

**Health Knowledge and Health Teaching Self-Efficacy
Among Preservice Elementary School Teachers**

by

Amy Hellenschmidt-Preston

May 12, 2001

**A thesis submitted to the Department of Health Science of the
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Masters of Science in Education**

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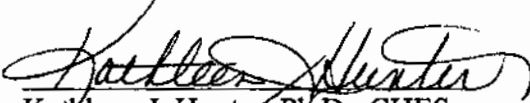
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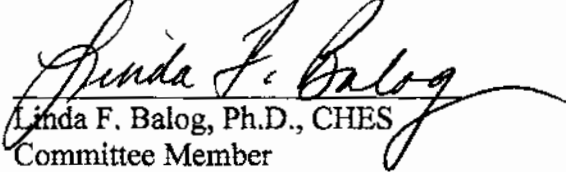
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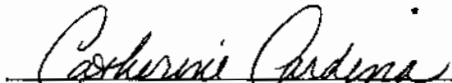
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Dedication

I dedicate this work to my husband who has always given me his unconditional support, and to my family and friends, who have always supported and always believed.

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I would like to acknowledge Dr. Kathleen J. Hunter, Dr. Linda F. Balog, and Dr. Catherine Cardina for their support, contributions, and inspiration.

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Abstract

Although implementation of health curriculum in elementary schools is generally the responsibility of classroom teachers, many elementary school teachers have had little to no health education training. This lack of training is significant because components of teacher preparation, such as teaching self-efficacy and curriculum content knowledge, have been linked with student educational outcomes and time spent implementing curriculum. This study examined the health knowledge and health teaching self-efficacy of preservice elementary school teachers who did not major in health science (non-health education majors), by comparing them to preservice elementary school teachers who did major in health, along with professional majors in the School and Community Health Education and Promotion Program (health education majors), at the State University of New York College at Brockport. This study also examined the relationship between health knowledge and health teaching self-efficacy.

Results

Statistically significant differences were identified between health education majors and non-health education majors with respect to health content knowledge test scores and two major constructs of health teaching self-efficacy: efficacy expectations and outcome expectations. The non-health education majors scored lower on the health content knowledge test, they were less confident in their ability to teach health lessons (efficacy expectations), and they were less likely to believe that, even if they did a good job teaching health, it would positively affect their students' health

(outcome expectations). A statistically significant positive correlation between health content knowledge and efficacy expectations was found; however, there was no statistically significant correlation between health content knowledge and outcome expectations.

Chapter One.— Introduction

Problem Statement

Throughout the past two decades, comprehensive school health education for grades K-12 has been cited by numerous health organizations and governmental agencies as an important component for improving the health of the nation's children. In 1990, the Office of Disease Prevention and Health Promotion (ODPHP) established the increased application of comprehensive school health education as one of the nation's major health goals for the year 2000. However, current statistics highlighting the continued poor health of children in the United States, as well as studies pointing to the lack of consistent program implementation, are indicators that the national goals are not being met, and that health education programs are not being implemented effectively (American Cancer Society [ACS], 1999; Curtis, 1992; Department of Health and Human Services [DHHS], 1998; DHHS, 1999; Kann, et al., 1995; ODPHP, 1995; ODPHP, 1996). The difficulty in providing comprehensive school health education may be compounded at the elementary level, due to an absence of teachers in that setting specifically trained in health education.

Significance of the Problem

For the first time in the history of the United States children are less healthy than their parents were when they were adolescents, and the 12- to 17-year-old age group is the only group that has not seen improvements in mortality rates since 1960 (ACS, 1999; Curtis, 1992). Although there are fewer cases annually of traditional childhood diseases, such as measles, mumps, and whooping cough, there have been

significant increases in adolescent morbidity and mortality linked to health behaviors (ACS, 1999; Berenson, Arbeit, Hunter, Johnson, & Nicklas, 1991; McGinnis, 1993). Examples of these behaviors include motor vehicle accidents, suicide, acts of violence, cardiovascular disease, obesity, poor nutrition, lack of exercise, teen pregnancy, sexually transmitted diseases, tobacco use, and drug and alcohol use (ACS, 1999; Arbeit et al., 1992; Berenson et al., 1991; Kann et al., 1995; McGinnis, 1993; ODPHP, 1995).

In addition to the short-term consequences of poor health in childhood, there are many long-term consequences that must be considered. Experts investigating the origins of the two leading causes of premature mortality and morbidity among the adult population, cardiovascular disease and cancer, have identified links between adolescent behavior and adult onset of disease (Arbeit et al., 1992; Berenson et al., 1991; ODPHP, 1995). For example, each year in the United States one-third of all adult deaths are due to cardiovascular disease (ODPHP, 1995). According to the American Heart Association (AHA; 1997), the major risk factors for the development of heart disease include hypertension, high blood cholesterol, and cigarette smoking. An important additional factor is a lack of exercise (AHA, 1997). Studies that have been conducted throughout the past several decades have reported increases in the incidence of these risk factors among the adolescent population. Arbeit et al. (1992) reported preliminary findings of the ongoing Bogalusa Heart Study in which elevated blood pressures and cholesterol levels are being detected in children and young adults. Tobacco use among adolescents is also a major health concern. Statistics

have shown that approximately 3,000 minors began smoking every day, which means that 80-90% of all new smokers were under the age of 18 (Bailey & Crowe, 1994; Glynn, 1993; Glynn, Greenwald, Mills, & Manley, 1993; Paralusz, 1998). Finally, there have been numerous studies indicating a lack of physical activity among children. According to *Physical Activity and Health: A Report of the Surgeon General*, “nearly half of youths 12-21 are not vigorously active on a regular basis” (U. S. Department of Health and Human Services, 1996, p. 4). Several of the previously cited factors, such as cigarette smoking and sedentary lifestyle, have also been linked with adult cancers.

Another way that poor health adversely affects children is through its impact on overall educational achievement. Good nutrition, absence of medical illness, and stress management skills have been linked to educational achievement (Lavin, Shapiro, & Weill, 1992; McGinnis, 1993; Stroble, 1997). According to McGinnis (1993), “a child needs to be healthy in order to learn, and a child needs to be well-educated in order to stay healthy” (p. 493).

The long-term costs to society for poor health in the adolescent population must also be considered. An unhealthy population is not a productive one: Poor health in the adult population leads to lost productivity in the workplace (Lavin et al., 1992). Furthermore, the financial costs of poor health behavior beginning during adolescence are staggering. Annually, Americans spend approximately \$138 billion to treat cardiovascular disease and \$104 billion to treat cancer (ACS, 1995). “The annual health care and related costs attributable to alcohol abuse are \$98.6 billion and

to illicit drug use, \$66.9 billion” (ODPHP; 1995, p. 5). Health related expenditures for tobacco use are \$65 billion per year (ODPHP, 1995). Additional healthcare costs include money spent on teen pregnancies, sexually transmitted diseases, acts of violence, and motor vehicle accidents.

The short-term and long-term consequences of poor health among the nation’s children are significant for both individuals and society as a whole; however, they are not insurmountable. The ODPHP (1990), the ACS (1999), and other health organizations have been calling for the implementation of comprehensive school health education in grades K-12 for more than a decade, as a solution to improve the health of children in the United States. Schools are in a unique position to educate and influence children, second only to the family (Seffrin, 1990). Each year in the United States, for approximately 180 days, 48 million students attend elementary and secondary schools (Kann et al., 1995; ODPHP, 1990). Despite the recommendations for comprehensive health education, and the time children spend at school, studies have shown that effective, sequential, and comprehensive health education has not been widely implemented (DHHS, 1998; DHHS, 1999; ODPHP, 1996). Although there are many factors involved in the low rates of compliance with ODPHP (1990) recommendations, and for ineffective health education implementation, a lack of teacher preparation, particularly on the elementary level, is one of the most frequently cited reasons (“Critical Issue,” 1993; Detert, Bradley, Schindler, Pretasky, & Oganowski, 1996; English, 1994; “Incentives for Strengthening,” 1990; Patterson, Cinelli, Sahkaran, Brey, & Nye, 1996; Ubbes et al., 1999).

The Centers for Disease Control (CDC), in 1990, defined eight objectives of comprehensive school health education (Collins et al., 1995; DHHS, 1999). Two of these objectives involve the presence of adequately trained educators. The first is management and coordination of health education in each school by a professional who has been trained to implement the program, and the second is instruction from teachers trained to teach the subject (Collins et al., 1995). This is particularly problematic on the elementary level, where most school districts require regular classroom teachers, many of whom have not had training in health education, to implement the health curriculum ("Critical Issues," 1993; English, 1994; Patterson et al., 1996). According to Collins et al. (1995), "55.1% of all school districts have a school health education director;" however, 96.1% "are responsible for both elementary and secondary health education" (p. 304). Additionally, only 5.9% of states require elementary school teachers, who teach health education, to have certification in health education (Collins et al., 1995). Finally, Collins et al. (1995) reported that "only 5.4% of all health education classroom teachers and 0.6% of all infused classroom teachers majored in health education" (p. 310).

Another factor that has contributed to a lack of teacher preparedness in health education has been that many states have not required health education content for elementary teacher certification (English & Duke, 1995). Everett, Price, Telljohann, and Durgin (1996), reported that "only 26 states require elementary teachers to have course work in health to qualify for elementary certification" (p. 90). Similarly,

health content is not a graduation requirement at many universities for degrees in elementary education (Kittleson & DeBarr, 1991).

The lack of health content in elementary teacher preparation programs may lead to teachers who are ill-prepared and unable to implement effective school health education. According to Allensworth (1993), a critical factor in health education programs that produce behavior change is adequate teacher preparation. It is unrealistic to expect teachers who lack knowledge to effectively implement programming.

A lack of knowledge may not be the only consequence of poor teacher preparation. Poor preparation may also affect educators' health teaching self-efficacy. Bandura's self-efficacy theory (1977) has been extended as a model to explain teaching behavior (Everett et al., 1996). Everett et al. (1996) explained that self-efficacy helps to determine the behaviors in which a person will engage. In general, "people tend to avoid activities that they feel are beyond their capabilities whereas they engage in activities they feel able to perform" (Everett et al., 1996, p. 96). Inadequate preparation may, therefore, affect the amount of time spent teaching health education.

Rationale

In 1990, the ODPHP established the Healthy People 2000 goals for the nation. Objective 8.4, amended in 1995, is to "increase to at least 75% the proportion of the Nation's elementary and secondary schools that provide planned and sequential kindergarten-12th grade comprehensive school health education" (National Center for

Health Statistics, 1996, p. 87). Recent reports, however, indicated that only 2.3% of schools nationwide are implementing all eight of the criteria for comprehensive school health education (DHHS, 1998; DHHS, 1999; ODPHR, 1996). Because adequate teacher preparation and management of health education programs are the basis of two of the eight objectives, it is important to study the current preparedness of preservice elementary teachers to teach health education. One indicator of preparedness is level of knowledge in health content.

