wave (flavor, aroma, texture, energy quality) and therefore food can impact both the particle aspects of the human body (chemistry) and the wave aspect of the human

being (mind/emotion). As chaos theory shows, a change in diet can send the bodymind into an entirely new direction of development, and this capability is what lies behind the ability of diet to change health conditions. (pp. 252-3)

Like ancient Asian philosophers, Colbin reconnects food with health, the body, mind and spirit.

The most comprehensive definition of nutrition to date, is that presented by the International Union of Nutritional Sciences (IUNS) in The Giessen Declaration of 2005 – “Nutrition science is defined as the study of food systems, food and drinks, and their nutrients and other constituents; and of their interaction within and between all relevant biological, social and environmental systems” (2005, p.4). The IUNS proposes that the purpose of nutrition science is twofold – to develop and sustain a healthy, diverse, human, living and physical environment and to influence the development of food and nutrition policy that protect sustainable and equitable community, national and global food systems. Ethics, evolution, history and ecology are principles which are used to guide nutrition science so that its implementation is most effective. This definition is based on systems and complexity theories (Cannon & Lietzmann, 2005) and also stresses the need for critical dialogue in order to implement action that will benefit individual and public health (Margetts, 2006). The IUNS (2005) stresses the need for an interdisciplinary approach to effectively address nutrition problems. This includes knowledge, as well as, skills, from biological (remembering that the classical biological dimension is still central) social and environmental dimensions (Beaudry & Delisle, 2005).

The dissemination of these new concepts of nutrition is slowly occurring at the public level, in university and high school dietetic and home economics courses. Although many university textbooks continue to focus on the biological processes occurring in the body during food consumption (Barker, 1996; Cataldo, DeBruyne & Whitney, 2003), other texts (Hamilton, Whitney &Sizer, 1988; Hegarty, 1988; Whitney & Rolfes, 2003) are integrating social and environmental knowledge such as personal and social factors influencing food choices, how to access and evaluate accurate nutrition information, consumer information, food safety, global food issues, and diet, lifestyle and

health.

2.6 Implications for Home Economics

Home Economics has been greatly influenced by Habermas. Brown (1980) and Brown and Paolucci (1979) used critical theory to define the knowledge content of home economics – instrumental or ‘how to’ knowledge (prepare a meal, prepare meat safely); communicative or ‘what does it mean’ knowledge (to be diabetic, to eat kosher); and lastly, emancipative or ‘in whose interest’ knowledge (is it to recommend baby formula over breastfeeding, is it to relax pesticide regulations). Siebert and Kerr’s (1994) typical high school text incorporates these forms of knowledge, as evidenced by these chapter topics: instrumental (biological processes of eating food, food preparation/recipes, food safety, purchasing food, serving food, diet planning), communicative (food habits and traditions, cultural foods), emancipative (global food issues, health risks and foods, evaluating nutrition information sources). This text also demonstrates to its readers the complex interplay of different types of knowledge needed by individuals to understand and act in a manner that will help maintain personal and global nutritional health.

2.7 Conclusion

In summary, the post-modern theories (systems, complexity and critical) have helped to rekindle the ancient health perspectives of ecology and wholeness. Good nutrition science is not a means to insure freedom from disease, but rather it is a means to overall well-being. Reductionism continues to have a stronghold on how matter is perceived. The body is still viewed as made up of many individual components, but now these components are seen to function systemically – parts of a greater whole – body/mind/environment.

Nutritional health of the body system is dependent upon the interaction of food (sourced from all food systems) and the interaction within and between body components – including the mind. These interactions are also influenced by the social and physical environment. Social factors such as religion, food fads, government policy and physical environmental factors such as climate, geography and pollutants can influence the quality, quantity and type of food entering the body.

The body system adapts to these environmental conditions either towards health or illness. The type, quality and quantity of food become important elements in maintaining health. The interactions of food, within and between body components are interconnected and interdependent. A breakdown in any one of the biological, social or physical systems can affect the well being of the other. Nutrition is now seen ecologically.

Nutrition knowledge, whether scientific or applied, remains focused on the biological processes by which the body takes in, uses and excretes food matter. However, due to the complexity of biological, social and physical environments and their subsequent interaction, nutrition knowledge needs to be broader so that humans can adapt more readily to system fluctuations and maintain health. Such knowledge needs to be interdisciplinary and contextual in nature. Since the purpose of knowledge is to lead human beings to adaptive action, it also needs to incorporate three basic human interests – control of the physical environment, understanding of social structures, and emancipation from oppressive conditions - as they relate to nutrition. The means to knowledge is not just through observation and experimentation, but also through experience, reflection and critical dialogue. The role of the nutrition professional may be diagnostic but more importantly it needs to be educative – teaching individuals the nature of nutritional illness and which choices need to occur in order to improve health.

Philosophically, nutrition science has come full circle incorporating ancient, modern and post-modern perspectives to create a science that is holistic, systemic, ecological and critical.

At the start of the chapter, I posed two questions: Is there a relationship between the terms eating, nutrition and health? How do we define nutrition? I posed these questions in an attempt to better understand what to teach my students about nutrition so that they can be healthier by making wiser nutritional choices.

My theoretical review supports the idea of an interconnected and interdependent relationship between what we put into our mouth as food, the nutritional components of food, and their ability to maintain health or well-being. These complex interactions require an integrated teaching approach. Knowledge needs to be interdisciplinary, contextual and able to help individuals meet three basic interests – control, understanding

and emancipation of their biological, social and physical environments. To acquire this knowledge, students need to develop cognitive and affective attributes that will help them freely choose the course of action that will lead them to personal and global health. These attributes include observation, experimentation, reflection, interpretation, dialogue, critique and personal skill development. To use these attributes effectively, we need to communicate well and this requires a good grasp of literacy (a conception I will explore in the next chapter).

In the introduction I provided three common definitions of nutrition. I questioned whether these definitions were sufficiently complete to guide curriculum content. This review indicates that they are not. Each is built on reductionist ideologies. The Collins Gage Canadian Paperback Dictionary (2006) and the Cambridge Advanced Learners Dictionaries Online (2007) definitions connect nutrition with health. Only the Cambridge definition, however, attempts to incorporate a systemic and ecological perspective. These definitions do not incorporate complexity or critical theory perspectives. It is my opinion that as a result of theoretical shifts, teachers of nutrition need to explore a new conception of nutrition.

I believe that a post-modern definition of nutrition needs to encompass all five philosophical theories discussed – reductionism, positivism, systems, complexity and critical theories. It needs to be interdisciplinary, holistic, ecological, and empowering. As presented, I believe that the IUNS offers the most progressive and comprehensive definition of nutrition – one that incorporates all of the above characteristics – at this time.

To conclude this chapter and for further discussion in this thesis, nutrition will be defined as follows:

Nutrition science is defined as the study of food systems, food and drinks, and their nutrients and other constituents; and of their interaction within and between all relevant biological, social and environmental systems.
(IUNS, 2005, p.4)

3 LITERACY: A CONCEPTUAL DEFINITION

3.1 Introduction

If one is going to discuss nutrition literacy or any type of literacy for that matter – eco-literacy, media literacy – then having a conception of literacy is critical to create common understandings. In this chapter, I explore the concept of literacy, surveying historical and current uses of the term, and develop a conception of literacy that will guide my practice as a home economics educator responsible for developing curriculum and instruction for nutrition literacy.

The most common understanding of literacy is the ability to read and write (Collins Gage Canadian Paperback Dictionary, 2006). This definition, however, has expanded substantially over the past fifty years. Literacy is what we “do” with language. It is a transformative process by which we use language to communicate understanding with others. But, for others, these definitions are not sufficient. Some claim a political dimension to literacy, whereby a literate person is able to alleviate poverty and oppression. UNESCO (2004) defined literacy as all those activities in which literacy is necessary for the effective functioning of persons or community and which also allows persons to continue to use reading and writing for their own and their community’s development. Literacy is also used as a metaphor for competencies in specific knowledge domains other than those concerned with reading or writing, for example skills in computer literacy, media literacy and health literacy (UNESCO, 2004). Researchers, such as Graff (1995), see these newly proliferated literacies as merely semantic ‘name games’ for politicizing literacy or knowledge areas.

Differing conceptions of literacy are also apparent within the public school system. In my school district, goals for increasing literacy skill levels (reading and writing) are clearly documented on their website (School District No. 23, 2008a). Further, the District Health Promoting Schools Committee expects all students in the district to be health literate [having the essential knowledge and skills needed to make health enhancing choices] (School District No. 23, 2008b). As a home economics educator, who teaches nutrition health, I am expected to support both these goals and policies by including literacy in my curriculum. However, how literacy is conceptualized in these two contexts is quite different. One speaks to the skills of reading and writing,

while the other to knowledge and decision making. With little support from the BC provincial curriculum documents for home economics (Ministry of Education, 2007) or curriculum leadership from the school district it is difficult to know which or how to incorporate these two conceptions into my day to day teaching. This practical example demonstrates the need for a common conception of literacy, in order to facilitate the development and execution of consistent, quality educational programs.

