Examining the effectiveness of a health course in influencing pre-service teachers' attitudes toward health in schools

by Susan Adeline Myers-Clack

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Health & Human Development

Montana State University

Abstract:

Research has shown that effective school health education depends on the effectiveness of health training for prospective teachers. This thesis focuses on the effectiveness of a university course in preparing pre-service teachers to incorporate health into their curricula and to contend with students' personal health issues. Hypotheses derived from the theory of educational change and the course objectives theorized that the class Drug and Health Issues for Educators will increase a pre-service teacher's: 1) value of school health education, 2) intention to include health in their teaching, 3) belief in the importance of health to a student's learning, 4) ability to include health content in their area of teaching concentration, 5) ability to identify, provide information on, and find resources for a student who has a health problem in nutrition, sexuality, tobacco, alcohol, drugs, physical fitness, mental health, and relationships.

Respondents were education majors enrolled in the course Drug and Health Issues for Educators during Spring Semester 2000. A pre-test/post-test questionnaire gathered data for the evaluation and the control variables at the beginning and end of Spring Semester 2000. Analysis were conducted on 119 paired samples.

All hypotheses were retained except hypothesis three and SC which were rejected with the t-tests and 5A which was rejected with the multiple regression technique. Drug and Health Issues for Educators may be effective in preparing prospective teachers to teach health and contend with a student's personal health issues.

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APPROVAL

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Susan Adeline Myers-Clack

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citation, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ABSTRACT

Research has shown that effective school health education depends on the effectiveness of health training for prospective teachers. This thesis focuses on the effectiveness of a university course in preparing pre-service teachers to incorporate health into their curricula and to contend with students' personal health issues. Hypotheses derived from the theory of educational change and the course objectives theorized that the class Drug and Health Issues for Educators will increase a pre-service teacher's: 1) value of school health education, 2) intention to include health in their teaching, 3) belief in the importance of health to a student's learning, 4) ability to include health content in their area of teaching concentration, 5) ability to identify, provide information on, and find resources for a student who has a health problem in nutrition, sexuality, tobacco, alcohol, drugs, physical fitness, mental health, and relationships.

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CHAPTER 1

INTRODUCTION

The purpose of this study was to examine if the course Drug and Health Issues for Educators will increase a pre-service teacher's: 1) value of school health education, 2) intention to include health in their teaching, 3) belief in the importance of health to a student's learning, 4) ability to include health content in their area of teaching concentration, 5) ability to identify, provide information on, and find resources for a student who has a health problem related to mental health, fitness, nutrition, sexuality, tobacco, alcohol and other drugs, and relationships. Chapter one presents the need for this research, introduces the five hypotheses tested, and provides research definitions, delimitation, and limitations. Chapter two is a review of literature. The methods used for this research are presented in chapter three. Chapter four presents the findings and chapter five discusses the findings and presents implication for theory, practice, and research.

School Health Education

Elementary, middle and high school students who cannot concentrate in school may not learn to their full potential (O'Rourke, 1996). One of the reasons a student cannot concentrate is their health (O'Rourke, 1996). Students struggle with health issues such as pregnancy, HIV, relationship abuse, malnutrition, eating disorders, and violence in schools. Furthermore, many of these health issues are out of the control of the student,

which can exacerbate the problem. Students contending with health issues also have more problems in school. They have lower grades, attendance, and graduation rates than their peers without health problems (Symons, Cinelli, James & Groff, 1997). Health education can help teach students how to handle personal health problems, adopt a healthy lifestyle, avoid disease and disability, and can assist them in successful academic achievement (American Cancer Society, 1992; American Cancer Society, 1999; CDC, 1999). Teaching students health information, life skills, and attitudes to help protect their health can impact 50 million children each year (American Cancer Society, 1992; CDC, 1999). Teachers are in a prominent position to help children with their health and health issues for several reasons. First, teachers are required to incorporate health into their lessons regardless of speciality area. In addition, students frequently divulge personal health issue to teachers they trust. Furthermore, children between the ages of six and 17 spend more time with their teachers than with their parents (Page & Page, 2000). Unfortunately, many teacher certification programs for non-health teachers lack health as a component (Lavin, 1993). Consequently, many non-health teachers feel unable to teach health, are uncomfortable with some components of health curricula, and are ill prepared to respond to a student who discloses personal health information (Lavin, 1993).

Since a teacher's values, beliefs, attitudes, thoughts, and judgments have a strong influence on what is accomplished in the classroom, it is necessary to discover how to influence a pre-service teacher to value school health education as a core subject, integrate health into his/her curricula, and effectively handle students' personal health

issues (Carter, Lee, & Worthy, 1991). Current research has not extensively examined pre-service training in health for non-health specialist teachers (Lovato & Rybar, 1995).

Problem Statement

Is a university course in school health education effective in preparing pre-service teachers to incorporate health into their curricula and to contend with students' personal health issues?

Research Hypotheses

The class Drug and Health Issues for Educators (HDHL 106) taught at Montana State University was designed to prepare pre-service teachers to teach health and to manage student health issues. The following hypotheses were tested.

Hypothesis 1: After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of how much they value school health education as compared to before.

Hypothesis 2: After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their intention to include health in their teaching as compared to before.

Hypothesis 3: After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their belief in the importance of health to students' learning as compared to before.

Hypothesis 4: After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their perceived ability to include health content in their area of teaching concentration as compared to before.

Hypothesis 5: After taking Drug and Health Issues for Educators, pre-service teachers will score higher on measures of their perceived ability to identify, provide information on, and find resources for a student who has a health problem related to mental health, fitness, nutrition, sexuality, tobacco, alcohol and other drugs, and relationships as compared to before.

Significance of the Study

Adequate preparation in health for pre-service teachers is essential (Lovato & Rybar, 1995). Teachers are encouraged to integrate health content into their classes, assist students who may be experiencing health problems, and are relied on for early identification and intervention when a student experiences a health problem (Wood, 1996). Yet pre-service teachers not specializing in health lack preparation in health education (Lovato & Rybar, 1995). Research on pre-service teacher training in health is needed to discover what promotes incorporation of health curricula into lessons and positive attitudes regarding health in schools (Hedrich, 1999).

Definitions of Terms

Schools	All schools included in the United States public school system including grades kindergarten through 12th grade.
Pre-Service Teacher	An undergraduate or graduate student preparing for elementary or secondary teacher certification.
Pre-Service Teacher Education	Formal, post-secondary education that prepares students to obtain teacher certification to teach elementary or secondary education.
Post Secondary Education	Education obtained after graduation from high school.
Drug and Health Issues For Educators (HDHL 106)	A required university course in school health education for pre-service teachers taught at Montana State University Bozeman.
School Health Education	The integration of health into K-12 curriculums; the furnishing of information in the areas of community health, consumer health, environmental health, family life, growth and development, nutritional health, personal health, prevention and control of disease, safety and accident prevention, and substance use and abuse and; helping students with personal health issue.