An additional factor that may affect consistent and effective implementation of comprehensive health education is self-efficacy (Everett et al., 1996). Because self-efficacy may be linked with the amount of time spent implementing health education programming, and given the ODPHR (1990) goal of increasing comprehensive school health education, it too warrants investigation.

Finally, the New York State Education Department recently amended the elementary teacher preparation requirements for certification to include increased health content (New York State Education Department, 1999a). These new regulations will affect all students applying for provisional certification on or after September 1, 2004. It is important, therefore, to study the current health knowledge of preservice elementary teachers in order to effectively develop new college elementary teacher preparation curriculum guidelines.

Purpose

The purpose of this thesis is:

1. to examine the health knowledge of preservice elementary school teachers who did not major in health science;
2. to examine the health teaching self-efficacy of preservice elementary school teachers who did not major in health science; and,
3. to examine the relationship between health knowledge and health teaching self-efficacy.

Hypotheses

The hypotheses proposed by this thesis are as follows:

1. Health education majors will have higher health content knowledge test scores than non-health education majors.
2. Health education majors will have higher health teaching self-efficacy than non-health education majors.
3. There will be a positive correlation between health content knowledge and health teaching self-efficacy.

Definition of Terms

1. Comprehensive School Health Education

Comprehensive school health education has been defined by the CDC to include eight objectives (Collins et al., 1995). These objectives include documented, sequential health programming for grades K-12; instruction in six key behavioral

areas; skill building for the prevention of intentional and unintentional injuries; a prescribed amount of time for implementation at each grade level; management of the program by a trained professional; instruction from teachers trained to teach health education; involvement of parents, health professionals, and community members; and, periodic program evaluation (Collins et al., 1995; DHHS, 1999).

2. Self-Efficacy

Self-efficacy is a multidimensional concept that contains three constructs (Bandura, 1977). These constructs are defined as follows:

- a. Efficacy Expectations – a person’s belief that he/she has the ability to perform a given behavior
- b. Outcome Expectations – a person’s belief that the behavior he/she performs will produce a desired effect
- c. Outcome Value – the value placed on the desired outcome that had resulted from engaging in the given behavior

3. Health Knowledge

Health knowledge will be defined as the performance score on a test of health content.

4. The Hawthorne Effect

The Hawthorne Effect is “any unintended effect that results from the attention given to subjects in an experiment” (Kornblum, 1988, p. 39).

5. Health Education Majors

Health education majors will include both preservice elementary school teachers who majored in health science, and professional majors in the School and Community Health Education and Promotion Program in the Department of Health Science. These sample participants will be students from the State University of New York College at Brockport.

6. Non-Health Education Majors

Non-health education majors will include preservice elementary school teachers who did not major in health science. These sample participants will be students from the State University of New York College at Brockport.

Limitations

One possible limitation of this study is that the ability to choose a random sample was hindered by the availability of students. This thesis studied sixty-four graduating students. Approximately half of the subjects were health education majors, including both preservice elementary school teachers who majored in health science and professional majors in the School and Community Health Education and Promotion Program in the Department of Health Science, and the other half were non-health education majors, including preservice elementary school teachers who did not major in health science. However, the limited number of students graduating from these programs in one academic year made the use of all available subjects necessary.

Of those graduating health education students, several were graduating as elementary school teachers who majored in health science, and the rest were eligible to become K-12 health education teachers. Although there is a difference in the type of employment that will be sought by these two groups of health education majors, the college health curriculum for the two groups is not significantly different; therefore, this difference was not believed to be a significant threat to the results of this study. This belief was confirmed by comparing the data collected for both groups of health education majors.

Assumptions and Delimitations

This study was conducted with the assumption that participants would respond to the instruments truthfully, and would, to the best of their abilities, provide accurate information on the demographic questionnaire.

Chapter Two – Literature Review

Due to the declining health of the nation's children, and the short-term and long-term consequences of poor health on quality of life, premature morbidity, productivity, and educational achievement, the need for effective, comprehensive K-12 health education has been highlighted. In response to these factors, numerous public health organizations and governmental agencies, such as the ODPHP and the ACS, have called for the increased implementation of comprehensive health education in the public schools.

Does Comprehensive Health Education Work?

The issue of whether health education is effective in increasing the health of the nation's youth has been a matter of public debate; however, most research supports the notion that comprehensive and sequential health education programs can facilitate healthful behavior changes in adolescents, and may promote lifelong positive health choices (Arbeit et al., 1992; Berenson et al., 1991; Kahn et al., 1995; Schall, 1994). Factors that have been cited as being key components of successful comprehensive health education programs are an early start (beginning health instruction in preschool or kindergarten), continuity of programming throughout the school years, the use of multiple teaching modalities, and teacher preparation (Arbeit et al., 1992; Detert et al., 1996; Schall, 1994). Conversely, as Lavin (1993) and Schall (1994) noted, programs that are categorical, focusing on only one issue and being implemented in a single lesson, have not been found to be effective.

In addition to content and breadth of instruction, studies have also indicated that, for comprehensive health education to be most effective, there is an optimal amount of time that instruction should take place each week. Stroble (1997) conducted an analysis of the data from the health section of the 1994 Maine Educational Assessment (MEA), a statewide competency exam, for fourth graders. She used correlation and analysis of variance statistical tests to identify factors associated with health knowledge scores on the MEA. Questionnaires were included with the MEA for the fourth grade teachers to respond, asking them to rate their school's health education program, to report the amount of time spent implementing health education per week, and to provide information regarding professional preparation and inservice training (Stroble, 1997). Stroble (1997) found that "up to 30 minutes of instruction per week yielded the highest mean scores" (p. 56).

Although many comprehensive school health education programs have been developed throughout the past two decades, one of the most commonly cited is the Growing Healthy program. The Growing Healthy program was developed by the National Center for Health Education (NCHE) for grades K-6, and is widely used throughout the United States. According to Schall (1994), in 1994, the Growing Healthy program was in use in more than "9,000 elementary schools in 42 states" (p. 30). Connell, Turner, and Mason (1985) reported that, when compared with three categorical health programs, the Growing Healthy program had a significantly stronger affect on knowledge, attitudes, and behaviors.

Another frequently cited health education program is the Heart Smart cardiovascular health promotion. The Heart Smart program was designed in response to findings of the ongoing Bogalusa Heart Study, which reported the detection of early signs of cardiovascular disease among children and young adults (Arbeit et al., 1992; Berenson et al., 1991; Newman et al., 1986). The purpose of the Heart Smart program is to ultimately reduce premature morbidity from heart disease, a leading cause of death among adults in the United States, by teaching healthy behaviors to children (Arbeit et al., 1992; ODPHP, 1995). While many programs have attempted to promote heart healthy behaviors among the adolescent population, the unique feature of the Heart Smart cardiovascular health promotion is that it is a multidisciplinary approach that targets the entire school environment, including the curriculum, the teachers' training, the physical education program, and the school lunch program (Arbeit et al., 1992; Berenson et al., 1991). In order to evaluate the effectiveness of the program, four elementary schools in Louisiana with similar student populations were chosen (Arbeit et al., 1992). The schools were randomly assigned to experimental and control groups (two schools in each condition), and the fourth and fifth grade students were the focus of the analysis. The study found that those in the experimental group had greater health knowledge than those in the control group. Additionally, those in the experimental group had overall reductions in blood cholesterol levels, increased high-density lipoproteins (HDL), and improved physical fitness performance (Arbeit et al., 1992).

Despite the growing evidence that comprehensive school health education programs, such as the Growing Healthy program and the Heart Smart cardiovascular school health promotion, are effective in increasing the adoption of healthful behaviors among the adolescent population, research suggests that sequential, effective comprehensive health education is not being widely implemented (DHHS, 1998; DHHS, 1999; Kann et al., 1995; ODPHP, 1995; ODPHP, 1996). As was previously cited, recent reports indicated that only 2.3% of schools nationwide are implementing all eight of the criteria for comprehensive school health education (DHHS, 1998; DHHS, 1999; ODPHP, 1996). This figure has fallen far short of the ODPHP (1990) goal to, by the year 2000, “increase to at least 75 percent the proportion of the Nation’s elementary and secondary schools that provide planned and sequential kindergarten-12th grade comprehensive school health education” (National Center for Health Statistics, 1996, p. 87).

There are many factors involved in the lack of implementation of effective comprehensive health education; however, one of the most commonly cited is poor teacher preparation (Detert et al., 1993; English, 1994; Patterson et al., 1996; Ubbes et al., 1999). This may be particularly true on the elementary level, where the majority of classroom teachers are required to teach health education, yet have little to no health education training. In order for comprehensive health education programs to be successful, it is important for elementary school teachers to have adequate preparation in health education, and to feel confident in their ability to

effectively implement health curriculum (Allensworth, 1993; Detert et al., 1996; English, 1994; Everett et al., 1996; Patterson et al., 1996; Ubbes et al., 1999).

Teacher Preparation

Adequate teacher preparation in health education has been cited by many experts as a significant factor for the effective and consistent implementation of comprehensive school health education programs (Allensworth, 1993; Collins et al., 1995; "Critical Issue," 1993; Detert et al., 1996; English, 1994; Patterson et al., 1996; Schindler, Detert, Pretasky, & Oganowski, 1996; Seffrin, 1990; Ubbes et al., 1999). Health education preparation is particularly critical for elementary school teachers, who often have the responsibility of implementing health education in their classrooms (English, 1994; Seffrin, 1990).

Studies have found a significant relationship between teacher preparation and student outcomes. The Wisconsin Elementary Health Education Pilot Project was a five-year pilot study that was designed to investigate the impact of health education preparation on experienced elementary teachers (Detert et al., 1996; Schindler et al., 1996). Additionally, the study examined the use of leadership teams within schools to promote health education implementation (Detert et al., 1996). The sample consisted of nine teachers from different elementary schools who were required to complete their Masters of Science degrees in health education over a three-year period of time. In each school, the principal and two professional staff members were used to create the building leadership teams, which created an overall sample size of 36 (Detert et al., 1996). An evaluation team consisting of faculty from the University

of Wisconsin-La-Crosse Health Education Department, an outside evaluator, and an elementary health education specialist followed the progress of the project over the course of the first two years (Detert et al., 1996). During the two years, various evaluation techniques, ranging from pretesting and posttesting to observation, were employed. Health education outcomes were compared with those of schools not in the treatment condition (Schindler et al., 1996). Initial results indicated more favorable outcomes in health knowledge, attitudes, and problem-solving skills among students in the treatment schools versus those in the control schools (Detert et al., 1996; Schindler et al., 1996). Detert et al. (1996) concluded that inadequate professional preparation, as well as a lack of commitment and motivation, were the main problems with health education at the elementary level.