3.2 Conceptualizing Language

To begin conceptualizing literacy, it is important to conceptualize language. Barton (2005) states that literacy is embedded in language. One cannot speak of literacy without speaking of language. Language can be defined, vernacularly, as speech or communication of meaning (Collins Gage Canadian Paperback Dictionary, 2006), or more academically, as symbolic mediated communication (Complexity and Education, n.d.). Both define literacy as communication, and involves meaning (symbolic infers given meaning to something). Only the latter definition included mediate. I shall construct a conception of language by analyzing each component of these definitions – symbols, mediation and communication.

Davis, Sumara and Luce-Kapler (2000) state that language starts as an oral phenomenon. Early in human existence, people communicated by mimicking the sounds they heard in their environment – verbal symbols which represented animals or natural events. These mimickings are the first representations of thought being expressed as words. As people evolved and their vocabularies grew, they developed the ability to make and change sounds or words, join these words to create speech or language. As time progressed, people were able to represent sounds (oral symbols) visually as text (written symbols) (Davis, Sumara & Luce-Kapler, 2000; Nelson & Pearson, 1992).

Communities that maintain an oral language tradition conceptualize words, relationships, memory of knowledge and interpretation of thought quite differently from those communities that use written symbols. In text communities, words are seen as objects – symbols that are filled with information and meaning. Word meanings are independent of context and as such, language meaning and usage are standardized by grammar books and dictionaries. In oral communities, words are utterances created

during interaction. Words are developed when sound, activity, context of needs and wants intersect. Meanings of sounds are contextual. They are particular to social conditions, cultural situations, patterns of daily life, as well as, specific to geography, subcultures and even to families. Word meanings are negotiated in face to face interactions and so are flexible and change often. In textual communities, written language becomes a storehouse for knowledge (lists, books and data bases) and so has the ability to connect people geographically, historically and culturally. Text language allows people to be autonomous in their use of stored language as they can access information and knowledge at will, which therefore places little demand on human memory. Oral communities, on the other hand, use different strategies for storing knowledge and for remembering. Rhymes, poems, recitation, and the like, help to create a collective memory. The transfer of meanings and knowledge is based on relationships with others – some members may become ‘keepers’ of specific knowledge. If word meanings presented are not clear, person to person dialogue allows for clarification of thought. In text communities, if the meaning of the written word is not clear, clarification is difficult as one may not have access to the author. For this reason, written exposition of thought is usually logical and linear so that it is clear and easy to follow. Therefore, the type of language community one participates in influences how a person will create, store and retrieve language symbols, word meanings and knowledge (Davis, Sumara & Luce-Kapler, 2000).

Language is not only symbolic it is also a mediator. People create meanings and world views from their everyday experiences as they interact with people and their environment. Language is the mediator between people and these experiences. Barton (2005) describes three ways in which language mediates experience. First, language mediates language. The language humans develop in their minds is created by the language available in the environment they live in. Language is used to create and express thought. The language that is learned shapes the way that those experiences are coded, organized and remembered. Language unites what goes on in the head (psychological) with what goes on in the environment (sociological). An example of this would include an alphabetic writing system (English) where a symbol represents a sound and several symbols need to be placed together to create a word meaning versus a

morpheme-writing system (Chinese) where each symbol represents a word meaning rather than a sound (Fromkin & Rodman, 1978). Secondly, language mediates between people and experience. People create world views, from their every day life experiences, and share them with others. Teachers, for example, use language to describe, interpret and structure ideas and facts for their students. This is a form of scaffolding to help make learning more manageable, knowledge more accessible and facilitates the creation of meaning. Thirdly, language mediates between text and experience. Authors of texts, such as books, magazines, newspapers, express their views of reality by using written language as a vehicle to influence others. Visual media, such as film, television and internet use textual images to present a specific reality to its viewers. The viewer or reader also uses language to decode the world view being presented. Teachers mediate visual and written texts for their students by selecting certain videos, textbooks or passages and other learning resources to facilitate the interpretation of ideas by students.

Language is also about communication. Communication can be viewed as a process of understanding and sharing of meanings through language (Nelson & Pearson, 1992). In complexity theory (for example: Cilliers, 2000; Manson, 2001; Morrison, 2002; University of Alberta, 2007) language is portrayed as the communicative process of complex systems (human systems). Communication allows for the exchange of information and resources between subsystems and systems (individuals and communities) and their environment. It is this complex exchange of information that allows humans to adapt to new situations in new ways. Adaptability is also facilitated by knowledge gained through learning and memory. Knowledge is everyday realities (world views) constructed through the dialectical interactions of individuals and communities. Dialectical interactions are dependent upon language which is made up of words, which in turn are symbolic – socially constructed meanings of everyday practices, that are influenced by cultural, historical and political processes (Davis, Sumara & Luce-Kaplar, 2000).

Communication can also be defined as a discourse (Crossley, 2005). Discourse (noun₁), at its most basic, is to engage in communication with individuals in different ways (email, Braille, speech, writing, etc.) Building upon this basic idea, discourse (noun₂) can also be viewed as a social structure that individuals have learned and rely

upon to help them view and think about the world they live in. A discourse (noun₂) is language that is socially constructed for a special group or community and that holds agreed-upon world views. Discourses (noun₂) can contain common vocabulary (word meanings), common knowledge and common ways of practicing everyday realities (talking, listening, acting, feeling, valuing). A person can be competent in several discourses at once – for example one could be a Moslem, a doctor and a pianist (Barton, 2007; Crossley, 2005; Larson & Marsh, 2005).

To summarize, language is a communicative process that allows humans to exchange meanings and resources in order to live in an ever changing world (noun₁). Language is made up of shared, symbolic meanings (image, oral, text) that mediate experiences (thought and action) gained through the interactions of individuals in their differing communities and environments (discourse noun₂).

3.3 Theoretical Approaches to Literacy

According to Barton and Hamilton (1998)

Literacy is primarily something people do; it is an activity located in the space between thought and text. Literacy does not just reside in people's heads as a set of skills to be learned, and it does not just reside on paper, captured as texts to be analyzed. Like all human activity, literacy is essentially social, and it is located in the interaction between people. (as cited in Larson & Marsh, 2005, p.10)

Literacy is doing language.

The word 'literacy' is fairly new. It did not appear in English dictionaries until 1924 (Barton, 2007). Like then, it is still defined, in every day vernacular, as the ability to read and write (Collins Gage Canadian Paperback Dictionary, 2006). However, as theoretical paradigms developed throughout the twentieth century, academics developed different conceptions and meanings of literacy.

Until the 1940s, reductionism and positivism were the predominant theoretical paradigms guiding knowledge development. Theorists believed that the world was like a machine made up of many parts and all parts were governed by the same mechanical laws. These laws were orderly, systemic and knowable and could be discovered by the use of scientific methodology (Butts, 1955; Capra, 1981). Literacy, up until the 1960s,

was conceptualized using a reductionist and cognitive psychological approaches. These approaches saw the mind as a computer – processing information gathered from the environment through the senses; coding it; storing it in memory; and retrieving it when needing to perform complex tasks such as reasoning and problem solving (Hilgard, Atkinson & Atkinson, 1979; Santrock, 1990).

Using this approach, literacy is conceptualized as a set of technical skills used to encode and decode language (UNESCO, 2003, 2004). Language skills are reduced to their most basic – phonics, letter knowledge, spelling skills, vocabulary, comprehension, as well as, basic knowledge and understandings required for reading and writing (left to right, print versus hand writing, etc.) (Freebody & Luke, 1990). These skills and understandings are set in a linear model and students progress through the skill set sequence at particular age levels (Larson & Marsh, 2005). Cognitively, interpretation, meaning and understanding of language is seen as universal – it is not contextual (Gee, 2008). Because skill sets are all the same, literacy becomes a measurable and assessable variable (Barton, 2007). This particular aspect of literacy makes this approach very appealing to government policy makers who demand accountability for success of literacy programs.

After World War II, UNESCO (United Nations Educational Scientific and Cultural Organization) was created to promote world development, with a priority on literacy. It developed literacy programs with the belief that literacy would spur socio-economic development in poor countries. Functional literacy, as it became known, was to prepare human kind for social, civic and economic roles, where reading and writing should provide general knowledge, basic training for work, increased productivity, a better understanding of the world and open the way to basic human culture. Programs, however, became mainly focused on industrial, agricultural and craft training for men, and homemaking and family planning for women (Graff, 1995). Although, this perspective did not turn out to be highly successful, what was notable was that it moved from thinking that fixed literacy skills fit all contexts toward the view that the demands of certain situations are different and literacy skills are relative to the context in which literacy is used (Barton, 2007). As well, the ability to read and write played an important

role in the ability of individuals to participate in social activities (Freebody & Luke, 1990).