Delimitations

1. This study was limited to students enrolled in Drug and Health Issues for Educators for Spring Semester 2000 whose major was elementary education,

secondary education, secondary education-teaching option, technology education, or teaching certification.

2. Measures used in the study were limited to questions included on the questionnaire.

3. Information on subjects' backgrounds was limited to those included on the questionnaire.

Limitations

1. A one group pretest/post-test design was used. This design lacks random assignment and a control group. Consequently, it is possible that something other than the treatment caused the outcomes.

2. Results can only be generalized to the population of Montana State University students in education who have taken Drug and Health Issues for Educators.

3. Subject may have answered the questions based on what they thought might please the instructor of HDHL 106.

CHAPTER 2

LITERATURE REVIEW

The literature review contains a discussion of the need for training in school health education in elementary, middle, and high schools. It covers the importance of school health education, exploring pre-service teacher thinking, how their thinking affects health education in schools, and barriers to pre-service teacher training in health. In addition, this review includes an explanation of the theory used as a basis for the evaluation of Drug and Health Issues for Educators (HDHL 106), a description of HDHL 106 taught at Montana State University Bozeman, and an overview of the Montana Office of Public Instruction Standards for teacher training in health in the state.

The Importance of School Health Education

School health education is emerging as an important research and practice topic for many reasons. First, research such as the Youth Risk Behavior Surveillance Survey (YRBSS) administered by the Centers for Disease Control and Prevention (CDC) established that youth are engaging in unhealthy risk behaviors (Table 1). For example, in 1997 among high school students (9th-12th grade) more than 70% of students self reported having tried cigarette smoking, almost 37% had ridden with a drunk driver, 41% had tried marijuana, and 48.4% had sexual intercourse. Effective school health education could help students who are engaging in risky health behaviors make healthier choices and reduce their health risk taking behaviors.

Table 1. Youth Risk Behavior Surveillance Survey - United States Center for Disease Control and Prevention

Percent of students nation wide who reported engaging in risk taking behaviors 30 days before the survey.

Behaviors that contribute to unintentional injuries

Risk Behavior	Percent engaged in
Rarely or never worn a seat belt	19.3
Rarely or never worn a motorcycle helmet	36.2
Rarely or never worn a bicycle helmet	88.4
Had ridden with a drunk driver	36.6
Had driven drunk	16.9
Had carried a weapon to school	18.3

Behaviors that contribute to intentional injuries

Risk Behavior	Percent engaged in
Had been in a physical fight	36.6
Attempted suicide	7.7
Tried cigarette smoking	70.2
Current smokers	36.4
Frequent smokers	16.7
Used smokeless tobacco	9.3
Used Marijuana	47.1
Used some form of cocaine	8.2
Used illegal steroids	3.1
Injected illegal drugs	2.1
Use of other illegal drugs	17.0
Used an inhalant	16.0

Sexual behaviors that contribute to unintended pregnancy and STDs, including HIV infection

Risk Behavior	Percent engaged in
Had sexual intercourse	48.4
Of those who had sexual intercourse and used condoms	56.8
Used alcohol or drugs prior to intercourse	24.7
Had been pregnant or gotten someone pregnant	6.5
Four or more sexual partners	16.0

Second, the desired changes in health behaviors were not elicited when health topics were treated in the same manner as other academic subjects. The assumption was that providing knowledge about personal health increased positive health behaviors (Perry, Stone, Parcel, Ellison, Nader Webber & Luepker, 1990; Allensworth, 1993). This did not elicit the expected changes. For schools to achieve the desired changes in students' health behaviors, recommendations were made for health programs to include techniques for problem solving, decision-making, refusal skills, media analysis, assertiveness, mediation, behavior contracting, and communication in addition to health knowledge (Allensworth, 1993). These techniques were then incorporated into guidelines for providing school health education. The following description is the health education component of the Comprehensive School Health Program (CSHP) that provides teachers with a prefabricated guideline of what should be incorporated into their lessons to help achieve the desired changes in health behaviors for children and youth.

> Health education as defined by the National Professional School Health Education Organization includes: 1) a planned, sequential, pre-kindergarten to grade 12 curriculum based on students' needs and current health concepts and societal issues, 2) instruction intended to motivate health maintenance and promote wellness and not merely to prevent disease, 3) activities to develop decision-making skills and individual responsibility for one's health, 4) opportunities for students to develop and demonstrate health-related knowledge, attitudes, and practices, 5) integration of the physical, mental, emotion, and social dimensions of health as the basis for study of the 10 content areas: community health, consumer health, environmental health, family life, growth and development, nutritional health, personal health, prevention and control of disease, safety and accident prevention, and substance use and abuse, and 6) the use of program planning, including formative and summative evaluation procedures, and effective management system, and resources (Allensworth, 1993, p. 14).

Third, research showed that effective school health education improved students' academic outcomes. For example, students show an increase in education outcomes including graduation rates, class grades, and performance on standardized tests (Symons, Cinelli, Tammy & Groff, 1997). Education behaviors including student dropout rates, behavioral problems at school deceased and education behaviors such as attendance rates, student involvement in school activities such as homework and extracurricular pursuits increased (Symons, Cinelli, Tammy & Groff, 1997). School health education also improved student attitudes toward school such as aspirations for post-secondary education and improving self-esteem (Symons, Cinelli, Tammy & Groff, 1997).

School health education is important because teachers are in an excellent position to influence the health of children. Schools have a captive audience in which they can try to influence a child to establish healthy habits which will endure into adulthood (Allensworth, 1993). They have contact with children almost daily and this provides teachers time to supply children with health information, life skills related to health, and gives them the opportunity to detect behavioral changes in children that might signal that the child could have a health problem. Because of all of this contact, students confide in teachers about personal health issues. Pre-service teacher training in health is considered a major factor in preparing teachers in these capacities (Wood, 1996). By making health a required component of all teacher certification programs teachers would be better prepared to deal with the variety of health issues that arise in schools.

Funds for health programs across the country are being severely reduced or completely cut from schools' budgets. Consequently, teachers are expected to integrate

health into their courses regardless of academic subject or grade level. This task is made harder for teachers because the objectives provided by the CSHP are specific, detailed, and involve more than providing basic health facts. Many teachers are unprepared to educate their students in the recommended areas because they lack the necessary pre-service training in health.

There are numerous reason why health in the schools is important. Students may receive many benefits from effective school health education. For students to reap these benefit teachers should be adequately trained in health.

The Importance of Exploring Teacher Thinking

It has been established that school health education is important. Students are less likely to engage in health risk behaviors and are more academically productive when involved in consistent health education (Symons, Cinelli, Tammy & Groff, 1997). The key to maintaining consistent health education is comprehensive pre-service teacher training in health. The exploration of teacher thinking is a relatively new approach to studying teaching (Carter, Lee & Worthy, 1991). Such research is based on the assumption that what teachers do in the classroom is directly affected by what they think, their values, and their beliefs (Carter, Lee & Worthy, 1991). A quote by Carter, Lee and Worthy (1991) makes this clear.