In addition to a relationship between teacher preparation in health education and student outcomes, researchers have identified a relationship between teacher preparation and time spent implementing health curriculum (Hausman & Ruzek, 1995; Ross, Luepker, Nelson, Saavedra, & Hubbard, 1991; Strobble, 1997). Hausman and Ruzek (1995) reported the effects of a teacher development program on health curriculum implementation. Specifically, they utilized data from a longitudinal study, the Partners for Health Project (PFH), that implemented teacher health education training for 156 school staff in Philadelphia (Hausman & Ruzek, 1995). The PFH included staff training in health curriculum, assistance with materials and information, and access to support during and after the program. Additionally, training (ranging from one to five days) in the Michigan Model for Comprehensive

School Health Education was provided (Hausman & Ruzek, 1995). Hausman and Ruzek's (1995) analysis focused on the relationship between teachers' feelings of preparedness and their self-reported implementation of health curriculum. The study divided the participants into four cohorts based on different types and levels of intervention and training. Analysis of the data showed that "all cohorts that had curriculum training showed statistically significant changes in preparedness levels from pretest to posttest over the project period" (Hausman & Ruzek, 1995, p. 84). Furthermore, a positive significant relationship was identified between feelings of preparedness and the implementation of sensitive health topics; the more prepared the teachers reported feeling, the greater the number of lessons they reported implementing (Hausman & Ruzek, 1995). Finally, "a positive significant relationship also existed between the amount of change in feelings of preparation scores, in contrast to the absolute level, and reported teaching" (Hausman & Ruzek, 1995, p. 85). Studies by other researchers have reported similar results (Ross et al., 1991; Stroble, 1997; Wiley, 1993).

Despite evidence that teacher preparation in health education may be significantly related to student health outcomes and to the amount of time spent implementing health curriculum, researchers have reported that poor health content preparation of elementary school teachers continues to be a problem. In 1991, Kittleson and DeBarr found through a survey of 213 colleges and universities that only 31.7% of elementary education programs included general health education as a requirement for graduation. The credit hours for these courses ranged from 1 to 3,

averaging 2.41 (Kittleston & DeBarr, 1991). In a survey conducted by Wiley (1993) in Texas, 40.2% of respondents (elementary school teachers) reported having never had a formal health education course in college, and 44.3% reported one college health education course. Since the early 1990s, the number of U.S. colleges and universities requiring health curriculum for elementary school teachers has increased; for example, a recent study of Ohio institutions of higher learning reported that 80% of the schools included in the survey required health content for elementary education degrees (Ubbes et al., 1999).

While there have been increases in the number of colleges and universities requiring health education coursework for elementary educators, requirements vary greatly from one school to another. Currently, at the State University of New York (SUNY) College at Brockport, students majoring in elementary health education are required to take HLS 370, which is a one credit course entitled Drug Education for Teachers (SUNY College at Brockport, 1999b). Additionally, there is no specific requirement for taking health education courses to fulfill general education requirements, though several are available (SUNY College at Brockport, 1999a).

States also vary greatly in their requirements of health curriculum in teacher preparation programs. New York is currently one of 26 states that requires health education as a condition for elementary school teaching certification (New York State Education Department, 1999a; Ubbes et al., 1999). The New York State Education Department recently amended the elementary teacher preparation requirements for certification to include increased health content for all students applying for

provisional certification on or after September 1, 2004 (New York State Education Department, 1999a). As a result of these changes, SUNY Brockport's current elementary education curriculum requirements will need to be altered. While the Drug Education for Teachers course is important, it covers only a small portion of the health education curriculum that elementary school teachers are required to implement. Elementary education students starting in the Fall 2001 semester at SUNY Brockport will be required to take HLS 301, a general health course.

New York State Health Curriculum Guidelines

The New York State health education curriculum guidelines delineate ten content areas for health instruction. The state's goal is to implement age-appropriate instruction in each of the content areas for grades K-12. The content areas include: Human Growth and Development; Emotional Health; Nutrition; Environmental Health; Family Life Education; Diseases and Disorders; Tobacco, Alcohol, and Other Drugs; Consumer Health; Safety and First Aid; and Community Health (New York State Education Department, 1999b). As a result of the lack of college requirements, elementary school teachers may graduate from a degree program without having taken health content in the New York State curricular areas. This may negatively affect their ability to implement effective and accurate health education in their classrooms.

Steps have been taken recently to address the lack of health content in the elementary education program. As was previously cited, as of the Fall 2001 semester,

SUNY Brockport elementary education students will be required to take HLS 301, which is a general health course touching on each of the above content areas.

The Need for Knowledge Prior to Teaching

Bloom's taxonomy of learning skills is a theoretical model that was developed to explain the hierarchical order of learning in terms of complexity and ability (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956; Holleman, 1985; Wilson, 1995). As such, it has been widely employed in the creation of tests and the writing of educational programs focusing on behavioral objectives and outcomes. Bloom's learning skills include (beginning with the least complex): knowledge, comprehension, application, analytical reasoning, synthetic reasoning, and evaluation (Wilson, 1995). Bloom's taxonomy is generally used to explain the learning of skills by students; however, it must be remembered that in terms of their own professional knowledge, teachers are students too. Therefore, a reasonable argument can be made that the taxonomy can be applied to explain teachers' knowledge and their ability to effectively implement curriculum. For example, according to Bloom's taxonomy, knowledge is the first step in the learning process, and, therefore, a person must have knowledge prior to proceeding to higher learning objectives. For instance, in order to apply knowledge (Bloom's third objective), one must first obtain the knowledge. In terms of teaching, the importance of content knowledge becomes clear. In order for teachers to create and implement effective lessons, they must first have a clear understanding of the subject matter. Furthermore, it is important for teachers to

possess content knowledge so they can guide their students in their own progression from lower-order to higher-order objectives in that subject.

In addition to discussing the importance of teachers possessing content knowledge from a theoretical perspective, it is also important to examine empirical research linking teacher knowledge with educational outcomes. Traditionally, educational research focused on the importance of pedagogical knowledge rather than content knowledge for improving educational outcomes. Throughout the past two decades, however, there has been a growing trend in recognizing the significant relationship between teachers' content knowledge and students' educational achievement (Connelly, Clandinin, & He, 1997). In 1986, Shulman proposed three types of knowledge that teachers may possess. The first was pedagogical knowledge (Shulman, 1986). Pedagogy is defined by the Merriam-Webster's Collegiate Dictionary (2000) as "the art, profession, or science of teaching" (online). The second type of knowledge was content knowledge: knowledge about the subject matter they are required to teach (Shulman, 1986). Finally, the third type of teaching knowledge identified by Shulman (1986) was pedagogical content knowledge: knowledge of both the subject matter and specific teaching strategies for the subject. According to Cochran, DeRuiter, and King (1993), Ormrod and Cole (1996), and Shulman (1986), knowledge of content, pedagogy, and the relationship between them are important components of effective teaching.

There have been many studies in the past decade that have examined the

relationship between pedagogical knowledge and content knowledge. A study conducted by Schempp, Manross, and Tan (1998) of ten middle school physical education teachers “suggested that teachers’ subject matter expertise had implications for the recognition of problems in student learning, level of detail in planning and organizing subject matter, ability to accommodate a range of learner skills and abilities, and comfort for teaching” (p. 342). Although this study was conducted with a small sample (n=10), the connection between subject matter knowledge and various teaching outcomes has been demonstrated in numerous studies (Connelly et al., 1997; Swafford, Jones, & Thornton, 1997).

One subject area, in which there has been much research focused on the relationship between teacher content knowledge and teaching effectiveness, is mathematics (Adams, 1998; Mullens, Murnane, & Willett, 1996; Quinn, 1997; Swafford et al., 1997). The findings of these studies may also have important implications for other educational disciplines, such as health education. Educational goals for mathematics and health are similar in that they both seek to not only increase knowledge, but to facilitate the application of knowledge and the adoption of skills. Another parallel between mathematics and health education is that researchers have reported that the mathematical knowledge of many school teachers may be inadequate due to poor teacher preparation (Adams, 1998; Ball, 1990; Mullens et al., 1996; Quinn, 1997; Swafford et al., 1997). This is of particular concern on the elementary school level, where classroom teachers are required to implement math curriculum, sometimes with little training.

In 1996, Mullens, Murnane, and Willett published the results of a study they had conducted in Belize. The study was a multilevel, pretest/posttest, longitudinal study that examined the relationship between teacher qualifications (knowledge and pedagogical training) and student mathematical achievement (Mullens et al., 1996). A random sample of 1,043 third grade students was selected. The students were given a pretest in October of 1990 and a posttest in May of 1991. In addition to measuring the students' academic progress throughout the course of the school year, teacher characteristics such as whether they had graduated from a college program, whether they had completed high school, and their level of competence on a mathematics exam were examined. After analyzing the data, Mullens et al. (1996) found no effect of teacher training on the learning of basic math. They did, however, find a statistically significant relationship between teacher knowledge of mathematics and the students' learning of advanced mathematical concepts. They reported that the students of teachers who demonstrated a high level of mathematical proficiency learned advanced mathematical concepts more quickly, and scored higher on a mathematical examination, than did the students placed with teachers who demonstrated lower mathematical proficiency. Ironically, the study found no statistically significant relationship between pedagogic training and learning of advanced mathematical concepts (Mullens et al., 1996).

Another study that focused on the relationship between teacher mathematical knowledge and instructional outcomes examined the effects of a geometry intervention program on instructional behaviors (Swafford et al., 1997). The subjects

of the study were 49 teachers who volunteered to participate. All subjects were given five hours of graduate credit and a summer stipend for participation. The program “consisted of a 4-week summer session and six half-day seminars during the academic year” (Swafford et al., 1997, p. 469). The program was called Project LINCS, and its focus was to increase teachers’ knowledge of geometry, and to increase their pedagogical knowledge as well. Swafford et al. (1997) utilized several different methods to evaluate the effects of the geometry intervention on the teaching behaviors of the participants, including pretesting and posttesting, lesson plan analysis (using two raters), recall interviews, and the videotaping of teaching sessions. These data suggested that program participants had an increase in knowledge of geometry and spent more time implementing geometry lessons in their classes (Swafford et al., 1997). While it is possible that some of the increase in time spent teaching geometry could have resulted from the Hawthorne effect, the results are similar to other research findings in that there may be a relationship between content knowledge and implementation time. For example, Dusick (1998) concluded that computer knowledge and prior preparation and training were significant predictors of the amount of time and willingness of community college faculty members to use computers in classroom instruction.