The 1960s and 1970s saw another shift in the development of literacy theory and practice. Conflict theory had a major influence on how language was perceived. The basic tenets of conflict theory are: for humans to survive in the world, they need knowledge that will help them control the physical environment and to develop methods for predicting how it behaves; humans live in a social environment and they require knowledge that will assist them to understand the social structures (values, norms, morals) that allow them to live in cooperative community; and finally, when social structures of a community break down, and conflict arises, humans need knowledge that will free them from oppressive conditions that prevent them from living the life they choose. Knowledge is developed through discourse (verb) – a communicative process that leads to the questioning of norms and assumptions held to be true. Freedom is achieved through reflection and dialogue on the historical, cultural, and political contexts that cause the conflict; once understanding of what the distortions in control and understanding are, corrective knowledge can be applied and corrective action taken (Brown, 1980; Coomer, 1989; Crossley, 2005; Fontana, 2004; Habermas, 1972).

Freire (2007) drew on conflict theory to develop the concept of literacy as ‘conscientization’ – the ability to raise the consciousness of people’s position in society, ask why societal structures are the way they are, and take action to change it if it is oppressive (Street, 1984; UNESCO, 2003). Text, in this sense, is constructed by individuals with a certain perspective or world view, even though there may be an attempt to make the text as neutral or factual as possible. The reader of the text will also hold a particular perspective or world view and will therefore interpret the text accordingly. The role of literacy, therefore, becomes one of critique – to become aware of the world views that are brought into play when creating and interpreting language and how these world views affect the ways that individuals live out their lives (Freebody & Luke, 1990). Freire saw language positioned in social context and as such, could oppress individuals and communities. Literacy is about challenging the powers that oppress. Learning to read and write is not enough, it is also necessary to discourse (verb) – to reflect and critique text (words) and then act upon the reflections and critique (Freire,

1970). Literacy is about shaping political and social change (Larson & Marsh, 2005). Freire's approach moved literacy from the socio-economic confines of functional literacy and placed it in a political context "emphasizing connections between literacy and politically active participation in social and economic transformation (UNESCO, 2004, p. 9).

The 1980s saw a further turning away from reductionist and cognitive theories to ones that focused on social and cultural interaction. Post-modern, post-structural and constructivist theories provided new paradigms in which to view the world. Post-modern theorists believe that knowledge is something humans construct from their understandings of the world they live in – it is not acquired. Knowledge is relational. It is embedded in geography, history, and context. Understandings are created through critical discourse. Discourse (verb) analyzes how identity, culture and knowledge shape and is shaped by language and power (Gee, 2000; Maybin, 2000; University of Alberta, 2007). Gee (2000) best described this turn in thinking by using 'network' as a key metaphor: "knowledge and meaning are seen as emerging from social practices or activities in which people, environments, tools, technologies, objects, words, acts and symbols are all linked to ('networked" with) each other and dynamically interact with and on each other" (p.184).

The New Literacy Studies (NLS) is a paradigm that evolved from this socio-cultural world view. As a movement, NLS is influenced by theories across many disciplines and as a result, many different conceptions of literacy have evolved. Defining literacy becomes difficult because no one definition is general enough to capture the complexity and diversity of how people acquire and apply literacy in their daily lives. The term 'plurality of literacy' is adopted to refer to the different purposes and different situations in which literacy is used and how they are influenced by culture, language, history, religion and political conditions. These conditions are embedded in power and influence who has access to and who constructs literacy. Literacy is not just a set of technical skills to be learned, rather it is about the social dimension of the acquisition and application of language (UNESCO, 2004). Literacy is not only learned and practised at school, but also at home, at work and in places of leisure. New information and technology also impact how literacy is conceived and therefore, what needs to be learned

(Baynham & Prinslow, 2001). The term 'multiliteracies' has also been used to pluralize the term literacy, to take into account the many ways of making meanings that have resulted from the technological developments that have impacted modes of communication like print, still and moving images, sounds and gestures (Larson & Marsh, 2005).

There are three main tenets of NLS – literacy practices and events; autonomous and ideological literacy; and discourse communities. Literacy practices and events are tools used to develop literacy competence across community use (Larson & Marsh, 2005). Literacy events are defined as occasions when individuals and social groups use written texts and construct meanings relevant for everyday living (Gee, 2000; Larson & Marsh, 2005). Literacy practice not only incorporates literacy events, but also incorporate behaviours, social and cultural conceptualizations that give meaning to the uses of reading and writing (Larson & Marsh, 2005). For example, a literacy practice is going to the grocery store to buy food for a Jewish meal. The literacy events within this practice include – understanding Jewish food laws, reading the sales flyer, making a grocery list, and reading food labels.

NLS also conceives literacy in terms of autonomous and ideological models. NLS does not conceive literacy as one model or the other, but rather as a continuum between the two models. An autonomous model attempts to understand literacy in terms of a reductionist perspective as a set of skills to be learned and that can be applied across all contexts. Texts do not need to be subjected to critical analysis because textual meanings are independent of social and political contexts (Larson & Marsh, 2005). The ideological model attempts to understand literacy in terms of its 'plurality' of acquisition and application in different contexts. The meaning of literacy is constructed by specific social practices, by particular social groups in specific cultural setting by particular purposes at a specific point in time (Gee, 2008; Larson & Marsh, 2005).

The final tenet of NLS is discourse. Gee (2008) describes two types of discourses. Little 'd' discourses (noun₁) are long meaningful stretches of language, like a conversation, essay or report. Capital 'D' Discourses (noun₂) are "composed of distinctive ways of speaking/listening, and often, too, writing/reading, coupled with distinctive ways of acting, interacting, valuing, feeling, dressing, thinking, believing, with

other people and with various objects, tools and technologies so as to enact specific socially recognizable identities engaged in specific socially recognizable activities” (Gee, 2008, p.155). So, discourse is a part of Discourse and Discourse is more than just language. An example of a Discourse would be a nutritionist or a foodie.

Literacy, as conceptualized by NLS, moves along a continuum between technical reading and writing skills and the acquisition of socially constructed meanings, about the world, through the use of reading and writing in every day practice. Through reflection, people realize that their world view is derived from a social structure (Discourse noun₂) that they have learned and that they regularly depend on (Crossley, 2005). Although this perspective recognizes that literacy is not just the acquisition of technical skills, or the social acquisition of meaning, it does not fully recognize the complexity or the integral nature of the acquisition and application of literacy in the lives of individuals.

A more recent perspective on literacy, an ecological one, has been conceptualized by Barton (2007). He concurs with Gee’s (2008) notion of the plurality of literacy, which has resulted from the recent proliferation of studies focusing on the social meaning of literacy (the recognition that literacy is socially constituted and shapes people’s attitudes, actions and ways of learning). Barton believes that it is important to integrate all of these perspectives in order to talk about literacy. He also recognizes that it is an omission to only speak about the social meaning of literacy. It is equally important to recognize the impact of psychological concepts such as thinking, learning and memory on literacy and not to treat them as unanalyzable concepts. Lastly, he believes that literacy is not something that is ‘done’ to people – rather people are active decision makers in the process of acquiring literacy.

Barton’s ideas are influenced by perspectives, such as activity theory (Complexity and Education, n.d.) which focuses on activity systems. Activities are undertaken by an individual who is motivated by reaching a set goal or finding the solution to a problem. Activities are mediated by culturally established tools, like language, in cooperation with their community. Equally influential is complexity theory (Complexity and Education, n.d.) which asserts that systems (humans and communities) are made up of other systems that interact in a network type fashion, with one another. Systems use tools, such as language, to share information and knowledge in order to create new behaviours that

allow them to adapt to a constantly changing environment – this is known as emergence. Finally constructivism, states that humans develop their own understanding and knowledge of the world by continually adapting and interpreting previous experiences gained through interaction with their environment (Complexity and Education, n.d.).

Using these perspectives, Barton describes how established languages change over time because of social factors (new technologies, culture, migration of people to new communities, new activities requiring new language) and how people can prevent their complete disappearance by standardizing the vocabulary and grammar through textbooks. Yet, at the same time, these same text tools can promote diversity of language, such as English (British, American, Canadian). Computer science has created a new way of looking at the world, and how humans interact and communicate in it. Internet, Google are just some examples of technologies that have developed their own language and have transformed how people access information and create new knowledge, as well as, how people communicate with one another (e-mail, text messaging) (Barton, 2007).

Barton believes that all of these perspectives need to be integrated in order to study literacy holistically. He uses the metaphor ‘ecology’ to encapsulate this new idea. Ecology is to be understood as the interrelationships of any and all human activities and their environment. The activity (in this case literacy) is part of the environment and their mutual interactions influence one another. He goes on to define the ecological approach to literacy

As one which examines the social and mental embeddedness of human activities in a way which allows change. Instead of studying the separate skills which underlie reading and writing, it involves a shift to studying literacy, a set of social practices associated with particular symbol systems and their related technologies. To be literate is to be active; it is to be confident with these practices. (Barton, 2007, p. 32)

In summary, literacy can be conceptualized as ‘doing’ language. It is about learning a specific set of skills that allow people to speak, write words and read visual symbols. It is about creating meaning and understanding about the world we live in and being able to communicate these understandings to others. Literacy is about empowering

people to live the life they choose through the use of language, as well as, understanding how political structures use language to oppress or emancipate individuals and communities. Literacy is understanding how culture, history and politics are embedded in language and how they impact on the ability of people to carry out their daily activities. Finally, literacy is ecological. It is many literacies integrated together as a set of interconnected social practices that depend on specific language systems that help make people confident in doing these activities and able to interact in their environments.