> Teachers' beliefs, thoughts, judgements, attitudes and values strongly influence content selections and ways of interacting in the classroom. The study of teacher thinking in health education provides a more complete understanding of teachers' intentions and helps explain variations in teacher actions which result from individual goals and values (p.376).

Hedrich (1999) stated that the process of preparing non-health specialist pre-service teachers to teach school health education is to allow them time to develop attitudes and beliefs that support health education. Teachers need time during pre-service training to comprehend how integral health is to a student's education. For example, pre-service teachers need to be shown the relationship between health education and increased academic achievement. Training in health education for pre-service teachers will also help them understand that they will serve as role models for their students. Some pre-service teachers may not be aware that their attitudes, values, and behaviors toward health act as a model of health for students (Hedrich, 1999). Pre-service teachers need the opportunity to develop that perspective and reflect upon their own health behaviors (Hedrich, 1999).

Wood (1996) found that pre-service teachers not specializing in health wanted and valued health training that encompassed a variety of topics (more that just health knowledge) including strategies to teach health in their classes, how to answer students' personal health questions, and information on school safety. Pre-service teachers wanted to help students develop decision making, communication, and conflict management skills. Prospective teachers also indicated a need to appropriately identify and assist students with a wide assortment of health issues. These pre-service teachers saw value in learning health teaching strategies and in how health and learning are intertwined (Wood, 1996).

Pre-service teachers should be allowed during training to acquire the skills, attitudes, beliefs, and knowledge to teach health (English, 1994). This would better

prepare them to address school health emergencies, students' personal problems and teach health in a competent manner (English, 1994). Unfortunately, barriers exist that keep pre-service teachers from becoming competent in health.

Barriers to Training in Health Education

There are many barriers that keep pre-service teachers from becoming competent in health. These barriers are: lack of pre-service teacher training, lack of research on the effectiveness of pre-service teacher training, and lack of awareness.

Lack of Pre-service Teacher Training

A lack of pre-service training in health education for teachers not specializing in health continues to be a major obstacle to the implementation of school health education (Lavin, 1993). Only 18 states require health education as part of the teaching credential and many of the health classes offered for credentialing are taught sporadically and superficially (Lovato & Rybar, 1995). Teachers often are called upon to teach health with little or no training because course work in health education is not offered or required in many teacher certification programs (Lavin, 1993). Teachers feel uncomfortable teaching certain health curricula, neglect health material, and are unprepared to respond to a student who discloses a personal health issue (Lavin, 1993). Regardless of a teacher's specialization, health education must be provided to all pre-service teachers to adequately address the issues confronting youth today (Lovato & Rybar, 1995). Training in specific

areas of school health education would help prepare pre-service and in-service teachers to respond to such high priority health-related areas as HIV/AIDS education and violence prevention (Wood, 1996).

Lack of Research on the Effectiveness of Pre-Service Teacher Training

The effectiveness of school health education depends on the effectiveness of health training for pre-service teachers (Wood, 1996). Nonetheless, training in health education for pre-service teachers, if required by certification programs, is often conducted without any evaluation of its effectiveness (Torabi, et al., 1999). When training in health is provided, many certification programs assume it will have an impact on the knowledge, skills, and attitudes teachers have toward health education (Torabi, et al., 1999). Furthermore, the assumption is made that the training teachers receive will positively affect their students' health (Torabi, et al., 1999).

Unfortunately, most evaluation studies conducted on pre-service teacher training in health education focus on how the training has impacted students' knowledge, attitudes, and health practices (Torabi, et al., 1999). This type of evaluation study fails to provide any information on how effective school health education training is for pre-service teachers. Research has discovered that pre-service teachers value training in a variety of heath topics, want to be knowledgeable in a variety of health issues and want to know how to respond to inquiries about and help students with personal health issues. Studies are needed to examine what is most effective in preparing teachers in these areas.

Currently, there is a lack of systematic and controlled studies that have examined the effect of pre-service teacher training in health education (Wood, 1996).

Lack of Awareness

Many pre-service teachers, if unschooled in health, are unaware that investments in learner health status will improve academic performance (Symons, Cinelli, James & Groff, 1997). They believe students will be able to concentrate on the current lesson regardless of the student's health status and are unaware that students will divulge personal health issues to them. In addition, some pre-service teachers do not realize that the school may be the only place a child is exposed to health information. They may believe that students' health issues will be taken care of by the parent/guardian, medical community, and/or social service agencies (Symons, Cinelli, James and Groff, 1997).

There are several barriers that keep pre-service teachers from receiving adequate training in health. These barriers prevent students from receiving effective school health education and hinder teachers from becoming comfortable teaching health and contending with students' personal health issues.

Theory of Educational Change and Its Application to Pre-Service Teacher Training

Research has revealed that pre-service teachers who are to be effective in teaching health must have time to alter their beliefs, values, attitudes, and thoughts about health. In addition, their training in health should include health that encompasses a wide range of health topics that extend beyond curricular content and basic health knowledge. Pre-

service teachers need to learn how to respond appropriately to the range of health problems that may affect students. Based on these findings, Fullan's Theory of Educational Change was used as a foundation for this study.

Theories and models of educational change have been used to guide research in the area of school change. Fullan's (1991) theory of educational change supports the need to examine teachers' thinking in the area of health. Fullan (1991) stated that teachers must alter their beliefs, teaching methods, and teaching materials if change within the teacher and school is to occur and education goals are to be achieved. Educational change is intended to help schools effectively accomplish their goals by restructuring and replacing curricula, programs, and practices with better and more efficient ones (Fullan, 1991).

For the purpose of this study, the theory was applied to changing pre-service teachers' beliefs in, values of, use of, and attitudes and thoughts toward school health education. Fullan's theory maintains that for teachers to change three things need to occur: 1) the possible alteration of beliefs (e.g. understanding the pedagogical assumptions and theories underlying the change), 2) the possible use of new teaching materials (curricula or technologies), and 3) the possible use of new teaching approaches (new strategies or activities). The required health education class for teacher certification taught at Montana State University, Drug and Health Issues for Educators, is preparing pre-service teachers in these areas.

The goals of the class included demonstrating the importance of health to a student's learning, the value of teaching health as a core subject, and the value of

incorporating health into curricula regardless of subject matter. In addition, the class attempted to provide pre-service teachers with the resources, skills, and knowledge necessary to incorporate teaching materials and teaching approaches that are effective for health subject matter. Fullan's educational change theory provides the necessary components needed for pre-service teachers to change. This evaluation study used Fullan's theory to determine whether Drug and Health Issues for Educators taught at Montana State University was an effective and positive change agent that influenced pre-service teachers to incorporate health into their teaching.