While content knowledge of teachers has been shown to be related to student academic achievement and increased instruction time, it may not be the only predictor of consistent and effective implementation of health education curriculum. Bandura’s

(1977) self-efficacy theory has also been used to predict curriculum implementation frequency and persistence in the face of adversity.

Self-Efficacy

Self-efficacy theory was developed by Bandura (1977) to explain self-motivation for engaging in a given behavior, the amount of effort that will be expended, and how persistent a person will be in the face of obstacles. Self-efficacy is a multidimensional concept consisting of three constructs. The first of these constructs is efficacy expectation, which is the belief that you can complete a course of action (Bandura, 1977). According to Bandura (1977), a person will tend to engage in behaviors that he/she feels confident in, and to avoid those that he/she finds threatening. The second construct, outcome expectation, is the belief that “a particular course of action will produce certain outcomes” (Bandura, 1977, p. 193). Bandura (1977) explains that if a person does not believe that engaging in a particular course of action will lead to the desired outcome, then there will be less motivation to engage in that behavior. The third construct is outcome value (Everett et al., 1996). Outcome value is the worth that the individual places on the behavioral outcome (Everett et al., 1996). According to self-efficacy theory, if a person does not feel that the outcome has value, he/she will be less likely to engage in the behavior (Bandura, 1977; Everett et al., 1996).

Self-efficacy theory has been used by many experts to predict teaching behaviors (Everett et al., 1996; Gibson & Dembo, 1984; Telljohann, Everett, Durgin, & Price, 1996). It has been theorized, for example, that if a teacher feels confident in

his/her ability to implement curriculum, he/she will be more likely to spend time implementing the curriculum than if he/she does not feel confident (Everett et al., 1996). Similarly, if a teacher does not feel that the curriculum will lead to the desired outcome, or if the curriculum has a desired effect the teacher believes is not that important, he/she will be less likely to implement the lesson (Everett et al., 1996).

There have been studies specifically designed to examine the relationship of self-efficacy to teaching behaviors. Gibson and Dembo (1984) conducted a study to “develop an instrument to measure teacher efficacy, provide construct validation support for the variable, and examine the relationship between teacher efficacy and observable behaviors” (p. 569). They developed a teacher efficacy scale that was piloted and revised. The final scale was a 30-question survey in Likert format (Gibson & Dembo, 1984). They implemented their study in three phases: factor analysis, multitrait-multimethod analysis, and classroom observation. Gibson and Dembo (1984) reported that there was a significant difference between teachers with high self-efficacy and those with low self-efficacy. High self-efficacy teachers spent more time engaging in whole class (rather than small group) instruction, and persisted longer in failure situations (Gibson & Dembo, 1984).

Another study that examined the relationship between teaching self-efficacy and curriculum implementation was conducted by Telljohann et al. (1996). The purpose of their study was to determine the effectiveness of health education inservice training in increasing the health teaching self-efficacy of elementary school teachers. The participants in the study were elementary school teachers, from a single

school district, who were divided into two groups: a control group and an experimental group. The teachers in the experimental group attended a 30-hour summer workshop, Project Healthy Kids, and the teachers in the control group did not participate in Project Healthy Kids. The experimental and control groups were both pretested, and were posttested eight months later using a scale the researchers developed, entitled the Health Teaching Self-Efficacy Scale (Telljohann et al., 1996). They reported that there was a statistically significant difference between the experimental and control groups in improving efficacy expectations, outcome expectations, outcome value, and hours spent teaching health education (Telljohann et al., 1996). As self-efficacy increased, the self-reported hours spent implementing health education increased.

The relationship between self-efficacy and time spent implementing curriculum has also been supported by the previously cited studies that identified a link between feelings of preparedness and implementation time (Hausman & Ruzek, 1995; Ross et al., 1991; Stroble, 1997). The more prepared a teacher feels to teach a subject, the more confident he/she may feel in his/her ability to effectively implement the material, which may lead to increased instruction time.

What Remains to be Studied?

Although many researchers have studied the content knowledge of teachers in various disciplines throughout the past two decades, health education content knowledge has been largely neglected. Additionally, while self-efficacy and content knowledge are closely related concepts, few studies have examined them together. It

is important to study the relationship between self-efficacy and content knowledge because they may affect one another in significant ways. High teaching self-efficacy has been linked with increased implementation time (Hausman & Ruzek, 1995; Ross et al., 1991; Stroble, 1997). If a teacher lacks health content knowledge, however, the teacher may be providing students with inaccurate or incomplete health information, and may be unable to implement effective health education programming. Therefore, this study examines the health teaching self-efficacy and health content knowledge of preservice elementary school teachers who have not majored in health science.

Measurement

In order to study the relationship between content knowledge and self-efficacy, it would be necessary to utilize two different measurement instruments. The first instrument, The Health Teaching Self-Efficacy Scale (see Appendix A) developed by Everett et al. (1996), was designed specifically to measure the health teaching self-efficacy of elementary school teachers. The instrument, which is in a Likert scale format, has been determined to be both valid and reliable (Everett et al., 1996; Telljohann et al., 1996). The efficacy and outcome expectations were shown to have high internal consistency; “Cronbach’s alpha was .89 for efficacy expectation scores and .91 for outcome expectation scores” (Everett et al., 1996, p. 95). Additionally, the test-retest reliability “was .70 for efficacy expectation scores, .63 for outcome expectation scores, and .77 for outcome value scores” (Everett et al., 1996, p. 95). This scale is a useful instrument with which to measure health teaching self-efficacy.

The second measurement instrument, The Health Knowledge Inventory (HKI) (see Appendix B) developed by Nicholson, Price, and Higgins (1988), was designed to be a valid and reliable general health knowledge test for use with students at the college level. The test contains 110 questions, ten for each of the eleven health content areas identified by the instrument's authors. These health content areas include: "accidents and safety, aging and death, chronic disease, communicable disease, consumer health, environmental health, human sexuality, mental health, nutrition, physical fitness, and substance use/abuse" (Nicholson et al., 1990, p. 4). The instrument has been found to be both reliable and valid. The test-retest reliability was .89, and the internal reliability was .91. Additionally, the test-retest reliability for each of the content areas ranged from .60 to .77. Measures of content validity, construct validity, and criterion-related validity were also considered to be strong (Nicholson et al., 1990). Furthermore, the results of pilot testing indicated that the "mean scores (roughly 63) for [two] groups of students, who were just starting a personal health class, were sufficiently low to allow for improvement upon further study, but not so low that the test is too difficult for one-time measures of personal health knowledge among groups not exposed to formal health education" (Nicholson et al., 1990, p. 5). The strong measures of reliability and validity, together with the applicability of this test for individuals with and without formal health training, makes this an appropriate instrument for this study.

Conclusion

While many studies have examined the content knowledge of teachers in various disciplines, health education content has been neglected. Additionally, while both health content knowledge and health teaching self-efficacy have been identified as important factors in implementing effective comprehensive health education, their relationship to one another in health education has not been studied. This study examines both the health content knowledge and health teaching self-efficacy of preservice elementary school teachers who did not major in health science, as well as the relationship between the two factors.

Chapter Three → Methods

Sample

The sample for this study included health education majors (preservice elementary school teachers who majored in health science and professional majors in the School and Community Health Education and Promotion Program in the Department of Health Science) and non-health education majors (preservice elementary school teachers who did not major in health). All of the above subjects were from the State University of New York College at Brockport, and the study consisted of sixty-four graduating students. Approximately half of the sample subjects were health education majors, and half were non-health education majors.

Instruments

Self-efficacy was measured using the Elementary Health Teaching Self-Efficacy Scale (Appendix A) developed by Everett et al. (1996). The scale was created to examine the health teaching self-efficacy of elementary school teachers, and measures three constructs: efficacy expectation, outcome expectation, and outcome value. In a study in 1996, Everett et al. found that efficacy expectations accounted for 32.3% of the variance, and outcome expectations accounted for 12.5% of the variance. Outcome value accounted for only 3.0% of the variance. Although this study contained no hypotheses pertaining to outcome value, all three constructs were measured; however, only efficacy expectation and outcome expectation were included in the statistical analyses. Efficacy expectation scores and outcome expectation scores were calculated by adding the Likert scale responses

corresponding to each variable. The range of possible scores for efficacy expectations and outcome expectations were 16-80 and 14-70 respectively.

The demographic data questionnaire (Appendix C) was administered after the Health Teaching Self-Efficacy Scale and included items such as age, gender, and health education major/non-health education major.

Health knowledge was measured using the HKI (Appendix B) developed by Nicholson et al. (1988). The tests were scored using a traditional numerical scale of 0-100.

Procedures

This study was conducted in a senior elementary education methods course and a senior health education teaching methods course, and included the administration of a self-efficacy scale and a health content knowledge test. Additionally, demographic data were obtained via a questionnaire (Appendix C). Students' responses were anonymous to encourage honest participation; therefore, the self-efficacy scale, health content knowledge test, and demographic data questionnaire for each individual contained the same code numbers so that responses could later be linked for individual-specific data analysis purposes.

It was necessary to administer the self-efficacy scale prior to the health content knowledge test, as performance on the content test might affect responses to self-efficacy questions. For example, if a participant were to take the health content knowledge test first and feel as if he/she did poorly, his/her reported self-efficacy

might be lower than it otherwise would have been. Conversely, high achievement on the health content knowledge test could have led to inflated reporting of self-efficacy.

Prior to administering any of the questionnaires, the participants were each provided with an informed consent form (Appendix D) in compliance with the Institutional Review Board requirements. The consent forms were read aloud to the participants, who were then asked to sign the forms if they agreed to participate. The consent forms were then collected.

Next, the participants were handed a large manila envelope with a code number preprinted on it. Each participant then received a copy of the Health Teaching Self-Efficacy Scale (Appendix A) to complete. The participants were instructed to place their self-efficacy scales in their envelopes upon completion, and to raise their hands for the second packet of questionnaires, consisting of the demographic questionnaire stapled to the front of the Health Knowledge Inventory (Appendix B). Each student was then asked to place the second packet of questionnaires in his/her envelope after he/she finished completing them, and to turn in his/her envelope on the way out. All of the students were provided with food and beverages as an incentive and expression of appreciation for their participation.

The data obtained from the self-efficacy scales, health content knowledge tests, and demographic data questionnaires were entered into a computer file for statistical analysis. The data were then analyzed in relation to the proposed hypotheses.