3.4 A Conceptual Model of Literacy

From the above discussion, it is apparent that literacy is a complex concept that has moved from the common understanding of reading and writing to a more complicated conception that includes consideration of social context such as politics and culture. In order to synthesize the literature reviewed, I have constructed a conceptual diagram. Refer to Figure 1 to accompany the following discussion.

Three components make up literacy – language, action and ecology. Each component is represented within a circle. The circles overlap to indicate their interconnectedness - each component influencing the other. In the outer two concentric circles are the social contexts (culture, politics, history) that impact the three components. The inner concentric circle is perforated to indicate the permeability of the social contexts with the components.

Literacy is language. Language is made up of symbolic (oral, written, image) mediated (using language to connect thought and experiences) communication (the process of understanding and sharing meaning). Literacy in this sense is discourse (noun₁). Discourses can involve one way path communications (as in a pamphlet), two way path communications (as in an email conversation), or transactional communication path (face to face conversation) (Nelson & Pearson, 1992). Language is influenced culturally (by religion, ethnicity, social class, etc.) politically (by the power structures that create texts and who are allowed to interpret it and use it) and historically (by being positioned as a historical act – in a particular written text which can be accessed at any time). The language culture of the community (oral or textual) will also influence how the symbols or words are created, the meaning given to the words, how they are stored

and accessed. Communication technologies also determine how meaning is coded or presented, or who has access to it (video, email etc.)

Literacy is action. Through the use of language, humans create individual meanings about their environment from their daily experiences. Through community interaction, people establish common understandings and world views. These common understandings and daily experiences create knowledge about the world they live in. The freedom to learn and use language to create and access knowledge, gives individuals and communities the power to choose the action that best helps them meet their goals.

Literacy allows for the analysis of language, as well as, cultural, historical and political structures that might interfere with people's ability to freely choose how they live and also foster the necessary changes to freely act. Literacy in this sense is discourse (verb).

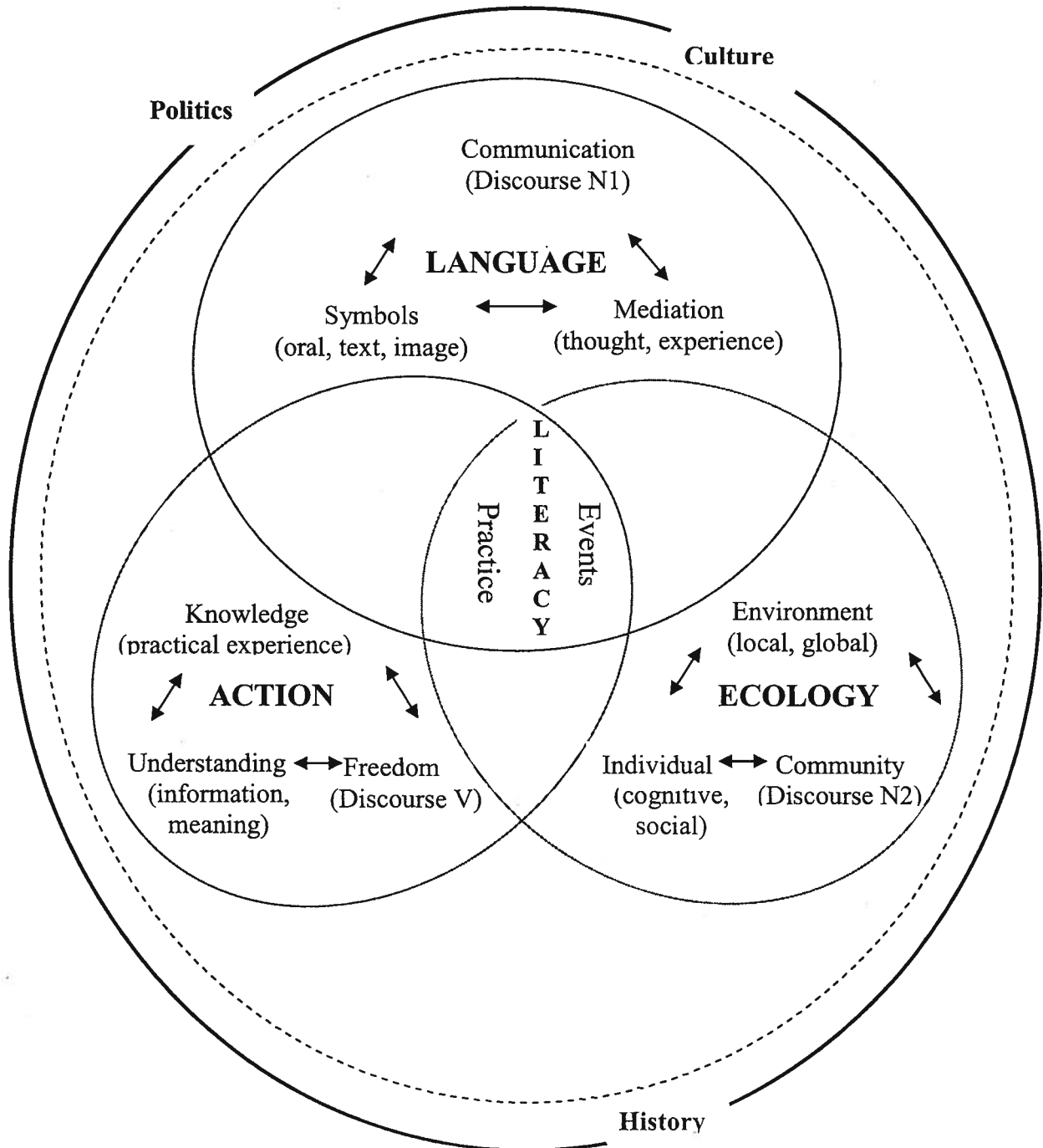
Literacy is ecological. Human systems (individual and communities) and their environments are interconnected and interdependent for their survival. Communication, through language, facilitates the creation and sharing of knowledge for survival.

Language is socially constructed by individuals during interactions at home, at school, at work and during leisure activities, and further constructed by the use of many different language technologies – television, radio, newspapers, cell phones, computers, etc.

Language use and development is dependent on the individual's ability to acquire the basic skills and meanings of the language as established by the community, and the community is dependent on the individual to create new symbols and meanings, so that people can adapt to changing environments. Literacy in this sense is discourse (noun₂).

As well, a person's ability to use language is based on his/her identity – who s/he is culturally, historically and politically, which in turn effects the interaction between them the community and the environment.

Figure 1. A Conceptual Model of Literacy



3.5 Conclusion

Literacy is not defined by each separate component – language, action, and ecology. Rather, literacy is defined by the relationship that these three components have together. Their interconnections and interdependence does not make the relationship constant. The relationship is dynamic because of the ever changing influence of culture, politics and history on different components at different times. With that in mind, literacy, as an integrated concept, is the ability of individuals and communities (who live in varying environments) to use symbolic language to create, access and communicate understandings and knowledge in order to empower themselves so that they may freely choose the actions that best meet their intended goals. Literacy in this sense is about everyday living. It is about the ability to accomplish everyday practices by participating in events which involve literacy.

Using this conception of literacy and the conception of nutrition developed in the previous chapter, I will create a new paradigm – nutrition literacy – in the next chapter.

4 NUTRITION LITERACY

4.1 Introduction

In Chapter 2, I surveyed both historical and recent uses of the term nutrition. In Chapter 3, I surveyed the historical and current understanding of literacy and constructed a figure to explain an elaborated conception of this commonly used term. In this chapter, I integrate these two to create a further conception – nutrition literacy.

As defined in Chapter 2, nutrition science is “the study of food systems, food and drinks, and their nutrients and other constituents; of their interaction within and between all relevant biological, social and environmental systems” (IUNS, 2005, p 4). In Chapter 3, I defined literacy as doing language. It is the ability of individuals and communities (who live in varying environments) to use symbolic language to mediate between thought and experience and thus create, access and communicate understandings and knowledge, in order to empower themselves, so that they may freely choose those actions that best meet their intended goals. Literacy is, then, about everyday living. It is about the ability to accomplish everyday literacy practices by participating in literacy events that involve language, action and ecology which are in turn influenced by politics, culture and history.