Fullan (1991) states that educational change involves three dimensions: 1) the possible alteration of beliefs, 2) the possible use of new materials, and 3) the possible use of new teaching approaches. Fullan (1991) believes, "All three aspects of change are necessary because together they represent the means of achieving a particular educational goal or set of goals" (p. 37). Closely monitoring change is important because individuals could implement none, one, two, or all of the dimensions of change (Fullan, 1991). For example, teachers could use a new curriculum or technology without altering their teaching approaches, or may use new teaching approaches with new materials without understanding or accepting the beliefs underlying the change. This applies to pre-service teachers who are receiving training in health. They may learn how to integrate health into their curriculum but they may not understand why they should be integrating health material. Fullan (1991) states, "...it is possible to change 'on the surface' by endorsing certain goals, using specific materials, and even imitating the behavior without specifically understanding the principles and rationale of the change" (p.40). Change has

to take place in all three dimensions in order to have the desired affect on the educational goal or outcome (Fullan, 1991).

Professional development is crucial to educational change because educational change involves learning something new (Fullan, 1991). Many teacher certification programs do not prepare teachers to gain the insight and skills needed to implement changes in the schools (Fullan, 1991). Fullan (1991) states that:

> To implement educational changes, teachers have to be able to assess the potential need for and quality of the changes; have certain basic skills in a range of teaching methods, planning, diagnosing, and evaluation; and be able to modify instructional activities continually in an attempt to meet the needs of diverse individual students....In short, not only are there difficulties in learning how to use new methods (such as applying theory to practice), but there is also an almost total neglect of the phenomenon of how changes are and can be introduced and implemented (p. 300).

Drug and Health Issues for Educators provided pre-service teachers training in school health education. They learned new teaching methods and used new materials to incorporate health into their area of expertise. The course allowed pre-service teachers the time needed to practice with the new materials and methods, and to learn how to evaluate the effectiveness of their work. Through the objectives of the course it also provided them the opportunity to recognize the link between health and learning, thus changed their beliefs about school health education. This course could influence pre-service teachers to make health an integral part of their teaching, not just another method to be neglected.

Professional preparation for teachers has a direct influence on how teachers conduct themselves as professionals and what they teach in their classrooms (Fullan,

1991). Fullan (1991) researched pre-service teacher education programs and found common shortcomings in programs and common complaints from students. The research found that many education program classes lacked coherence, programs failed to prepare teachers to cope with the variety of problems students present to them, and programs failed to give them the skills needed to establish change in schools (Fullan, 1991). The deficiencies found in pre-service teacher training in health are consistent with these findings. Teacher certification programs must help pre-service teachers identify what factors influence their beliefs, attitudes, and values toward health education and connect those with the proper tools that will prepare them to engage in school health education. Those who become effective and positive forces in the lives of their students have the proper skills to connect the underlying beliefs and values of the change to what is taught in the classroom (Fullan, 1993).

Drug and Health Issues for Educators

The following overview of Drug and Health Issues for Educators (HDHL 106) taught at Montana State University provides the class objectives and how they were met. The goals of the class were to influence pre-service teachers' beliefs and values toward health education and to provide them with the skills, resources, and materials to teach health and respond to students' personal health issues.

All students enrolled in a teaching major at Montana State University are required to complete the course HDHL 106 in partial fulfillment of their professional education requirements for teacher certification. The class covers topics required by the Montana

Office of Public Instruction for health related teacher education, and was specifically developed for education majors. HDHL 106 had six objectives. After taking the class, students would be able to: 1) discuss content-related health information in the areas of mental health, fitness, nutrition, sexuality, tobacco, alcohol, drugs, and relationships; 2) describe the health profile of K-12 Montana students; 3) identify K-12 students who might have problems in the health areas listed in number one; 4) provide information on and resources for K-12 students who present with health problems or issues; 5) apply health content to their area of teaching concentration; and 6) explicate their stance in relation to several controversial health topics.

The objectives were met in the following corresponding methods: 1) assigned readings from a health text book that covered the content areas listed in objective one and the attendance of lectures/discussions delivered by a lecturer; 2) dissemination of information on the health profile of Montana students by a lecturer; 3) attendance of lectures/discussions led by guest speakers who worked with school aged children; 4) objective four was met with method three; 5) pre-service teacher development of four lesson plans that applied health content to their future teaching area and presentation of one of those lesson plans to their classmates; and 6) pre-service teacher preparation of essays on controversial health issues and participation in one group presentation on a controversial health issue. Guest speakers in the course discussed: 1) how to identify a K-12 student having trouble in the related areas; 2) how this trouble might be affecting the student physically and psychologically; 3) what teachers can do to help; and 4) what

resources future teachers should know about for additional help or information. An evaluation of the course was necessary to determine its effectiveness.

Montana Office of Public Instruction Standards

The class Drug and Health Issues for Educators (HDHL 106) was specifically designed for education majors based on the Montana Office of Public Instruction (OPI) standards regarding health education for pre-service teachers enrolled in a post-secondary teaching major. OPI standards are broad and vulnerable to different interpretations by various teacher certification programs.

The following description of OPI standards for pre-service training in health education was taken from the Montana Teacher Education Program Standards. These standards were adopted by the Board of Public Education on September 22, 1994. OPI standards for pre-service teacher health education require that all pre-service teachers have an understanding of basic health knowledge, concepts that promote health, and the benefits of leading a healthy lifestyle. Specifically, OPI standards state that pre-service teachers should have the ability to advocate for, plan, organize, assess and implement health education programs in the school. Pre-service teachers should be competent in the content areas of: personal health, principles of health related physical fitness, accident prevention and safety, nutrition, community health, consumer health, family life education and human sexuality, chronic and communicable disease prevention including HIV/AIDS prevention, alcohol, tobacco and other drugs, mental and emotional health, and environmental health. In addition to competency in content areas, OPI states that pre-

service teachers should have knowledge and skills related to: the interrelationship of the physical, emotional, social, and intellectual dimensions of growth and development; the fundamental areas in the health curriculum and the relationship to total health; and the ethical issues surrounding individual and family health decision-making. Pre-service teachers are also required by OPI to have knowledge and skills to teach prevention and intervention strategies including but not limited to: basic communication and counseling skills, assertiveness, building self-esteem/self-concept, stress management, conflict resolution, critical thinking and decision making, identification of obstacles to learning, and risk factors, protective factors, and resiliency.

Conclusion

Young people need more information and coping skills to contend with various health issues. Teachers can reach millions of children each year and potentially influence their health decisions. Students making healthy choices will be in a better position to learn because they can concentrate on learning instead of their health problems or issues.

Pre-service teachers need professional preparation in health to prepare them to teach health and respond to a student who discloses personal health information (Lavin, 1993). Current research has not extensively examined pre-service training in health for those teachers not specializing in health (Lovato & Rybar, 1995). Because a teacher's values, beliefs, attitudes, and thoughts have a strong influence on what is taught in the classroom, research to determine how to best influence a pre-service teacher to teach health is necessary (Carter, Lee, & Worthy, 1991). The goal of this study was to

determine whether a professional preparation class in school health education was effective in increasing pre-service teachers ability to teach health and contend with students' personal health issues.