Chapter Four – Results

Purpose of the Study

The purpose of this thesis was to examine the health knowledge and health-teaching self-efficacy of preservice elementary school teachers who did not major in health science, and the relationship between health knowledge and health teaching self-efficacy.

It was hypothesized that: health education majors would have higher health content knowledge test scores than non-health education majors; health education majors would have higher health teaching self-efficacy than non-health education majors; and there would be a positive correlation between health content knowledge and health teaching self-efficacy.

Health Education Majors

The data collected from the preservice elementary school teachers who majored in health science, and that from the professional majors in the School and Community Health Education and Promotion Program in the Department of Health Science, were examined using independent t-tests. No differences were found that would affect the outcome of this study or that would preclude them from being grouped together as health education majors.

Methods of Data Analyses

Descriptive statistics were used to report the demographic characteristics of the sample. Frequencies and percentages are provided for reported major, gender, and age, and the mean age of participants is included. Mean scores and standard

deviations were also calculated for health content knowledge test scores, efficacy expectations, and outcome expectations.

Additionally, various statistical tests were used to evaluate the data in relation to the proposed hypotheses. Independent t-tests were used to measure group differences between health education majors and non-health education majors for health content knowledge test scores, efficacy expectations, and outcome expectations. The Pearson Product Moment Correlation was used to examine the relationship between the health content knowledge test scores and the self-efficacy constructs of efficacy expectations and outcome expectations. Smith's (1988) rules for interpreting Pearson Product Moment Correlation coefficients were used to interpret the data. Smith (1988) interprets the correlation coefficients as follows: 0 indicates no relationship; $\pm .01-.25$ indicates a weak relationship; $\pm .26-.55$ indicates a moderate relationship; $\pm .56-.75$ indicates a strong relationship; $\pm .76-.99$ indicates a very strong relationship; and ± 1 indicates a perfect relationship.

Findings

Descriptive Statistics

The sample included a total of 64 subjects; 26 were health education majors (40.6%) and 38 were non-health education majors (59.4%). Of the 64 participants, 12 were male (18.8%) and 52 were female (81.3%) (see Table 1).

Table 1

Gender of Participants

		Frequency	Percent
Valid	Male	12	18.8
	Female	52	81.3
	Total	64	100.0

The reported ages of the participants ranged from 21-44 years (see full Table 2 on p. 38), with a mean of 26 years. Two participants did not report their age.

Table 2

Age of Participants

	Age	Frequency	Percent
Valid	21	13	20.3
	22	16	25.0
	23	10	15.6
	24	3	4.7
	25	1	1.6
	27	2	3.1
	28	1	1.6
	30	1	1.6
	31	1	1.6
	32	1	1.6
	33	2	3.1
	34	1	1.6
	37	1	1.6
	38	2	3.1
	39	3	4.7
	40	1	1.6
	41	1	1.6
	42	1	1.6
	44	1	1.6
	Total	62	96.9
Missing		2	3.1
Total		64	100.0

Independent t-tests

Independent t-tests were used to measure group differences between health education majors and non-health education majors for health content knowledge test scores, efficacy expectations, and outcome expectations. An alpha level of .05 was used for all independent t-tests.

The first independent t-test measured group differences between health education majors and non-health education majors in their health content knowledge test scores. There was a statistically significant difference ($t = 3.516$, $df = 62$, and $p < .001$) between the health content knowledge test scores of health education majors, with a mean score of 74.13 ($SD = 10.13$), and the health content knowledge test scores of non-health education majors, with a mean score of 64.75 ($SD = 10.70$) (see Tables 3 and 4). The range of possible scores was 0-100.

Table 3

Test Scores for Health Education Majors and Non-Health Education Majors

	Major	N	Mean	Std. Deviation
Test scores	Health education majors	26	74.1259	10.1338
	Non-health education majors	38	64.7518	10.6989

Table 4

Independent Samples Test – Test Scores for Health Education Majors vs. Non-Health Education Majors

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Test scores	Equal variances assumed	.159	.692	3.516	62	.001

The second independent t-test measured group differences between health education majors and non-health education majors in their efficacy expectation scores. There was a statistically significant difference ($t = 4.344$, $df = 62$, and $p < .001$) between the efficacy expectation scores of health education majors, with a mean score of 71.92 ($SD = 5.51$), and the efficacy expectation scores of non-health education majors, with a mean score of 65.79 ($SD = 5.58$) (see Tables 5 and 6). The range of possible scores for efficacy expectations was 16-80.

Table 5

Efficacy Expectation Scores for Health Education Majors and Non-Health Education Majors

	Major	N	Mean	Std. deviation
Efficacy expectations	Health education majors	26	71.9231	5.5058
	Non-health education majors	38	65.7895	5.5758

Table 6

Independent Samples Test – Efficacy Expectation Scores for Health Education Majors vs. Non-Health Education Majors

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Efficacy expectations	Equal variances assumed	.021	.887	4.344	62	.000

Finally, the third independent t-test measured group differences between health education majors and non-health education majors in their outcome expectation scores. There was a statistically significant difference ($t = 2.292$, $df = 62$, and $p < .025$) between the outcome expectation scores of health education majors, with a mean score of 60.46 ($SD = 6.31$), and the outcome expectation scores of non-health education majors, with a mean score of 56.08 ($SD = 8.22$) (see Tables 7 and 8). The range of possible scores for outcome expectations was 14-70.

Table 7

Outcome Expectation Scores for Health Education Majors and Non-Health Education Majors

	Major	N	Mean	Std. deviation
Outcome expectations	Health education majors	26	60.4615	6.3134
	Non-health education majors	38	56.0789	8.2245

Table 8

Independent Samples Test – Outcome Expectation Scores for Health Education Majors vs. Non-Health Education Majors

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Outcome expectations	Equal variances assumed	1.768	.188	2.292	62	.025

Pearson Product Moment Correlation

The Pearson r was calculated to examine the relationship between health content knowledge test scores and health teaching self-efficacy. It was calculated two times: once for health content knowledge and efficacy expectations, and once for health content knowledge and outcome expectations. An alpha level of .05 was used for both correlations.

The first Pearson Correlation was calculated to examine the relationship between health content knowledge test scores and efficacy expectations, and found that there was a statistically significant positive correlation between test scores and efficacy expectations (Pearson $r = .372$ and $p < .002$) (see Table 9). According to Smith's (1988) interpretation of Pearson Product Moment Correlation coefficients, $r = .372$ indicates a moderate relationship. In the social sciences, a moderate relationship is considered to be significant (Smith, 1988).

Table 9

Pearson Correlation for Health Content Knowledge Test Scores and Efficacy Expectations

		Test scores	Efficacy expectation
Test scores	Pearson Correlation	1.000	.372**
	Sig. (2-tailed)	.	.002
	N	64	64
Efficacy expectations	Pearson Correlation	.372**	1.000
	Sig. (2-tailed)	.002	.
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

The second Pearson Correlation was calculated to examine the relationship between health content knowledge test scores and outcome expectations. There was no statistically significant correlation between health content knowledge test scores and outcome expectations (Pearson $r = .104$ and $p = .414$) (see Table 10).

Table 10

Pearson Correlation for Health Content Knowledge Test Scores and Outcome Expectations

		Test scores	Outcome expectation
Test scores	Pearson Correlation	1.000	.104
	Sig. (2-tailed)	.	.414
	N	64	64
Outcome expectations	Pearson Correlation	.104	1.000
	Sig. (2-tailed)	.414	.
	N	64	64

Analysis of Findings

The first hypothesis of this study was that health education majors would have higher health content knowledge test scores than non-health education majors. This study found that there was a statistically significant difference between the health content knowledge of health education majors and non-health education majors. The results indicated that the health content knowledge of health education majors was higher than that of the non-health education majors.

The second hypothesis was that health education majors would have higher health teaching self-efficacy than non-health education majors. This study found that there was a statistically significant difference between health education majors and non-health education majors for both efficacy expectation scores and outcome expectation scores. The analysis showed that health education majors had higher efficacy expectation scores and outcome expectation scores than non-health majors. Efficacy expectation is a person's belief that he/she has the ability to perform a given behavior and outcome expectation is a person's belief that the behavior he/she performs will produce a desired effect (Bandura, 1977). In this case, health education majors were more confident in their ability to implement health education curriculum than were non-health education majors. Additionally, health education majors, when compared to non-health education majors, had more confidence that, if they did a good job teaching health curriculum, it would positively affect children's health.

Finally, the third hypothesis of this study was that there would be a positive correlation between health content knowledge and health teaching self-efficacy. This

study found that there was a statistically significant positive correlation between health content knowledge and efficacy expectation (confidence in the ability to teach health curriculum). There was no statistically significant relationship, however, between health content knowledge and outcome expectation, the belief that if implemented correctly, health education will produce positive results.



Chapter Five. Discussion

In 1990, the ODPHP established the increased application of comprehensive health education as one of the nation's major health goals for the year 2000.

However, studies have indicated that there is a lack of consistent program implementation, and that the national goal is not being met. Although there are many factors involved in the low rates of compliance with ODPHP (1990) recommendations, and for ineffective health education implementation, a lack of teacher preparation, particularly on the elementary level, is one of the most frequently cited reasons ("Critical Issues," 1993; Detert et al., 1996; English, 1994; "Incentives for Strengthening," 1990; Patterson et al., 1996; Ubbes et al., 1999).

Teacher preparation and content knowledge have been linked with time spent implementing curriculum and with student outcomes (Detert et al., 1996; Hausman & Ruzek, 1995; Mullens et al., 1996; Ross et al., 1991; Schindler et al., 1996; Stroble, 1997; Swafford et al., 1997). Additionally, teaching self-efficacy has been identified as an important predictor of curriculum implementation time (Everett et al., 1996; Gibson & Dembo, 1984; Telljohann et al., 1996). Two constructs that are a part of self-efficacy are efficacy expectations and outcome expectations. Efficacy expectation is the belief that you can complete a course of action, and outcome expectation is the belief that, if you follow the course of action, it will produce a certain outcome (Bandura, 1977). When applied to health education, efficacy expectations would be a teacher's confidence in his/her ability to effectively implement health curriculum, and outcome expectations would be the belief that, if

he/she does a good job teaching health, it would positively affect the health of his/her students (Everett et al., 1996). The purpose of this study was to examine both the health content knowledge and health teaching self-efficacy of preservice elementary school teachers who did not major in health science, as well as the relationship between the two factors.

Sample

The sample for this study included 64 subjects, 12 males (18.8%) and 52 females (81.3%). This is reflective of the higher percentage of females in both health education and elementary education in today's workforce. It is not clear whether a more gender-balanced sample would yield different research results.