As an integrated concept, nutrition literacy is about doing nutrition. Theorists might prefer to use the term ‘practicing nutrition’ or ‘applying nutrition’ but I prefer the term ‘doing literacy’ (Barton and Hamilton, as cited in Larson & Marsh, 2005, p.10)) because this phrase implies more active engagement. It is about using language for creating understandings and knowledge about food systems and their ecological relationship with biological, social and environmental systems and communicating these understandings and knowledge to individuals and communities, so that they can choose and know how to participate in daily actions that will lead to better nutritional health. Nutrition literacy is about everyday living. It is the ability to accomplish everyday nutrition literacy practices by participating in nutrition literacy events.

Using this definition of nutrition literacy, I shall elaborate the conceptual model of nutrition literacy using the literacy model created in Chapter 3.

4.2 Tracing Nutrition Through the Conceptual Model of Literacy to Create a Conception of Nutrition

A conceptual model of nutrition literacy integrates the definition of nutrition science and the literacy model, with the intended outcome of demonstrating a vision of nutrition literacy that can assist people in leading nutritionally healthier lives. Authentic nutrition literacy occurs at the intersection of three main components – nutrition language, nutrition action and nutrition ecology – within a context of politics, culture and history.

4.2.1 Nutrition Language

One component is nutrition language, without which, it would be difficult for individuals to communicate nutritional information, understanding and knowledge. In the conceptual model of literacy the language component includes symbols, communication and mediation. Nutrition symbols include the nutrition related words, concepts and ideas that are expressed orally or in text and/or in images. So being familiar with nutrition terminology (for example diet, malnutrition nutrients, deficiency diseases) and their meanings (vocabulary), as well as nutrition images (for example food guides, nutrition labels, medical instructions) allows individuals to communicate with a common understanding.

Communication is the act of transmitting nutrition words, concepts and ideas from one person to another. The method chosen to communicate nutrition symbols is known as a discourse (noun₁). Discourses (noun₁) could involve a one way communication path, such as information being presented to an individual in the form of a newspaper article, or a lecture, or in a television program, or on the internet. Discourse (noun₁) can also involve a two way communication path where a person might email a message to a food manufacturer requesting an ingredient list of a processed food product. Messages are sent back and forth and opportunities for clarification are available. A third type of pathway which a discourse can take is a transactional one. An individual is both a sender and a receiver simultaneously – as in the case of a dietitian consulting with a patient. The dietitian is sending an oral message (medical advice) but is also receiving an image message, (facial expressions) to determine if the patient is comprehending the medical advice. In this case several messages are being sent simultaneously allowing for several

different forms of feedback – oral and image. Choosing the type of discourse and communication pathway can expedite the message being sent.

Nutrition language mediates between the individual, people and nutrition experiences in three ways. First, language mediates nutrition language. In other words, everyday nutrition language experiences [symbols and discourses (nouns₁)] are coded in the brain by using the language available in the brain. Second, nutrition language also mediates between people and nutrition experiences. People create nutrition ideas and concepts from their everyday life nutrition activities and share them with others through the use of language. Lastly, language also mediates between nutrition text, images and people. Authors use nutrition texts or images to express their world views about nutrition in order to influence others. Because the reader uses their available vocabulary to decode the nutritional world view being presented an end result may be an interpretation the author may not have intended.

Language is influenced by cultural, political and historical contexts. Political policies determine who has access to language and nutrition learning (girls not boys, availability of schools, provincial curriculum guides), as well as access to different modes of communication (air waves, internet, books). Historically, language symbols and meanings change over time and so it is important to be sensitive to these changes during a discourse in order to be understood – for example body as machine (modern perspective) versus body as system (post-modern perspective).

Nutrition language, relies on an interconnected and interdependent relationship between nutrition language symbols, nutrition language communication and nutrition language mediation.

4.2.2 Nutrition Action

Another component is nutrition action – the ability to use language, so as to freely make the most informed decisions about how to live a nutritionally healthy life. Language is a tool that is used to create, store and access information, meanings and understandings about the world we live in. Nutritional information is gathered from a variety of academic sources including biology, chemistry, agriculture, food science, psychology, sociology, economics, political science, as well as, familial, ethnic and religious sources.

Creating nutrition meanings from information communicated through language is a form of action individuals participate in during their day to day activities. Communities create common understandings about nutrition in much the same way. Individuals and communities, in turn through language, use these meanings and understandings to create and act upon knowledge. It enables people to address questions such as – in what ways can we support a diabetic teen or what kinds of support should be in place to ensure that nutritional status is not disadvantaged by socio-economics status or what should be done to insure universal access to safe, nutritious, culturally appropriate foods?

Action implies the ability to embody or apply knowledge and learn from experience. So the action dimension includes experiences that contribute to overall nutrition literacy such as planning and preparing nutritious food, designing menus for special diets, comparing and contrasting nutritional analysis of various foods products. These experiences allow individual meaning and common understandings to be transformed into everyday nutritional practice.

Nutrition action also involves the freedom to access information, understandings and knowledge about nutrition; the freedom to use language to create one's own meanings and understandings about personal and community nutrition; and the freedom to analyze those commonly held understandings and knowledge practices about nutrition that might prevent one from making the best possible decision about their nutritional practice. Nutrition action includes the ability to articulate and discuss nutrition practice within families and communities and the ability to reflect consciously about the impact of nutrition practices in the individual, the community and the environment. Discourse (verb) is a means to freedom. It is a process that uses communicative discourses (noun₁), such as discussion groups or editorials, to analyze those contexts (cultural, political, historical) that may promote biased nutritional understandings and practices (infant formula feeding, food banks, mono-culture crops). But it can also empower individuals by using the same communicative discourses (noun₁) to promote alternate understanding and knowledge about nutrition practices (infant breastfeeding, community kitchens, seed banks).

Nutrition action, relies on an interconnected and interdependent relationship between nutrition understandings, nutrition knowledge and nutrition freedom.

4.2.3 Nutrition Ecology

The third component is an ecological component. Language connects individuals, communities and environments via a complex, interconnected and interdependent communicative web, which facilitates the exchange of vital information, understandings and knowledge about nutrition – which humans need for survival.

Individuals socially construct nutrition language during interactions at home, at school, at work and during leisure activities, as well as, by the language technology made available to them. Although an individual's cognitive ability will determine how nutrition thought, symbols and meanings are internalized, it is the diverse communities present, in the environment, which will produce the broad scope of possible nutrition action.

Humans, all belong to a nutrition community, due to the simple fact that physical survival is dependent on the consumption of food and water. When a community socially constructs its own language, which contains common vocabulary, common world views, common understandings and common ways of practicing everyday realities (talking, listening, acting, feeling, valuing), that community has developed a discourse (noun₂) – in this case a nutrition discourse. Children, for example, begin their learning about nutrition in the home (familial community) by learning the familial words for different foods; create meanings about foods (that's yummy, that makes my bones strong); and acquire the 'how to' knowledge of food (how to grow tomatoes). As individuals grow, the number of communities they are exposed to or they participate in expands – a school community, a religious community, an ethnic community, a political community. Some of these communities' discourses will contain understandings and knowledge about nutrition (respectively Canada Food Guide, kosher, haggis, green revolution).

An individual's or a community's ability to acquire nutrition language and participate in nutrition action is also dependent upon the environment, local and global, that they live in. Cultural, political and historical contexts within the environment (war/peace, wealth/poverty, oppression/freedom, disease/health, democracy/autocracy, indigenous/industrial) are vital determinants to accessibility to language education; to nutrition communicative resources (books, email, internet); to discourse (verb) about nutrition issues; and to free action on nutrition understandings and knowledge.

Environments are constantly changing. Nutrition language and action change as a result.

Nutrition ecology, relies on an interconnected and interdependent relationship between the individual, the community and the environment as they relate to nutrition.

4.2.4 Nutrition Literacy Events Lead to Nutrition Literacy Practice

The center of the Venn diagram, the areas of overlap, is where nutrition literacy comes to life. It is here that language, action, and ecology unite and work together within the contexts of politics, culture and history to create nutritional literacy. For example, the political contexts could include consideration of laws, regulations, funding policies, ideological positions around poverty and access to food. Cultural contexts could include topics such as family roles, norms, traditions and rituals. Historical contexts could include advancements in research and technology, impact of colonialism and globalization.

It is in the areas of overlap where small literacy events occur and over time the accumulation of these events become a coherent set of nutrition literacy practices. For example, the nutrition literacy practice of using a nutrition guide, such as the Canada's Food Guide to Healthy Eating (1996), for meal planning might include the following nutrition literacy events: interpreting the rainbow image, defining the term alternatives, using the internet to download government literature on the Food Guide, determining serving sizes, identifying the politics of food guides, determining cultural or religious variations of the Food Guide. It is the ability to cope with nutrition problems day in and day out that makes a person nutritionally literate. Because nutrition problems continually change and new ones present themselves, nutrition literacy will always be an ongoing action for individuals and families.

4.3 Conclusion

Nutrition literacy, as conceptualized, involves nutrition language, action and ecology. The interdependent and interconnected relationships between these three components, as well as the influence culture, politics and history have on these components, create a complex and dynamic system whose main function is to assist individuals and communities adapt to constant changes in the system by using nutrition literacy to achieve the day to day practices that secure nutritional health for all.