CHAPTER 3

METHODS

This chapter presents information on the study procedures. Included are details on subject selection, instrumentation design and content, study design, and methods of statistical analysis. The study's limitations and threats to validity are also discussed.

Human Subjects Committee

The Montana State University Human Subjects Committee was contacted for research approval. Exemption from the requirement of review by the full committee was granted on October 7, 1999.

Data

Subjects

Subjects for the study were Montana State University (MSU) students enrolled in Drug and Health Issues for Educators (HDHL 106) during Spring Semester 2000. The eligible students were those whose major degrees were in one of the following areas: 1) Elementary Education, 2) Secondary Education including option 1 (Major is Secondary Education) and option 2 (Major in a Teaching Option), 3) Technology Education, or 4) Non-degree Teaching Certification. Students not majoring in these areas were excluded from the study. No age, gender, or racial restrictions were imposed.

Based on the eligibility criteria listed above of, the 195 students enrolled in HDHL 106 during Spring Semester 2000, 162 were eligible to be in the study. Of the 162 eligible respondents 43 were excluded from the sample. The excluded respondents consisted of 10 students who withdrew from the class before post-test data was collected and 33 respondents who were missing pre-test data. The 33 respondents who were missing pre-test data may have missed the first day of class when the survey was administered or they may have added the class after the pre-test survey was administered. The remaining119 students were matched by identification number to their pre-test data and used as the sample.

Instrumentation

A 78-item questionnaire was developed to gather the data (Appendix A). Survey questions were generated based on the objectives of HDHL 106 and on Michael Fullan's (1991) theory of educational change. To increase reliability and validity of the instrument a pilot study was conducted with a sample of 83 MSU education students enrolled in HDHL 106 Fall Semester 1999. The pilot test was conducted during the ten recitation sections that accompany the class. A script describing the purpose of the pilot test was developed to ensure equal treatment of each group (Appendix B). The purpose of the pilot study was: 1) to determine whether respondents understood the questions (i.e. terminology, directions, clarity, meaning), and 2) to evaluate the questionnaire as a whole (i.e. length, time to complete, readability, appearance).

Several professionals provided consultation on content, form, and other aspects of the survey administration. The questionnaire was given to Dr. Marlene Tappe, Associate Professor of Health at Purdue University, Dr. Joanne Erickson, Assistant Professor of Educational Administration at Montana State University, Dr. Eric Strohmeyer, Professor Emeritus of Research Design and Statistics at Montana State University, Dr. Tim Dunnagan, Associate Professor of Health Promotion/Wellness at Montana State University, and Dr. Suzanne Christopher, Assistant Professor of Community Health at Montana State University.

Survey revisions were made in response to comments made during the pilot test. The changes made were: 1) wording changes for clarity, 2) separated one question into two, 3) changed the identification number from the last four digits of the social security number to a participant generated identification code for greater confidentiality and, 4) increased the length of the participant generated identification code to decrease the chance of duplicate numbers.

Questionnaire Design

The purpose of the survey, directions for completing the survey, and four questions forming a participant generated identification code were included on a cover page. The identification code was used to match the pre and post surveys for statistical analysis and was generated by the respondent to increase survey confidentiality. In addition, the cover page stated that completing the survey would not affect the

participant's grade in the course and that all answers would be kept confidential. Following the cover page was the 78-item questionnaire.

Study Design

A one group pre-test/post-test design was used. During Spring Semester 2000 the pre-test questionnaire was administered to respondents the first class day for HDHL 106 (January 12, 2000) and the post-test questionnaire was administered the final class day (May 4, 2000). Prior to the pre and post-tests, respondents were provided a brief explanation of the survey to clarify that its purpose was to evaluate the effectiveness of the class. The survey was distributed and respondents were given approximately 20 minutes to complete it. Questionnaires were collected upon completion. To increase data reliability the same procedure was used for pre and post-tests.

Survey Questions

Hypothesis one (After taking drug and health issues for educators, pre-service teachers will score higher on a measure of how much they value school health education as compared to before.) was tested with survey question one. The question was: How strongly do you agree or disagree that teaching health is as important as teaching core subjects?

Hypothesis two (After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their intention to include health in their teaching as compared to before.) was tested with survey question three. The question was: How likely or unlikely is it that you intend to integrate health information in your

area of teaching concentration or content area? (For example: If your content area is Mathematics how likely or unlikely is it that you intend to integrate health information in math classes you teach after graduation.)

Hypothesis three (After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their belief in the importance of health to a students' learning as compared to before.) was tested with survey question two. The question was: How important or unimportant is a K-12 student's health in their ability to learn in school?

Hypothesis four (After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their perceived ability to include health content in their area of teaching concentration as compared to before.) was tested with survey question four. The question was: How confident are you in your ability to integrate health information in your area of teaching concentration or content area?

Hypothesis five (After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their perceived ability to identify, provide information on, and find resources for a student who has a health problem related to mental health, fitness, nutrition, sexuality, tobacco, alcohol, drugs, and relationships as compared to before.) was tested with survey questions 5-12, 13-20, and 21-28. These questions were: How strongly do you agree or disagree that you are able to identify a student of yours with a problem in the area of nutrition, sexuality, tobacco, drugs, alcohol, physical fitness, mental health issues, and relationship issues (5-12); How strongly do you agree or disagree that you are able to provide information for a students of yours in the

area of nutrition, sexuality, tobacco, drugs, alcohol, physical fitness, mental health issues, and relationship issues (13-20) and; How strongly do you agree or disagree that you are able to find resources for a student of yours with a problem in the area of nutrition, sexuality, tobacco, drugs, alcohol, physical fitness, mental health issues, and relationship issues (21-28).

Control Variables

Based on past research, theoretical literature and experience nine variables were chosen as potential control variables. Respondents were asked about their personal health status which included: how healthy is your lifestyle, how important is your health to you, and what is your general health status. Information gathered on demographics included: age, gender, school major, school classification, and ethnic background.

Statistical Analysis

Data from pre and post surveys meeting the specified subject eligibility criteria were reviewed for completeness and inconsistencies before data entry. Data was entered into an SPSS database for statistical analysis. After entry, the data sets were printed and compared to original surveys to validate the information.

The existing survey served as a code book since data was pre-coded. The code book contained information on handling missing information (which was coded with nine), multiple responses, and variable names. Numerous attempts were made to gather missing information and clarify multiple responses. Multiple responses unexplained by respondents were changed with the flip of a coin. Heads equaled the higher number, tails

the lower. This procedure was used a total of six times. Pre-test variables were labeled with a Q and the question number (i.e. Q1, Q2, Q15 etc.) and post-test variables were labeled with a Z and the question number (i.e. Z1, Z2, Z15 etc.).

The participant generated identification numbers were used to match pre and post surveys. Some of the pre-test numbers were duplicated so multiple attempts were made to match the questionnaire with the proper respondent. Distinctions were made by adding the day of their birth to the identification code. To solve the problem of duplicate identification numbers, the post-test survey included a fifth question asking the participant their day of birth.