In addition to a gender imbalance, there was a wide range of participant ages (21-44 years), with a mean of 26 years. It was interesting to see that there were a large number of non-traditional students working toward careers in health education and elementary education.

Independent t-tests

This study found a statistically significant difference between the health content knowledge test scores of health education majors and non-health education majors (preservice elementary school teachers who did not major in health science). Although the test scores for both groups could have been higher ($M = 74.12$ for health education majors and $M = 64.75$ for non-health education majors), the scores were significantly lower for non-health education majors. This is an important finding because previous studies have linked teacher preparation with implementation

time, and teacher knowledge with student outcomes. If teachers have poor health content knowledge, they may be less likely to spend time implementing it, or may be disseminating false or inaccurate information. Additionally, a lack of teacher health content knowledge may negatively impact student learning, particularly of advanced concepts.

This study also identified a statistically significant difference between health education majors and non-health education majors in both efficacy expectations and outcome expectations. Scores for non-health education majors were significantly lower than for health education majors for both constructs. This is a significant finding because it may be an indication that the non-health education majors will spend less time teaching health lessons in their elementary school classrooms.

The lower efficacy expectation scores among non-health education majors show that they were less confident in their ability to effectively implement health education curriculum than were health education majors. Because of the relationship between efficacy expectations and curriculum implementation time, it is possible to surmise that non-health education majors will spend less time teaching health lessons in their classrooms. Additionally, the lower outcome expectation scores among non-health education majors indicate that non-health education majors were less likely to believe that, even if they did a good job teaching health, it would positively affect their students' health. This is significant because if non-health education majors do not believe that health education can be effective, they will be less likely to spend time implementing it.

Pearson Correlations

This study also examined the relationship between health content knowledge and health teaching self-efficacy. A statistically significant positive correlation was identified, indicating a moderate relationship between health content knowledge and efficacy expectations; as health content knowledge increased, efficacy expectations increased. Similarly, as health content knowledge decreased, efficacy expectations decreased. This finding seems to indicate that the study participants were aware of, and were able to accurately assess, their level of preparation. In other words, those who reported feeling less confident about teaching health curriculum, performed poorly on the health content knowledge test. It is also worth noting that the participants were able to accurately assess their level of preparedness for teaching health curriculum prior to taking the knowledge test, as the self-efficacy scale was administered first during the study.

No statistically significant correlation was identified between health content knowledge and outcome expectations. This indicates that there is no correlation between health content knowledge and whether or not participants believed that health curriculum, if implemented properly, could positively affect health.

Limitations

The major limitation of this study was the lack of a random sample. The relatively small number of health education majors (both preservice elementary school teachers who majored in health science and professional majors in the School and Community Health Education and Promotion Program) and non-health education

majors (preservice elementary school teachers who did not major in health) at the State University of New York College at Brockport necessitated the use of all available subjects. Future studies may benefit from drawing subjects from a larger population. It is not believed, however, that the lack of a random sample impacted the outcome of this study.

A further limitation of this study is that the questionnaires were given, for both health education majors and non-health education majors, on days when other questionnaires were also administered which may have resulted in participant fatigue. While it is not believed that this negatively impacted the outcome of this study, future studies should seek to administer the questionnaires on a day when additional surveying is not taking place.

Conclusions and Recommendations

The non-health education majors (preservice elementary school teachers who did not major in health science) were significantly less prepared to teach health curriculum than were health education majors, as identified by lower scores in both health content knowledge and health teaching self-efficacy. Because health education is generally the responsibility of elementary school classroom teachers, and given that poor teacher preparation may lead to less time spent implementing health lessons, health curriculum must be included in elementary teacher preparation programs. In addition to increasing health curriculum, more attention needs to be paid to increasing the health teaching self-efficacy of elementary school teachers while they are in college. Furthermore, inservice training designed to increase health content

knowledge and health teaching self-efficacy among current elementary school teachers may be necessary to compensate for poor teacher preparation. Working to increase the efficacy expectations and outcome expectations of preservice and current elementary school teachers may lead to increased implementation time, as well as to an increase in the valuation of health education as an important component of a student's education.

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Appendix A – The Health Teaching Self-Efficacy Scale
(Everett et al., 1996; Telljohann et al., 1966)

DO NOT put your name on this survey. Your responses will be anonymous and confidential. You cannot be identified through your participation in this study. *Thank you.*

For the following questions, please circle the response which best describes your opinion.

1. I know where I can obtain curricular resource materials for health education.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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2. Increased teaching time in health education produces significant changes in many students' health-related behaviors.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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3. Even if I try very hard, I will not teach about health as well as I will most other subjects.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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4. It is rewarding for me to teach students about health issues.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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5. The inadequacy of a student's health education background can be overcome by good teaching.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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6. I understand health education concepts well enough to be effective in teaching elementary health education.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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7. I know the steps necessary to teach health education concepts effectively.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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8. I am able to stimulate students enough that they ask thoughtful health questions.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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9. I believe I can evaluate changes in health attitudes.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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10. I believe I can evaluate changes in health skills.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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I believe I can do a good job teaching students about:

11. Tobacco/Alcohol and Other Drugs

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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12. Sexuality

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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13. Nutrition

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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14. Mental/Emotional Health

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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15. Fitness .

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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16. Disease Control/Prevention

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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17. Environmental Health

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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18. Safety/Accident Prevention

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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19. Consumer Health

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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20. Personal Health/Hygiene

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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I believe that if I do a good job teaching, the students I teach will be:

21. Healthier adults.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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22. More likely to live productive lives.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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23. Less likely to use tobacco products.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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24. Less likely to misuse drugs, including alcohol.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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25. Less likely to be involved in an unwanted pregnancy.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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26. Less likely to contract a sexually transmitted disease.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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27. More likely to eat well balanced meals.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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28. More likely to engage in regular exercise.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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29. More likely to maintain a normal weight.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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30. Less likely to commit suicide.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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31. Less likely to be involved in acts of violence.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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32. Less likely to be involved in a crippling or fatal accident.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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33. More knowledgeable about personal health issues.

Strongly Agree	Agree Some	Not Sure	Disagree Some	Strongly Disagree
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Appendix B – The Health Knowledge Inventory
(Nicholson et al., 1990; Price et al., 1988)

DO NOT put your name on this survey. Your responses will be anonymous and confidential. You cannot be identified through your participation in this study.
Thank You.

For the following questions, please circle the best answer.

1. According to health professionals which of the following weight reducing techniques is the most highly recommended?
 - a. Hypnosis
 - b. Fasting and/or fad diets
 - c. Sweat belts and spot reducing techniques
 - d. Regular exercise combined with reduced calorie intake

2. The risk of heart disease is most serious for women who smoke and:
 - a. Have arthritis
 - b. Are pregnant
 - c. Use oral contraceptives
 - d. Have osteoporosis

3. Hashish is a derivative of:
 - a. Mescaline
 - b. LSD
 - c. Psilocybin
 - d. Marijuana

4. All of the following statements are true about shock except:
 - a. It is easier to prevent shock than to treat it
 - b. The victim's temperature is usually high
 - c. Vomiting is common
 - d. Breathing is shallow and irregular

5. Of the following, which statement is inaccurate?
 - a. The dying patient should be separated from other patients during the terminal phase
 - b. Terminally ill patients should be told they are dying
 - c. Most patients prefer to die at home rather than in a hospital
 - d. Health providers usually do not communicate easily with each other on issues relating to the needs of the dying patient

6. Osteoporosis is associated with a deficiency of:
 - a. Vitamin A
 - b. Calcium
 - c. Potassium
 - d. Vitamin B12

7. A positive HIV antibody test means:
 - a. The person has full blown AIDS
 - b. The person is infected with the AIDS virus, and most certainly will develop AIDS
 - c. The person was exposed to the virus that causes AIDS, but has developed antibodies to the virus and is immune
 - d. The person has AIDS and will probably die within a year

8. Pushing painful thoughts or feelings from the conscious mind is indicative of:

a. Sublimation	c. Reaction formation
b. Regression	d. Repression

9. Carbon monoxide is dangerous because it:
 - a. Destroys cilia in the lung's air sacs
 - b. Impairs the red blood cells' oxygen-carrying function
 - c. Helps to create fluorocarbons in the air
 - d. Causes sterility once the accumulation reaches toxic levels

10. Immediately following a strenuous workout a person should:
 - a. Drink a large quantity of water to replace lost body fluids
 - b. Eat a hearty meal to replace needed energy
 - c. Walk or jog slowly in place
 - d. Lie down and relax

11. A heart attack is known as:

a. Congestive heart failure	c. Endocarditis
b. Cardiac ischemia	d. Myocardial infarction

12. Fat consumption should not exceed _____% of daily caloric intake.

a. 50%	c. 30%
b. 40%	d. 20%

13. When a person is in very good physical condition his or her heart:
 - a. Pumps faster
 - b. Produces fewer abnormal heart sounds
 - c. Pumps more slowly
 - d. Produces more arrhythmias

14. Individuals who derive sexual excitement from dressing in the clothes of the opposite sex are called:

a. Transvestites	c. Transsexuals
b. Homosexuals	d. Bisexuals

15. If you suspect internal bleeding:
- Apply hot compresses to the area
 - Give fluids such as water
 - Apply cold compresses to the area
 - Give a depressant such as alcohol
16. In America, it is presently illegal to:
- Medically prolong life against a person's will
 - Practice active euthanasia
 - Practice passive euthanasia
 - Write a "living will" or a "durable power of attorney" for health care
17. Rheumatic fever is best prevented by:
- Periodic physical examination
 - Controlling high blood pressure
 - Prompt treatment of streptococcal infections
 - Eliminating foods high in cholesterol from the diet
18. Microorganisms that can harm or injure humans in some way are called:
- Microbes
 - Pathogens
 - Hosts
 - Bacteria
19. What type of vitamin supplement does a person eating a well balanced diet need?
- Only Vitamin C
 - A multiple vitamin tablet
 - A multiple vitamin tablet with iron
 - No supplements are needed
20. Exercises that pit one muscle, or part of the body against another or against an immovable object in a strong but motionless pressing or contracting are called:
- Isometric
 - Static
 - Isotonic
 - Ballistic
21. The type of chest pains usually felt by someone experiencing a heart attack:
- Pain in the left chest, centering on the nipple
 - Squeezing, aching, or pressing pain
 - Sharp or jabbing pains
 - Pain will increase with movement