In the next chapter, I review the common understandings of home economics and determine its fit within the concept of nutrition literacy. I shall also present implications of using this conceptual framework within home economics educational practice.

5 IMPLICATIONS FOR HOME ECONOMICS EDUCATION

5.1 Introduction

As mentioned in my opening chapter, home economics teachers are frequently charged with teaching nutrition. The current curriculum documents in the province of BC title the food studies course Foods and Nutrition (Ministry of Education, 2006). Often the basic understanding of nutrition is not made explicit. In this chapter, I explore what it would mean for Home Economics Education if the concept of nutrition literacy that I have articulated were to be adopted as the educational goal for the subject area. I will begin by giving a brief overview of how home economics education has evolved over the years to make the case that nutrition literacy fits with the current views of the goals and purposes of home economics education.

5.2 Understanding Home Economics

Home economics was founded as a profession during the Lake Placid Conferences held between 1899 and 1908. These conferences were brought about by a movement started in the 1800s to help working and middle class families cope with the many changes to their daily lives caused by political and social unrest of the times (Vaines, 1981).

An implicit mission statement that emerged during the 1901 Lake Placid Conference was for home economists to help homemakers properly preserve food, keep homes clean and dry, provide clean drinking water, learn proper removal of refuse, care for clothing, and manage money properly (Vaines, 1981). An explicit mission statement was made in 1907,

We unhesitatingly claim that the following are of the utmost importance: (the goal is) 1. To secure maximum of health, sane happiness and vigorous mental and physical activity ... 3. Such knowledge of laws of commerce, of production, distribution and consumption as will make an intelligent consumer ... [to get] the most in health and real comfort out of the materials the family consume. 4. A knowledge of the history of the development and use of these natural resources in the past 50 years and the effect of

this use on social conditions and on life in city and country. (Vaines, 1981, p.8)

Adelaide Hoodless (1908) summarized these mission statements quite succinctly by stating that home economics education exists in order to train good citizens. Good citizenship includes knowledge of contemporary society, as well as, the economic basis of society. The economic value of a person is mainly due to good dietetic and hygienic habits established in the family at an early age. She also believed that up until then, the home's knowledge and practice had been haphazard, instinctual and unscientific. Hoodless argued that in order to best train mothers to develop better living conditions for themselves and their families and society at large, a more academic approach to the home was required.

The knowledge, laws and theories that relate to economics, hygiene and health were those based in the natural and human sciences (biology, chemistry, economics). Comte had a powerful influence on the development of the positivist movement in the latter nineteenth century (Zimmerman, 1989). He believed that science was the only way of knowing and investigative procedures could be reduced to the scientific method. So around 1905 The Lake Placid Conference, under the influence of Comte, adopted this mode of inquiry to develop its practices.

The scientific method of research did best fit the mission developed for home economics during this era. Home Economics wanted to improve the lives of families by asking 'how to' questions such as how to get clean water, how to remove stains from clothes, etc. To address these questions, cause and effect relationships needed to be observed between phenomena, deductive reasoning was used to draw conclusions, and phenomena could then be controlled by various laws or theories (Fanslow, 1989; Zimmerman, 1989). For example: bacteria is in milk; bacteria is killed at boiling temperature; boil the milk and the bacteria is killed; children will have safe milk to drink. Home economics' action paralleled societal needs and with empirical modes of inquiry.

The middle years of the twentieth century saw global and social upheavals never before envisioned: two world wars, a depression, women's suffrage, the urbanization of families, women entering the work force, new technologies that influenced the practical activities of the home, divorce rates grew, children not being socialized by their parents, There was an overall concern that families were deteriorating (Jax, 1989).

The types of problems that families were coping with, on a day-to-day basis, were changing. Problems of the family were evolving from practical skills (money management, dietetic, hygiene) to more social communicative problems (relationships, transmission of norms and values, social practices) (Jax, 1989). These changing needs of families led home economists to revisit the aims of their professional practice. Duggan (1957) believed that families needed not only to be provided with facts and knowledge but also understanding which would help make decisions concerning all aspects – social, physical, aesthetic – of their home and family living.

Home Economics reliance on natural science and the empirical mode of inquiry for the development of its knowledge base and for the resolution of practical and social family problems was proving to be inadequate. The ‘how to’ questions were slowly evolving to ‘how do we understand’, ‘how did this process come to be’, ‘what is the meaning of’ types of questions (Hultgren, 1989). A new method of inquiry needed to address these types of questions.

By the turn of the twentieth century, philosophers, like Dilthey, Wundt, and Weber (Hultgren, 1989) were already questioning whether the physical sciences were appropriate for explaining the human and cultural world, how reliable knowledge occurred in this area of study, and which methods would produce objective data in the study of areas such as language, social action and values. For these philosophers the object of inquiry became the meaning an action had for the individual, wherein understanding became the premise of explanation. From this premise arose a new method of inquiry called interpretive science. This form of research seeks to clarify or uncover meanings structured and expressed by people in their day-to-day life experiences. The aim is to understand human cultural action and experiences from the view point of those living the experience.

Home economists were able to link this mode of inquiry to professional practice by learning how to understand how specific groups (for example how do we understand the day-to-day life experiences of a single parent; how did World War Two influence the increase of mothers in the work force; what is the meaning of transferring the socialization of children from families to schools) were experiencing their new family roles and what support services were needed in order to help them cope with these new

roles (for example increased knowledge in child care, time management) (Peterat & DeZwart, 1995).

The final thirty years of the twentieth century saw huge political, social and technological changes in North America: the women's liberation movement, anti-racism laws, globalization, multinational corporations, consumerism, computer technology, economic instability, family structural changes, family violence, physical and mental health concerns, institutional control (Peterat & DeZwart, 1995). It had become apparent that the traditional family was disintegrating and that family problems were constantly changing. (McLean & Peterat, 1984; Shapka & Harrison, 1984).

The types of problems families were facing on a day-to-day basis were still evolving from the practical skills and the social communicative areas, but a new element was found to be interfering with families' ability to solve these problems – societal control in the form of local and global political, economic and cultural power (Strom & Plihal, 1989). There was also the realization that families were systemic and part of a greater whole. Family problems were complex and their resolution was dependent upon the understanding of the interrelated and interconnected relationship (ecology) between the family and other social and environmental systems (Kieren, Vaines & Badir, 1982; Nelson, 1995). Families needed to become aware of what conditions were interfering with their ability to choose a high quality and happy lifestyle and how to free themselves from these conditions (Shapka & Harrison, 1984). Examples of such conditions include: reduced access to public medical treatments; unfair child custody laws; production of food for export rather than for local consumption or hyper-consumerism.

With an evolving understanding of the perennial problems of families, home economics once again needed to revisit the aim of its professional practice. It needed to be able to address all three types of problems – technical skill, social communicative and freedom from restrictive societal control. Brown and Paolucci (1979) stated that the new aim of home economics was to

Enable families, both as individual units and generally as a social institution, to build and maintain systems of action which lead to maturing in individual self-formation and 2) to enlightened, cooperative participation in the critique and formulation of social

goals and means of accomplishing them. (p.23)

With a new mission in place, home economics needed to add to its knowledge base in order to alter its mode of practice with families. The questions researchers in home economics also needed to ask now included 'what is just' and 'what can we do' or 'how does this influence'. Other modes of inquiry were needed to seek knowledge to answer these questions.

Philosophers, such as Hegel and Habermas, were focused on understanding the complexity of human activity in a social system (Coomer, 1989). Human activity is focused on three areas of interest: 1) production – which is instrumental action that focuses on meeting needs and wants and uses empirical research as its means of acquiring knowledge; 2) socialization – which is communicative action that focuses on using language to reflect and understand the world and uses interpretive research as its means of acquiring knowledge; 3) system maintenance and development – which is emancipatory action that focuses on the use of power to free society from distortions in communication that interfere with the attainment of individual goals and uses critical research as its means of acquiring knowledge. Critical research, a new mode of inquiry, uses the dialectic to discover the inter-subjective meaning individuals and families have in a particular setting by moving through a series of four stages of activity: interpretive, analytical, critical-dialectical and action (Strom & Plihal, 1989).

Von Bertalanffy (1950, 1951) was the first to conceptualize general systems theory. The central concept of systems theory is wholeness. In other words, the whole system is greater than the sum of its parts. Capra (1988), Flint (1997), and Kast and Rosenzweig (1972) summarized the key concepts of this theory as follows: A system has its parts (sub-systems) organized in an interconnected hierarchical fashion. The boundaries between the system and its sub-systems must be permeable (open) to facilitate the exchange of information, materials or energy (resources) with its environment. In order for the system to exist it must remain in equilibrium – which means that the needs (goals) of the sub-systems and the needs of the system must be met at the same time. Cyclical patterns of communication (feedback) facilitate the exchange of resources as goals fluctuate. This form of communication creates a dynamic and transformative

relationship. This relationship helps all concerned meet their intended goals in many different ways by using resources creatively.