Descriptive statistics were generated to gain a general description of the data. Frequencies and percent distributions were calculated by age, gender, ethnic background, major, classification, religious status, lifestyle, general health status, and importance of health.

To detect mean differences between the pre and post tests without control variables, a paired sample, one tailed t-test was used. Hypotheses one, two, three and four utilized an alpha level of .05. These questions included: the value of health as a core subject, the likelihood of integrating health information into the curricula, the importance of health to a student's learning ability, and confidence in their ability to integrate health information into their curriculum. Hypothesis five consisted of three different measures (they will be called hypothesis 5A, 5B, & 5C). Each hypothesis included eight different levels (the levels are nutrition, sexuality, tobacco, drugs, alcohol, physical fitness, mental health, and relationships). All levels of hypotheses 5A, 5B, and

5C needed to be retained for the hypothesis to be retained. Hypothesis five was tested utilizing an alpha of .05 employing the Bonferroni correction. The Bonferroni correction is a statistical adjustment that allows a large number of comparisons to be made simultaneously by effectively raising the standard of proof needed to reject a null hypothesis (Glass & Hopkins, 1996). If multiple outcomes are tested instead of a single outcome, which is the case for hypothesis five, the Bonferroni correction divides the alpha level by the number of questions. Therefore, hypotheses 5A, 5B, and 5C were tested at an alpha level of .00625 (.05/8). The questions used to test hypothesis 5A, 5B, and 5C were: hypothesis 5A (the ability to identify a student with a problem in nutrition, sexuality, tobacco, drugs, alcohol, physical fitness, mental health issues, and relationship issues); hypothesis 5B (the ability to provide information for a student in the areas listed above); and hypothesis 5C (the ability to find resources for a student in the areas listed above).

To apply a paired sample t-test, survey data must meet two assumptions; that the observations are normally distributed and have equal variances (Glass & Hopkins, 1984). To determine if the data were normally distributed with equal variances a Kolmogorov-Smirnoff and Mahalanobis' Distance tests were employed. The assumption of normality and equal variance was violated for all data. Research has revealed that violation of the assumption of normality and equal variances has almost no practical consequences in using the t-test (Glass & Hopkins, 1984; "SPSS Base User Guide, 1990"). A logarithm transformation was performed to adjust for these violations.

For hypotheses retained with the t-tests multi-variate multiple regression was conducted to detect mean differences in the pre and post test with control variables included. Multiple regression is the statistical method most commonly used to predict the dependent variable score from two or more independent variables (Glass & Hopkins,1996). For the purpose of this study the multiple regression model tested that the control variables' parameters were the same for both dependent variables and that the intercept for both dependent variables were different. In other words, this model determined if the control variables were responsible for the mean differences detected by the paired sample t-tests.

Hypotheses one, two, three, and four were tested utilizing an alpha of .05. Hypothesis five utilized an alpha of .00625 (using the Bonferroni correction .05/8). The control variables tested were: how healthy respondents' lifestyle were, their general health status, how important health was to them, major, college classification, age, how religious they were, ethnicity, and gender. Again, all levels of hypotheses 5A, 5B, and 5C needed to be retained for the hypothesis to be retained.

There are three assumption associated with multiple regression: 1) the dependent scores (Y) are normally distributed at all points along the regression line, 2) that there is a linear relationship between Y and predicted Y at all points along the straight regression line, the residuals have a mean of zero, and 3) homoscedasticity (Glass & Hopkins, 1984). In most regression models, an additional assumption is listed that the independent variables are fixed and not random (Glass & Hopkins, 1984). This regression model will provide identical results whether the independent variables are fixed or random (Glass &

Hopkins, 1984). Tests for normality and equal variances found all data violated these assumptions. An additional test of linearity was performed and all data violated this assumption. Fortunately, a logarithm transformation (which was performed) can stabilize the variance, achieve normality, and linearize a relationship ("SPSS Base User Guide, 1990").

CHAPTER 4

RESULTS

This chapter presents the results of the study. Details are provided on respondents' demographic and background information. In addition, results of the hypotheses testing are provided.

Respondent Demographic and Background Information

A total of 119 Montana State University students who were enrolled in Drug and Health Issues for Educators participated in this study during Spring Semester 2000. Frequencies and percent distributions of respondents' demographic (Table 2) and background information (Table 3) are presented in Tables 2 and 3. More than half of the respondents were elementary education majors (54.7%), 26.9% were teaching option majors, the rest were secondary education, technology education, non-degree teaching certification only majors, and others. Respondents included 37.8% sophomores, 25.2% freshman, 22.7% juniors, and the remaining 14.3% were seniors, graduate students, and others. Most respondents were female (64%). The average age was 21.3 years, and the majority were white (95.9%).

Most of the respondents reported leading a healthy lifestyle and that their own health was very important (52.2%) or important (47.0%) to them. A majority of respondents stated that their general health status was good (57.2%), 22.7% reported that it was excellent, and 20.1% stated their health status was average or fair. No one reported

leading a very unhealthy lifestyle or having poor health. Most respondents declared themselves either religious (32.8%) or somewhat religious (32.0%), another 18.4% stated they were very religious and 16.8% reported being not at all religious.

Table 2. Demographic Information of Survey Respondents

		% of sample n=119
Major		
	Elementary Education	54.7
	Secondary Education	14.3
	Teaching Option	26.9
	Technology Education	.8
	Non-Degree Teaching Certification	2.5
	Other Teaching Option	.8
Classification		
	Freshman	25.2
	Sophomore	37.8
	Junior	22.7
	Senior	10.1
	Graduate Student	2.5
	Other	1.7
Age		Mean 21.3 (SD 4.64)
Ethnic Background		
	American Indian/Alaskan Native	.8
	Asian/Pacific Islander	.8
	Hispanic	1.7
	Black	.8
	White	95.9
Gender		
	Female	64.0
	Male	36.0

Table 3. Background Information of Survey Respondents

	% of sample n=119
The Lifestyle I Lead	
Very Healthy	19.3
Healthy	69.8
Unhealthy	10.9
Very Unhealthy	0
My Health is __ to Me	
Very Important	52.2
Important	47.0
Of Little Importance	.8
Unimportant	16.8
My General Health Status Is	
Excellent	22.7
Good	57.2
Average	17.6
Fair	2.5
Poor	0
How Religious do You Consider Yourself	
Very Religious	18.4
Religious	32.8
Somewhat Religious	32
Not At All Religious	16.8

Hypotheses Testing

Hypotheses were tested both without and with control variables. First, paired sample, one-tailed t-tests were conducted to detect mean differences between the pre and post test scores. For hypotheses retained, a multi-variate multiple regression was conducted to detect mean difference in the pre and post test scores with control variables included. The regression model determined if the control variables were responsible for

the mean differences detected by the paired sample t-tests. Hypotheses were tested at an alpha level of .05 except for hypotheses 5A, 5B, and 5C which used an alpha of .00625 (employing the Bonferroni correction .05/8). In addition, all levels (i.e. the health issues [for example, drugs, nutrition, fitness etc.]) of hypotheses 5A, 5B, and 5C needed to be retained for the hypothesis to be retained.