22. The best way(s) to prevent getting a sexually transmitted disease is:
- To use a condom
 - For partners to communicate honestly
 - To wash before and after intercourse
 - All of the above
23. When helping someone who is suffering from depression, a friend or family member should:
- Call the help line immediately
 - Be an attentive, non judgmental listener
 - Try to cheer the person up
 - Tell the person to get hold of themselves and “pull themselves up by their bootstraps”
24. A woman who smokes during her pregnancy increases the chances that she will have a baby that:
- Is born addicted to nicotine
 - Has Down’s Syndrome
 - Suffers neurological damage
 - Has low birth weight
25. Which of the following statements is *not* true?
- Lifestyle can have a significant effect on one’s health
 - Aerobic exercises generally require a high expenditure of calories
 - A cardiac patient who exercises is less likely to have another heart attack
 - If you need recovery time after performing a strenuous activity, it’s a signal that you’ve exercised too hard
26. The most effective method of birth control, excluding sterilization, is:
- | | |
|------------------------|------------------|
| a. Birth Control pills | c. The diaphragm |
| b. Norplant | d. Spermicide |
27. A type of cancer for which a genetic link has been identified in some cases:
- | | |
|------------|-----------|
| a. Skin | c. Breast |
| b. Bladder | d. Lung |
28. During the flu season, it is most important for _____ to receive the flu vaccine:
- | | |
|------------------------------|-----------------------|
| a. Elderly & chronically ill | c. Young adults |
| b. Young children | d. General Population |

29. A generic drug name indicates;
- The chemical content of a drug
 - The name of the individual who discovered the drug
 - The name of the company that manufactures the drug
 - The drug contains a narcotic derivative of some kind
30. Which vitamin is found in fortified milk and produced by the body in response to ultraviolet light?
- Vitamin E
 - Vitamin K
 - Vitamin C
 - Vitamin D
31. Depletion of the ozone layer causes:
- Plants to grow slower
 - An increase in sunburns
 - Suppression of the immune system
 - All of the above
32. Which of the following is *not* a physiological factor in depression?
- Low blood sugar
 - Elevated cholesterol level
 - Nutritional deficiency
 - Imbalance in the brain levels of certain neurotransmitters
33. The most common attitude toward death in American society has been described by scholars as one of:
- Death denying
 - Death defying
 - Death desiring
 - Death accepting
34. Individuals believed to be suffering from acute alcohol intoxication:
- Should be forced to vomit
 - Should be placed in a cold shower immediately
 - Should be left alone to sleep
 - Should receive emergency medical help immediately
35. Identify the cause of more than half of all fatal residential fires.
- Cigarette smoking
 - Children playing with matches
 - Malfunction of electrical appliances
 - Cooking
36. Exercise that makes the cardiovascular and respiratory system strong is:
- Aerobic exercise
 - Isometric exercise
 - Calisthenic exercise
 - Isotonic exercise

37. _____ occurs when a person's vital body signs (heartbeat, respiration) cease functioning.
- a. Clinical death
 - b. Cellular death
 - c. Brain death
 - d. Spiritual death
38. The most common and most curable of all cancer is:
- a. Colon
 - b. Breast
 - c. Skin
 - d. Lung
39. Which of the following is a weakness of a strict vegetarian diet?
- a. Too much bulk and fiber content
 - b. Tends to aggravate high blood pressure
 - c. It could lack essential amino acids
 - d. Tends to cause diarrhea
40. _____ is the capacity of a muscle to exert a force against a resistance.
- a. Strength
 - b. Flexibility
 - c. Endurance
 - d. Coordination
41. Which of the following statements is true?
- a. Most old people are basically alike
 - b. Most old people live at or below the poverty level
 - c. Most old people will be a victim of a crime
 - d. Most old people retain their interest in sex
42. Which of the following is a recognized method for controlling bleeding?
- a. Elevating the wound
 - b. Apply direct pressure
 - c. Apply pressure points
 - d. All of these methods
43. Analgesic drugs are used to:
- a. Reduce pain
 - b. Reduce swelling
 - c. Reduce fever
 - d. Reduce nausea & vomiting
44. A lack of dietary or supplemental iron will cause:
- a. Anemia
 - b. Diabetes Mellitus
 - c. Hypoglycemia
 - d. Herpes Type I
45. LSD, mescaline, and psilocybin are classified as:
- a. Opiates
 - b. Depressants
 - c. Stimulants
 - d. Hallucinogens

46. The most prevalent form of rape in the United States is:
- Acquaintance Rape
 - Child Molestation
 - Marital Rape
 - Rape of a person from a different race or ethnic group
47. _____ is a diagnostic test for breast cancer.
- Pap smear
 - Arteriogram
 - Mammogram
 - Electromyogram
48. Of the following, which is *not* a characteristic of bulimia?
- A conscious, relentless attempt to diet
 - Primarily affects adolescent females
 - Consequences may include inflammation and bleeding of the esophagus and loss of dental enamel
 - Eating binges followed by induced vomiting
49. The major threat to the quality of the United States water supply is:
- Sewage
 - Organisms that cause cholera and typhoid fever
 - Industrial and agricultural chemicals
 - Garbage disposal
50. Exercising the body at levels greater than to which it is accustomed is:
- Overload
 - Cardiorespiratory endurance
 - Training effect
 - Principle of reversibility
51. Breast and testicular self-exams should be done:
- Monthly
 - Every 3 months
 - Twice a year
 - Once a year
52. Although only one area of the body may be injured, the body as a whole may react by depressing vital processes. This condition is:
- Shock
 - Anoxia
 - Asphyxia
 - Vital depression
53. Which of the following statements about Alzheimer's disease is inaccurate?
- Alzheimer's is an organic brain syndrome that primarily affects the elderly
 - Alzheimer's is incurable
 - Alzheimer's is primarily caused by atherosclerosis
 - Most Alzheimer's patients are cared for at home rather than being institutionalized

54. The primary psychoactive ingredient in marijuana is:
- Peyote
 - THC
 - DMT
 - Methedrine
55. Fertilization usually occurs in the:
- Fallopian tubes
 - Vagina
 - Ovaries
 - Uterus
56. The primary role of the Food and Drug Administration (FDA) is to:
- Protect the public from quackery
 - Enhance buyer awareness
 - Regulate the effectiveness, safety and labeling of drugs
 - Develop and enforce uniform safety standards
57. Angel dust is a slang name for:
- Mescaline
 - Cocaine
 - Opium
 - PCP
58. If a child has swallowed a bottle of medicine, who should be called?
- Toxic Substance Clinic
 - American Red Cross
 - Poison Control Center
 - A pharmacy
59. Which of the following statements about the effectiveness of aerobic exercise is true?
- Aerobic exercises should be done daily for 1 to 2 hours per session
 - Aerobic exercises should be done 3-4 times weekly for approximately 20-30 minutes per session
 - Aerobic exercises should be done once per week for 30-45 minutes per session
 - Aerobic exercises should be done once per month for 1 hour per session
60. Antibiotics are effective in treating diseases caused by which of the following category of organisms?
- Viruses
 - Animals
 - Bacteria and fungi
 - Parasitic worms
61. The major danger associated with quack treatments is:
- They tend to create false hopes of cure
 - They may have a placebo effect
 - Effective treatment may be delayed
 - Money is needlessly wasted

62. Foods served at fast food restaurants typically tend to be:
- High in calories, fat, and salt content
 - High in calories, low in protein and salt
 - Low in calcium and fats, high in sugar
 - Low in protein, sugar and salt
63. Menopausal symptoms are primarily attributable to:
- The “empty nest” syndrome
 - Estrogen deficiency
 - Cultural expectations
 - Environmental influences
64. Which of the following procedures should be used as a last resort to stop severe bleeding?
- Apply a tourniquet
 - Elevate the injured part
 - Apply direct pressure to the wound
 - Apply pressure to the supplying artery (pressure point)
65. Which statement regarding tuberculosis (TB) is *not* accurate?
- Symptoms include chronic coughing, weight loss and even death
 - All TB infections are easily cured
 - TB is spread through coughing
 - The disease thrives in places such as hospitals, college residence halls, and prisons
66. A health care provider who believes that all diseases are related to spinal dislocations is called:
- An Osteopath
 - An Orthopedist
 - An Internist
 - A Chiropractor
67. Ascribing an undesirable thought or action of one’s own to another person is called:
- Displacement
 - Reaction formula
 - Projection
 - Compensation
68. Side effects commonly associated with alcohol do *not* include:
- Irritates the gastrointestinal tract
 - Enhances the effects of other depressant drugs
 - Enhances sexual performance
 - Acts as a diuretic

69. The source of water pollution most likely to be contaminated with disease organisms is:
- Synthetic organic chemicals
 - Inorganic chemicals and minerals
 - Radioactive substances
 - Human sewage
70. A rule to prevent infection is to never touch a wound with anything that is *not* sterile, the most important exception to this is:
- If there is severe bleeding
 - If the wound is a burn
 - If there is clothing sticking to the wound
 - If the wound is a puncture and not bleeding
71. A document that indicates the signer's preferences for medical treatment in the event a person is diagnosed terminally ill and is unable to express his/her choice or wishes regarding their medical treatment.
- Last Will and Testament
 - Durable Power of Attorney for Health Care
 - Living Will
 - Informed Consent form
72. A biopsy is:
- A radioactive substance which tends to destroy a cancerous tumor
 - Removal of tissue for examination
 - Sputum sample examined for cancerous cells
 - A scanning procedure to check for cancer
73. A sexually transmitted disease that can also be picked up from infected towels, linens, or clothing is:
- | | |
|-------------------|---------------|
| a. Syphilis | c. Pubic lice |
| b. Genital Herpes | d. Gonorrhea |
74. Two diseases that quacks frequently claim to be able to cure are:
- | | |
|--------------------------|-----------------------------|
| a. Arthritis and cancer | c. Heart disease and asthma |
| b. Diabetes and baldness | d. Obesity and epilepsy |
75. Disorders which originate in the mind and manifest themselves in bodily symptoms are known as:
- | | |
|-----------------------------|------------------------|
| a. Panic attacks | c. Affective disorders |
| b. Psychosomatic complaints | d. Neurotic reactions |