Home economists were able to link these modes of inquiry to professional practice by learning how to create emancipatory and ecosystem knowledge. Home economists learned how to use language to call into question those values, beliefs, or practices that are held by social institutions (cultural, religious, political, economic) that interfered with the family's ability to meet their day-to-day activities or future goals (for example what can we do to prevent agricultural land from being developed into golf courses? What is just when gay couples cannot adopt a child? How does advertising influence dietary practices?) and then learning to take the necessary action to change the values, beliefs and practices so that families can go freely about their daily activities (writing letters to the newspaper editor about the need to produce food locally, legally challenge the nation's law as to who qualifies as a fit parent, research children's food choices after watching early morning television).

This historical review demonstrates, firstly, that the knowledge domains of home economics have grown to include food preparation and preservation, nutrition, hygiene (personal and environmental), clothing care, money management, human development and relationships, and transmission of values and norms. Secondly, that home economics has developed philosophically in a very similar path as nutrition and literacy (positivism, to systems, to interpretive to critical). Communication is central to these modes of inquiry, in the development of knowledge and modes of action, that will assist individuals and families – whether it be in the creation and transmission of information necessary for family functioning, in creating understandings about families and their interactions with other social groups or with the environment, or in being critical about social structures that interfere with families being able to meet their intended goals. Language is central to communication. Literacy then, as previously conceptualized as language, action and ecology, becomes the means by which knowledge and action is possible in home economics. Nutrition literacy, therefore, can be positioned within the common understandings of home economics.

5.3 Implications for Home Economics Education

Accepting the conceptualization of nutrition literacy within the domain of home economics, what then are the implications for home economics teachers? How does one educate a person to be nutritionally literate?

A nutritionally literate person will have nutrition language. A home economics educator needs to ensure that a nutritionally literate person has a working knowledge of nutrition vocabulary (nutrients, diet, nutritional diseases), texts (nutrition labels, food guides, textbooks) and images (food products, healthy eating, advertisements) so that they can begin to learn to decode nutrition messages. A nutritionally literate person will need a working knowledge of the discourses (noun₁) used to communicate nutrition messages to them and how they can communicate them in return (websites, television, textbook, pamphlets, newspapers, magazines, power point presentations, lectures). A nutritionally literate person will also know that certain discourses can provide opportunities for feedback and therefore better personal learning rather than just the passing on of generic nutrition information (a pamphlet versus a group discussion).

A home economics educator will therefore provide opportunities for their students to mediate their own nutrition language through naming their nutrition experiences (journaling about their family meal practices, investigating food practices of their peers within their school or community); mediate nutrition language and nutrition experience for the students by using language to communicate theirs and others nutrition ideas and experiences (critique Canada's Food Guide for Healthy Eating, view a video on planning healthy food choices, plan healthy meal menus, demonstrate the preparation of a healthy meal); and finally, a teacher will help students mediate text and experience by providing them with opportunities to learn that authors of texts are purposefully presenting their particular world view about a nutritional concept. In order to get a balanced perspective on nutritional issues, teachers need to provide a nutritionally literate person with the opportunity to locate texts with opposing views on an issue, engage in critical thinking and learn to decipher the intent of the authors (looking at private and government websites on organic and genetically modified foods).

A home economics educator needs also to pay attention to how culture, history and politics influence nutrition language. Young people today are in a culture that is highly technological and their understanding of its application in communication can often supersede the teacher's ability. Educators then need to ensure that along with more traditional discourses like lectures and textbooks, a nutritionally literate person will learn not only to use the computer to access information but also to present their nutrition understandings by means of power point presentations or creating a website, for example. Teachers need to also understand the limitations and freedoms that politics can place on the classroom in terms of accessing and using nutrition language – what funding is available for teachers to upgrade textbooks and computers; which students will be allowed to access nutrition courses.

A nutritionally literate person will have an ecological perspective of the interconnections between nutritional status and individual, social and environmental factors. A nutritionally literate person will need to have opportunities not only to look inward to understand what they know and how they came to know about nutrition but also to look outward to their social and physical environments for points of influence. This introspection requires the use of reflection and discourse (verb) by means of language.

A home economics educator needs to structure nutrition learning activities that, firstly, meet the cognitive abilities of their students – for example by simplifying or advancing language resources (texts, videos) as necessary. Secondly, teachers need to create learning activities that help students become aware that their nutrition understandings and practices are a result of what they have learned at home, at school, from their peers, from different media sources, from personal values, as well as, from government policies (teachers can do journaling about holiday foods eaten at home, or enter into discussions about government vending machine regulations in schools or analyzing diets and food practices in popular media). Thirdly, teachers need to expose students to different community nutritional discourses (noun₂). Discourses provide students with opportunities to learn different nutritional perspectives, arguments and value positions (food guides from around the world, eating practices by individuals with dietetic disorders like diabetes or wheat allergies, or religious food practices). Fourthly,

teachers need to help students understand that because they are exposed to and may participate in many different nutritional discourses (noun₂) throughout their lifetime, they will have to balance a complex set of nutritional actions in their day to day lives. As a result, decision making skills become an important part of meal planning and food choice activities. Finally, teachers need to understand that cultural, political and historical contexts (rich/poor, free/oppressed, indigenous/industrial, etc.) within our environment are constantly changing. This causes nutritional language and action to also change, resulting in teachers needing to be kept updated on the latest nutrition research, in order to communicate new word meanings, understanding and knowledge about nutrition for students to be able to make more informed decision about their nutritional health.

A nutritionally literate student must have the ability to learn from and act upon understandings and knowledge obtained through dialogues of freedom. Because nutrition borrows concepts and language from a variety of academic sources, home economics teachers should have educational training that is multi-disciplinary. A multi-disciplinary approach helps teachers to better understand the complex nature of nutrition and equally the complex set of skills needed to implement a nutrition action plan. Since language is a tool by which students create, store and access information, meanings and understandings about nutrition, home economics teachers need to ensure students are introduced to the language of these varied disciplines (nutrients, food borne diseases, nutritional diseases, agricultural practices, etc.).

Home economics teachers also need to provide a nutritionally literate person with opportunities for lived nutritional events. This means helping people to create both individual meanings and communal understandings about nutrition and transform them into everyday practical nutrition action, or 'how to' knowledge – for example view a video on what does it mean to be a vegetarian and then transform that meaning into planning and preparing a vegetarian meal or listen to a local food bank manager speak to the issue of poverty in their local community and then have the class create and implement a community action project to assist those locally who are in need of food, for example serving food at a soup kitchen.

Home economics teachers need to teach students the art of discourse (verb). Students need to learn how to analyze the cultural, political and historical contexts that

promote biased nutritional understandings and practices. Students should be able to critique both sides of an issue and be able to freely decide the most desired course of action. For example, students research a variety of fad diets and answer questions like – how has desired body size changed over the past two hundred years; why is being thin equated with being beautiful and desirable in women and muscular and lean desirable in men; why are women in developed countries more like to have eating disorders; who benefits from the development of all of these fad diets; how do these diets compare to that proposed by the Canada Food Guide?

A nutritionally literate student must be able to apply the lenses of politics, history and culture to the language, ecology and action of everyday nutrition so as to be more literate when ‘doing nutrition’. A home economics teacher needs to understand the interconnected relationship that culture, history and politics have on the attainment of nutrition literacy components. Through the instructional strategies planned by the teacher, students need to be made aware that understandings and knowledge are in constant flux and that what is known to be true today could be untrue tomorrow and so as a result students need to know how to access current nutrition information so that accurate, informed decisions can be made.

A nutritionally literate person recognizes that nutrition literacy occurs at the point where language, action and ecology intersect. It is at this point that the person is able to apply the learning from nutrition literacy events to everyday nutrition literacy practices with the potential end result of resolving day to day nutrition problems and therefore lead a nutritionally healthier life. The ultimate role of the home economics teacher is to improvise or create home economics curriculum and instruction by helping a student to explore each literacy component as well as the overlaps between language and ecology, ecology and action, and language and action and then identify those literacy events that will help them to solve every day nutrition problems. Gone are the days when curriculum involved categorizing different vegetables into groups or just having demonstration and cooking days, rather the teacher must provide learning activities that help students develop a vast repertoire of literacy events from each literacy component (for example, be familiar with terms like generic brands or grade A meat, reading a grocery flyer, writing a grocery list, reading a food label, using the internet to learn about the merits of

organic versus industrially farmed foods, comparing generic branded with regular branded processed foods, comparing recipes, understanding how free trade agreements have affected the supply and cost of food, evaluating food choices for quality, personal taste and cost) that they can call upon in order to accomplish everyday nutrition literacy practices (for example planning a week of low cost meals that fit within the family's budget).

The using of this model for lesson planning will mean a longer period of time will be required to cover a topic of study. However, once the students have acquired how to use the components of the model, they should be able to apply it to any topic more quickly.