The t-test tables in this section provide the pre-test mean and standard deviation (SD), the post-test mean and SD, and the p-value. The mean is the average score for that test. Scores ranged from one to four, with one being strongly agree to four being strongly disagree. A lower score on the post test indicated an increase in agreement. The p-value is the significance probability and is used to reject or retain the hypothesis by comparing it to the alpha level.

The multi-variate multiple regression tables provide a F-value and Pr > F value. The F-value is a test for equal variances. If variances were equal an F-value of one or close to one would be expected. The Pr > F value is the significance probability and is used to reject or retain the hypothesis by comparing it to the alpha level.

Hypothesis #1

After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of how much they value school health education as compared to before.

After completion of the 15 week course, the paired t-test showed that there was significant improvement on a measure of how much pre-service teachers valued school health education (Table 4).

Table 4. **Hypothesis 1: Value of School Health Education**
Paired Samples t-test

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Value of School Health Education	.225 (.164)	.135 (.164)	.000

The multi-variate multiple regression hypothesis was retained for hypothesis one (Table 5). The control variables lifestyle, general health status, importance of their own health, major, classification, age, religious status, ethnicity, and gender lacked influence on the mean differences detected by the paired sample t-test for the measure of how pre-service teachers valued school health education.

Table 5. **Hypothesis 1: Control Variables Influence on the Value of School Health Education**
Multi-variate Multiple Regression

	F Value	Pr > F
Value of School Health Education	0.69	0.715

Hypothesis #2

After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their intention to include health in their teaching as compared to before.

After completion of the 15 week course, the paired t-test showed that there was significant improvement on a measure of pre-service teachers' intentions to include health in their teaching (Table 6).

Table 6. **Hypothesis 2: Intention to Integrate Health**
Paired Sample t-test

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Intention to Integrate Health	.314 (.167)	.215 (.191)	.000

The multi-variate multiple regression hypothesis was retained for hypothesis two (Table 7). The control variables lifestyle, general health status, importance of their own health, major, classification, age, religious status, ethnicity, and gender lacked influence on the mean differences detected by the paired sample t-test for the measure of pre-service teachers intentions to integrate health in to their content area.

Table 7. **Hypothesis 2: Control Variables Influence on Pre-Service Teachers' Intentions to Integrate Health in Their Content Area**
Multi-variate Multiple Regression

	F Value	Pr > F
Intention to Integrate Health	1.21	0.298

Hypothesis #3

After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their belief in the importance of health to a student's learning as compared to before.

After completion of the 15 week course, the paired t-test showed that there was no significant improvement on a measure of pre-service teachers' beliefs in the importance of health to a student's learning (Table 8).

As stated before, only hypotheses showing a difference in means were further tested with the multi-variance multiple regression technique. Since there were no mean differences the control variables could not have any influence so the multiple regression was not performed.

Table 8. **Hypothesis 3: The Importance of Health to a Student's Learning**
Paired Sample t-test

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Belief in the Importance Of Health to a Student's Learning	.104 (.153)	.096 (.146)	.320

Hypothesis #4

After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their personal perceived ability to include health content in their area of teaching concentration as compared to before.

After completion of the 15 week course, the paired t-test showed that there was significant improvement on a measure of pre-service teachers' perceived ability to include health content in their area of teaching concentration (Table 9).

Table 9. **Hypothesis 4: Perceived Ability to Integrate Health Content**
Paired Sample t-test

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Perceived Ability To Integrate Health Content	.330 (.146)	.166 (.161)	.000

The multi-variate multiple regression hypothesis was retained for hypothesis four (Table 10). The predictor variables lifestyle, general health status, importance of their own health, major, classification, age, religious status, ethnicity, and gender lacked influence on the mean differences detected by the paired sample t-test for the measure of a pre-service teachers intention to integrate health into their content area.

Table 10. **Hypothesis 4: Control Variables Influence on Pre-Service Teachers' Confidence in Their Ability Integrate Health in Their Content Area**
Multi-variate Multiple Regression

	F Value	Pr > F
Ability to Integrate Health	1.63	0.115

Hypothesis #5

After taking Drug and Health Issues for Educators, pre-service teachers will score higher on a measure of their personal perceived ability to identify (hypothesis 5A), provide information on (hypothesis 5B), and find resources for (hypothesis 5C) a student who has a health problem related to mental health, fitness, nutrition, sexuality, tobacco, alcohol and other drugs, and relationships (these are the levels) as compared to before.

After completion of the 15 week course, the paired t-test showed that there was significant improvement on all the levels of hypothesis 5A (identify a student with a health issue) and hypothesis 5B (provide information on a health issues for a student) at all levels (Table 11). Since two levels, drugs and physical fitness lacked significant improvement for hypothesis 5C it was rejected (Table 11).

Table 11. **Hypothesis 5: Perceived Ability to Identify, Provide Information on, and Find Resources for a Student with a Health Issue**
Paired Samples t-test

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Identify (hypothesis 5A)			
Health Issue (level)			
Nutrition	.283 (.136)	.176 (.156)	.000
Sexuality	.332 (.155)	.227 (.179)	.000
Tobacco	.251 (.163)	.146 (.176)	.000
Drugs	.242 (.169)	.157 (.175)	.000
Alcohol	.252 (.156)	.155 (.175)	.000
Fitness	.200 (.172)	.147 (.171)	.001

Table 11 (continued)

	Pre-test Mean (SD) n=119	Post-test Mean (SD) n=119	p-value
Identify (hypothesis 5A)			
Health Issue (level) (continued)			
Mental Health	.267 (.182)	.194 (.176)	.000
Relationship	.322 (.156)	.220 (.171)	.000
Provide Information For (hypothesis 5B)			
Health Issue (level)			
Nutrition	.249 (.165)	.123 (.160)	.000
Sexuality	.287 (.162)	.132 (.164)	.000
Tobacco	.219 (.169)	.121 (.162)	.000
Drugs	.222 (.170)	.117 (.166)	.000
Alcohol	.212 (.161)	.106 (.154)	.000
Fitness	.198 (.168)	.115 (.154)	.000
Mental Health	.322 (.174)	.151 (.167)	.000
Relationship	.264 (.161)	.135 (.157)	.000
Find Resources For (hypothesis 5C)			
Health Issue (level)			
Nutrition	.145 (.158)	.099 (.152)	.004
Sexuality	.212 (.170)	.109 (.155)	.000
Tobacco	.142 (.155)	.094 (.150)	.002
Drugs	.139 (.160)	.097 (.149)	.011
Alcohol	.135 (.152)	.084 (.144)	.001
Fitness	.142 (.165)	.098 (.147)	.007
Mental Health	.194 (.176)	.105 (.151)	.000
Relationship	.204 (.169)	.108 (.150)	.000

With the multi-variate multiple regression hypothesis 5A was rejected because three of the eight levels showed influence from control variables (these were drugs, alcohol, and physical fitness). All levels needed to be retained for the hypothesis to be retained. With the multi-variate multiple regression hypothesis 5B was retained. The predictor variables lifestyle, general health status, importance of their own health, major,

classification, age, religious status, ethnicity, and gender lacked influence on the mean differences detected by the paired sample t-test for the measure of a pre-service teachers ability to provide a student information on a personal health issue. With the multi-variate multiple regression hypothesis 5C was not tested because the t-test failed to find a significant difference in the mean (Table 12). Since there were no mean differences the control variables could not have any influence.