76. Air pollutants which affect the respiratory system cause:
- The cilia to slow down – thereby allowing a greater absorption of the pollutant into the body
 - The cilia to speed up thus becoming more effective
 - More cilia to be generated so as to increase cleansing efficiency
 - Cilia to grow longer – thereby increasing their resistance
77. Teenage mothers are more likely to have all the following with the exception of:
- Premature babies
 - Stillbirths
 - Shorter labor
 - Higher maternal mortality
78. When treating a suspected fracture you should:
- Move the victim to a more convenient location
 - Treat for shock, and immobilize the injured area
 - Set or reduce the fracture
 - Strengthen a joint that is out of alignment
79. When dealing with bereaved children it is advisable to do all the following except:
- Allow the child to attend the funeral or memorial service if he/she wants to
 - Grieve openly in the presence of the child
 - Tell the child the truth about how, when, where a significant other died
 - Tell the child that death is like “going to sleep,” “going on a trip,” etc.
80. Which of the following has been associated with cancer?
- Chemicals presently used in food for coloring
 - Diets low in vitamins
 - Diets low in fats and high in sugar
 - Diets high in fats and low in fiber
81. Preparations of weakened or killed pathogens that stimulate antibody formation without causing observable signs and symptoms of the disease are called:
- | | |
|----------------|---------------|
| a. Vaccines | c. Toxoids |
| b. Antibiotics | d. Pheromones |
82. Acetaminophen is of *no* value in the treatment of:
- | | |
|----------|-----------------|
| a. Fever | c. Inflammation |
| b. Pain | d. Headaches |

83. The best way to get the different nutrients we need is to:
- Eat a wide variety of foods
 - Take a vitamin and mineral supplement daily
 - Eat only "organically" grown foods
 - Eat a good breakfast daily
84. The term "dementia" means:
- To be deprived of the mind
 - To be dying
 - To be psychotic
 - To be elderly
85. The term "freebasing" is associated with:
- PCP
 - Cocaine
 - Heroin
 - LSD
86. A term that means "without oxygen" or *not* requiring oxygen is:
- Anaerobic
 - Metabolism
 - Aerobic
 - Aneurysm
87. What is the first thing that should be done when attempting to aid an unconscious person?
- Check for a pulse
 - Attempt the Heimlich Maneuver
 - Start artificial respiration immediately
 - Open the airway and check for breathing
88. Cancer specialists are referred to as:
- Oncologists
 - Nephrologists
 - Pathologists
 - Obstetricians
89. The main function of carbohydrates in the diet is to:
- Build and repair the body
 - Regulate the body temperature
 - Supply the body with energy
 - Manufacture hormones and enzymes
90. Healing that results from a person's belief in treatments that have no medical value is called:
- Quackery
 - Mysticism
 - Voodooism
 - Placebo effect

91. What is the major source of human-made radiation to which the majority of the U.S. population is exposed to each year?
- Fallout from nuclear weapons testing
 - Faulty color television sets
 - Medical and dental X-rays
 - Nuclear power generators
92. What should you do if you are unable to blow air into the victim's lungs when trying to give artificial respiration?
- Keep trying
 - Attempt the Heimlich Maneuver
 - Let someone else try
 - Retilt head, try again
93. Biological changes commonly associated with aging include all the following except:
- Diminished immune system response
 - Diminished blood sugar levels
 - Diminished breathing capacity
 - Diminished hearing acuity
94. To reproduce, which of the following must take over the reproductive machinery of a cell?
- | | |
|-------------|------------|
| a. Protozoa | c. Viruses |
| b. Bacteria | d. Fungi |
95. Which drug is the most potentially lethal when combined with alcohol?
- | | |
|-----------------|------------------|
| a. Barbiturates | c. Cocaine |
| b. Marijuana | d. Decongestants |
96. Which of the following is most likely to lead to hearing loss?
- Loud music during a party
 - Illness and ear disease from drinking too much liquor
 - Continually listening to loud music through headphones
 - Sound wave emitted from the TV
97. Individuals who manifest both masculine and feminine psychological traits are termed:
- | | |
|--------------------|----------------|
| a. Transsexuals | c. Bisexuals |
| b. Gender confused | d. Androgynous |

98. Diabetes mellitus involves a malfunctioning of which gland?
- Adrenal
 - Pancreas
 - Thyroid
 - Pituitary
99. Which of the following is a well-balanced dietary program?
- Slim Fast diet
 - Macrobiotic
 - Weight Watchers
 - Liquid protein diet
100. In which of the following stages of bodily reaction to stress is psychosomatic illness most likely to occur?
- Alarm stage
 - Resistance stage
 - Exhaustion stage
 - Holistic stage
101. The condition known as “runners’ high” has been associated with the release of brain chemicals known as:
- Endorphins
 - Prostaglandins
 - Steroids
 - Platelets
102. Research on the incidence of child molestation indicates that most child molesting is done by individuals who are _____ in their sexual orientation.
- Bisexual
 - Homosexual
 - Heterosexual
 - Asexual
103. Physical exercise is beneficial to the elderly because it provides all the following results except:
- Lowers cholesterol levels
 - Prevents the loss of brain cells
 - Increases respiratory efficiency
 - Reduces mental anxiety and tension
104. Which group is at the greatest risk of developing diabetes mellitus?
- Adult males
 - People under 20
 - The obese
 - People whose diet is high in simple carbohydrates
105. Which of the following diseases may deform a fetus if an expectant mother contracts it during the first 3 months of pregnancy?
- Smallpox
 - Measles
 - Rubella (German Measles)
 - Varicella (Chicken Pox)

106. Which of the following is *not* an example of a managed care health plan?
- Health maintenance organization
 - Indemnity plan
 - Preferred provider organization
 - Point-of-service plan
107. Attempts to understand another's emotional thoughts and feelings is called:
- Compassion
 - Empathy
 - Tolerance
 - Sympathy
108. What gas is responsible for about 50% of global warming?
- Oxygen
 - Carbon dioxide
 - Chlorofluorocarbons
 - Sulphur dioxides
109. Contemporary research indicates that a primary explanation for homosexuality is:
- A hormonal dysfunction
 - Heredity
 - Poor relationship with parents
 - There is no agreement regarding an explanation
110. If you burn yourself on the hand with a hot iron, you should:
- Cover the wound with butter or other grease
 - Cover the wound with a cotton ball dipped in oil
 - Cover the wound with sterile gauze that has been dipped in warm water
 - Cool the area and cover loosely with a sterile dressing

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Appendix C – Demographic Questionnaire

DO NOT put your name on this survey. Your responses will be anonymous and confidential. You cannot be identified through your participation in this study. Thank You.

1. Age: _____
2. Gender: M _____ F _____
3. Class Standing: Freshman _____
Sophomore _____
Junior _____
Senior _____
Graduate _____
Other _____ (please explain)
4. Are you a health education major? Yes _____ No _____
5. If you are not a health education major, what is your major?

Appendix D – Informed Consent Form

The purpose of this research project is to examine general health opinions and knowledge among preservice elementary school teachers. This research project is being conducted in order for me to complete my Masters Thesis for the Department of Health Science at the State University of New York College at Brockport.

In order to participate in this study, your informed consent is required. You are being asked to make a decision about whether or not to participate in the project. If you want to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and leave the study without penalty, even after the study has begun.

I understand that:

1. My participation is voluntary and I have the right to refuse to answer any questions.
2. My confidentiality is guaranteed. My name will not be written on the survey. There will be no way to connect me to my written survey. If any publication results from this research, I would not be identified by name.
3. There will be no personal risks or benefits because of my participation in this project.
4. My participation involves reading 143 items/questions, and circling responses to each of those items/questions. Additionally, my participation will involve filling out a demographic questionnaire. It is estimated that it will take 45 minutes to complete this survey.
5. Approximately 60 people will take part in this study. The results will be used for the completion of a masters thesis by the primary researcher.
6. When the thesis has been accepted and approved, all consent forms will be destroyed.

I have read and understand the above statements. All of my questions about my participation in this study have been answered to my satisfaction. I agree to participate in the study realizing that I may withdraw without penalty at any time during the survey process.

If you have any questions you may contact:

Primary Researcher:
Amy Hellenschmidt-Preston

Faculty Advisor:
Dr. Kathleen Hunter

Please print your name: _____

Signature: _____ Date: _____

Appendix E.– Letter of Permission – The Health Teaching Self-Efficacy Scale



The University of Toledo

College of Health and Human Services · Toledo, Ohio 43606-3390

Department of Public Health and Rehabilitative Services

Health Education Center

(419) 530-2743 · Fax (419) 530-4759


March 13, 2000

Ms. Amy Hellenschmidt-Preston

Dear Amy:

I give you permission to use the Health Teaching Self-Efficacy Scale for your Masters Thesis research project. I also give you permission to omit several items that pertain to teachers presently teaching elementary school, as your research will be conducted with preservice elementary school teachers.

Sincerely,


Susan K. Telljohann, Ph.D., CHES
Professor of Health Education

Appendix F – Letter of Permission – The Health Knowledge Inventory

Department of Public Health
Office 270-745-4797
Fax: 270-745-4437
public.health@wku.edu



Western Kentucky University
1 Big Red Way
Bowling Green, KY 42101-3576

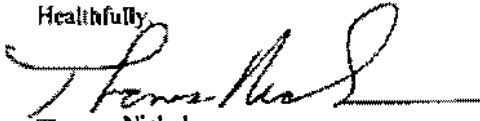
December 8, 1999

Amy Hellen Schmidt-Preston

Dear Amy,

Please feel free to use the Health Knowledge Inventory as part of your thesis research.
Best wishes with your graduate studies.

Healthfully,



Thomas Nicholson
Professor of Public Health

Appendix G – IRB Letter of Approval

BROCKPORT

State University of New York
College at Brockport
350 New Campus Drive
Brockport, New York 14420-2919

Grants Development Director
(716) 395-2523/5118
Fax (716) 395-5602
cdonalds@po.brockport.edu

Date: March 9, 2000

To: Amy Hellenschmidt-Preston ✓
Dr. Kathleen Hunter

From: Colleen Donaldson for C~
Institutional Review Board

Re: Project IRB #2000-27

Your proposal HEALTH KNOWLEDGE AND HEALTH TEACHING SELF-EFFICACY AMONG PRESERVICE ELEMENTARY SCHOOL TEACHERS has been approved. Accordingly, you may proceed with the work as proposed and approved. If this project continues beyond one year, federal guidelines require that the information below (items 1-6) will need to be provided to the IRB before the project can be approved for a second year. Please note also that if the project initially required a full meeting of the IRB (Category III proposal) for the first review, then continuation of the project after one year will again require full IRB review.

Information required by the IRB for continuation of the project past the first year includes the following:

1. number of subjects involved in year one
2. a description of any: adverse events or unanticipated problems involving risks to subjects or other, withdrawal of subjects from the research or complaints about the research during the previous year
3. a summary of any recent literature, findings, or new information about any risks associated with the research
4. a copy of the current informed consent document
5. a general summary of research findings from year one
6. reason why project needs to be continued into a second year.

Please contact Colleen Donaldson, Office of Academic Affairs, immediately if:

- the project changes substantially,
- a subject is injured,
- the level of risk changes.

A final report is due on or before March 1, 2001