5.4 Conclusion

The conception of nutrition literacy has great potential for teachers of Home Economics who teach Foods and Nutrition. It can be used as a model for curriculum planning and implementation. Home economics teachers can use literacy as an instructional conceptual framework to help students develop nutrition language, meanings, understandings and knowledge and recognize the interconnected relationship of nutrition problems and use this to make better informed decisions about the course of action they want to take in order to achieve nutritional health.

In Chapter 6, I summarize and conclude the findings from their research and propose further needed research.

6 SUMMARY AND CONCLUSION

6.1 Summary

In Chapter 2 and in Chapter 3, I examined the current literature in nutrition and literacy so that and in Chapter 4 I could create a conception of nutrition literacy could become the foundation for Home Economics educator's practice. Nutrition literacy was defined as 'doing nutrition' with the use of language. It is about using language for creating understandings and knowledge about food systems and their ecological relationship with biological, social and environmental systems and communicating these understandings and knowledge to individuals and communities, so that they can choose daily actions that will lead to better nutritional health. Nutrition literacy is about everyday living. It is the ability to create and maintain everyday healthy nutrition literacy practices. These practices are developed by participating in literacy events. In Chapter 5, I explored the implications of this conception with the practice of Home Economics and described what a nutrition literate person ought to know and do:

1. A nutritionally literate person will have nutrition language.
2. A nutritionally literate person will have an ecological understanding of the interconnections between nutritional status and individual, social and environmental factors.
3. A nutritionally literate person will have the ability to learn from and act upon understandings and knowledge obtained through dialogues of freedom.
4. A nutritionally literate person will be able to apply the lenses of politics, history and culture to the language, ecology and action of everyday nutrition.
5. A nutritionally literate person is able to recognize that nutrition literacy occurs at the point where language, action and ecology intersect. It is at this point that the person is able to apply the learning from nutrition literacy events to everyday nutrition literacy practices in order to lead a nutritionally healthier life.

If home economics educators accept this vision of a nutritionally literate person, it will have dramatic influences on the development of nutrition pedagogy. More time will have to be devoted to acquiring the many varied literacy events needed to accomplish the broader scope of nutritional practice. Teaching activities will focus on the acquisition of language, action and ecology and their overlapping components rather than

learning food lists and food values.

6.2 Nutrition Literacy and my Teaching Practice

Since beginning this education quest towards an understanding of nutrition and literacy several years ago, I began to modify my teaching methods. My students have become more engaged in nutrition events that are at the overlaps between language, action and ecology. The following are two examples of how I have modified my practice.

6.2.1 Food Service Presentation to the Parent Advisory Council

Students in my school were concerned about the quality of the food and beverages being sold in our school server and vending machines and their lack of purchasing choice with respect to nutrition. I suggested that they turn this into what I now call a nutrition literacy event. So, they organized themselves and took action to resolve the problem. With minimal assistance, a small committee was organized and a survey was developed seeking school wide student input into what healthy foods and drinks should be made available in the school and what price ranges would be affordable to the students. The creating and the conducting of the survey involved the use of nutrition language symbols, communication discourse (noun₁) and knowing their community. The committee was responsible for implementing the survey, tallying the results, drawing conclusions from their results and developing some recommendations. The analysis of the surveys involved creating meanings and understandings and knowing their community. The committee presented their recommendations to the Parent Advisory Council who were very supportive and approved changes to the food products being served in the school. The presentation involved nutrition symbols, communication, community discourse (noun₂) and freedom. Students felt empowered that they could create change because they defined the problem and worked towards the solution. They were content that they got to eat and pay for foods that they enjoyed and that were nutritious. The nutrition literacy practice was creating the change in food availability in the school server and vending machines.

6.2.2 Foods and Nutrition Nine and Kindergarten Buddy Project

Another literacy event that I created was The Buddy Project. This involved pairing a food and nutrition nine class with a nearby elementary kindergarten class. The

grade nine students were given the task of teaching their buddies about nutrition, food safety and food systems. This long term project involved several nutrition literacy events such as reading a short story about food production at the elementary school, participating in a food exhibit at a local science centre, as well as, preparing a healthy snack together at the middle school. These activities involved the use of nutrition symbols, images and texts, communication discourses (noun₁), knowing your community and environment (ecology), (discourse noun₂), impact of history on food production. The Buddy Project also became an assessment tool to assess the long term foods and nutrition learning of the grade nine students. The grade nine assessment tool was a journal that the students kept about their interactions with their buddies but also about what they learned and what they taught their buddies. The journal involved language symbols, nutrition meanings and understandings and knowledge, as well as creating freedom through their suggestions for next year's choice of activities. By the end of the Buddy Project, the grade nine students were able to demonstrate that they had developed and retained long term food and nutrition concepts and the little buddies had also developed some food and nutrition understandings. Both had fun and developed a new friendship through the connection of food. The nutrition literacy practice was teaching food and nutrition concepts to someone else.

If I was to continue with this project I would involve the grade nine students more in determining the nature of the activities for example, their suggestions were to have a closer venue for the food systems field trip and to extend their time together in order to develop a community discourse (noun₂) [for further elaboration see Cimbaro 2008].

6.3 Conclusion

I began the research into understanding the link between nutrition and literacy by first exploring a related conception – health literacy as developed by Nutbeam (1999, 2000). He saw literacy as more than just reading and writing. Nutbeam defined literacy by what it enables people to do in everyday life. His health literacy model is composed of three levels. Level 1 consists of functional health literacy which includes basic reading and writing which allows for the communication, to individuals, of factual information about health risks and how to utilize the health system. Communication at this level is one way and does not foster skill development nor autonomy. Level 2 consists of

interactive health literacy. This type of literacy focuses on using knowledge for the development of personal skills that will enable an individual to live autonomously. Communication is two way allowing for the tailoring of health education activities to the needs of the individual. Level 3 consists of critical health literacy. This type of literacy focuses on developing knowledge and skills in order to develop social and political action that would benefit the individual or the community. Critical health literacy empowers individuals by helping them to recognize that social, economic, and environmental factors influence health. Communication is transactional as it allows for constant analysis, critique and feedback to ensure understanding.

Nutbeam's model is hierarchical. It allows for vertical relationships between the three levels of literacy or lateral relationships between the goal, content and outcome of each level. Although my conception of nutrition literacy incorporates these same elements, my framework is not hierarchical rather it is a Venn diagram. I believe that nutrition literacy has an inter-related, inter-connected relationship with its three components – language, action and ecology. Individuals, communities, the environment, symbols, communication, understandings, knowledge and free discourse are continuously influenced by culture, history and politics contexts. An influential change by one context in one element can cause single or multiple changes in others. The overlapping areas of the circles are even more powerful than the circles themselves for educators as they imply developing inter-related, interconnected curriculum and pedagogy. Nutrition literacy is therefore a complex and variable concept, and like a camera lens, one area might require more focus than another at times depending on the nutrition literacy event. But each event contributes to developing an overall nutrition literacy practice.

Teachers need to be aware, flexible and creative when working with students, people and communities to enact the goal of developing nutritional literacy. This includes opening the classroom door to the community, other contexts and active learning events to students. The field of home economics has proven, over time, to adapt and change its mode of practice as it recognized the impact and changes that culture, history and politics caused on the ability of families to meet their daily needs. Nutrition literacy is a conceptual framework which home economists can utilize to fulfill their mandate –

that of enabling

Families, both as individual units and generally as a social institution, to build and maintain systems of action which lead to maturing in individual self-formation and 2) to enlightened, cooperative participation in the critique and formulation of social goals and means of accomplishing them. (Brown & Paolucci, 1979, p.23)

6.4 Further Research

Developing a conceptual framework for nutritional literacy is merely a beginning. The purpose of this thesis was to begin a dialogue on a conception of nutrition literacy. There is need for further research in conceptual clarity, in curriculum development and implementation, and in gathering empirical data. Based on the results of this study and the discussion of implications the following topics are suggested for further research and investigation:

1. The relationship between the nutrition literacy model presented to other literacy models, such as media literacy, food literacy, eco literacy.
2. The potential of this framework for the development of home economics curriculum.
3. The implementation of this conception into every day teaching practices of home economics.
4. A study of the understanding of nutrition literacy among home economics teachers, pre-service teachers and students who take Foods and Nutrition in high school.
5. A closer examination of the similarities and differences between nutrition events and practices and problem-based learning and constructivist and active learning.

6.5 Final Words

The process of writing a philosophical treatise about nutrition literacy cannot be done without participating in some interpersonal reflection about what it means to be nutritionally educated. Somewhere on my journey to this educational point, I wrote that home economics education is the means by which we can reach the ideal of the educated person. Home economics develops the whole person, in not just the ideal world, but also in the practical day to day world. Home economics helps to create thinkers who not only have knowledge from differing disciplines, but systematically hold it, retrieve it and

apply it to create solutions to family and community problems that are critical, caring, creative and moral. I think that the system-based concept of nutrition literacy helps to create this type of person. It is the diversity of possible nutrition literacy events that make critical, caring, creative and moral nutrition literacy practices possible. To be educated in home economics is to be nutritionally literate.

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