Table 12. Hypothesis 5: Control Variables Influence on Perceived Ability to Identify, Provide Information on and Find Resources for a Student with a Health Issue
Multi-variate Multiple regression

	F Value	Pr > F
Identify (hypothesis 5A)		
Health Issue (level)		
Nutrition	1.87	0.063
Sexuality	2.57	0.011
Tobacco	1.99	0.047
Drugs	2.79	0.005
Alcohol	3.35	0.001
Physical Fitness	2.78	0.005
Mental Health	1.17	0.321
Relationships	0.95	0.481
Provide Information (hypothesis 5B)		
Health Issue (level)		
Nutrition	0.55	0.838
Sexuality	1.21	0.293
Tobacco	1.39	0.202
Drugs	1.50	0.156
Alcohol	1.93	0.055
Physical Fitness	1.55	0.140
Mental Health	1.25	0.271
Relationships	1.93	0.055
Find Resources (hypothesis 5C)*		

*were not tested because t-test failed to find a significant difference between the means

The control variables my general health status and how religious do you consider yourself did have a significant influence on pre-test hypothesis 5A (not the post-test measure) for drugs. Hypothesis 5A for level alcohol and physical fitness was influenced by the control variables but no control variables were significant when tested at an alpha of .00625 (Table 13). The control variables lifestyle, major, college classification, age, ethnicity, and gender lacked significant influence on this measure. The t value is the statistic that the parameter is zero. The Pr > | t | is the probability that a t statistic would obtain a greater absolute value than that observed given that the true parameter is zero and is used to reject or retain the hypothesis by comparing it to the alpha level.

Table 13. Influence of Control Variables on Hypothesis 5A (Pre-Test)

	t Value	Pr > | t |
Drugs (level)		
Control Variable		
Religious Status	-3.23	0.0016
Alcohol (level)		
Control Variable		
*	*	*
Physical Fitness (level)		
Control Variable		
*	*	*

* no control variable was significant testing at an alpha level of .00625

Summary

Hypothesis one, two, four, and hypothesis 5A and 5B were retained when tested with the t-tests. Hypothesis three and 5C were rejected when using with the t-tests.

Hypothesis one, two, four, and hypothesis 5B were retained when tested with the multi-variate multiple regression technique. Hypothesis 5A was rejected because influence from the control variables was found in three of the eight levels using the multi-variate multiple regression technique. Hypotheses 3 and 5C were not tested with the multiple regression technique because there was no mean differences and the control variables could not have any influence.

CHAPTER 5

DISCUSSION

The purpose of this study was to examine if a university course would increase a pre-service teacher's: 1) value of school health education, 2) intention to include health in their teaching, 3) belief in the importance of health to a student's learning, 4) ability to include health content in their area of teaching concentration, and 5) ability to identify, provide information on, and find resources for a student who has a health problem. Of the five hypotheses, four were retained. In addition, the nine control variables (lifestyle, general health status, importance of their own health, major, classification, age, religious status, ethnicity, and gender) were found to have no effect on all but one of the retained hypotheses.

The following chapter is separated into four sections. The study finding are reviewed and a discussion of theory, practice, and research implications are presented.

Findings Reviewed

T-tests

Hypothesis one (pre-service teachers' value of school health education), two (intention to include health in their area of teaching), four (the ability to include health in their area of teaching), and hypothesis 5A (identify a student with a health problem) and 5B (provide information on a health problem for a student) were retained. Hypothesis 5C (find resources for a student with a health problem) was rejected. There were two levels

(drugs, and physical fitness) that lacked mean differences. Hypothesis three (belief in the importance of health to a students' learning) was also rejected with the t-tests.

Possible Reasons for Rejection

Hypothesis three (belief in the importance of health to a students' learning) could have been rejected because pre-service teachers scored high on the measure before the course and this high score remained constant throughout the course. Hypothesis 5C (finding resources for a student with a health issue) was rejected; two levels lacked mean differences (they were drugs and physical fitness). The rejection of these two areas could be because pre-service teachers scored high on their perceived ability to find resources for a student in these areas prior to taking the course and this remained constant throughout the course.

Multi-variate Multiple Regression for Control Variables

Hypothesis one (pre-service teachers' value of school health education), two (intention to include health in their area of teaching), four (the ability to include health in their area of teaching), and hypothesis 5B (provide information on a health problem for a student) were retained. This indicated that the mean differences between the pre and post-tests were not attributable to the nine control variables (lifestyle, health status, importance of own health, major, classification, age, religious status, ethnicity, and gender). Hypothesis 5A (identify a student with a health problem) was rejected because three (identify a student with a problem related to drugs, alcohol, and physical fitness) of the eight levels showed influence from the control variables. The independent variables

health and religious status influenced the mean differences between the pre and post test but direction of the influence cannot be determined. Hypotheses three and 5C were not tested because thy lacked mean differences.

Possible Reasons for Rejection

Hypothesis 5A was rejected on the levels drugs, alcohol, and physical fitness. There is no theory why this hypothesis was rejected.

These finding indicated that the course Drug and Health Issues for Educators may have influenced pre-service teachers value school health education, their intention to integrate health into their area of teaching, their ability to integrate health into their lessons, and their ability to provide information on a health issues for a student.

Limitations

This study design, a one group pre-test/post-test, has some limitations. This particular design lacks a control group and random assignment so it is unknown whether something other than the treatment caused the outcomes. In other words, it is inconclusive whether this class was responsible for the changes observed. Variables other than those in this study may be responsible for increasing pre-service teachers' value of school health education, their intention to include health in their teaching, their perceived ability to include health in their teaching, and their perceived ability to identify, provide information on, and find resources for a student with a personal health issue. Different circumstances pre-service teachers experience during their college career such

as pursuing a minor degree, plans to obtain an advanced degree, other classes, or student teaching might influence how they view health in schools.

A pre-service teacher's family life may also influence their views about health in schools. Pre-service teachers who have children in or entering school may have opinions about school health education and its effect on their children. These opinions could influence their perspective on teaching health in schools and dealing with students' personal health issues.

In addition, there was the possibility that the respondents were less willing to admit to holding a undesirable position and attitude when being tested about school health in a class covering school health. This social desirability effect could be the reason for the changes. Furthermore, the results of the study only apply to education majors who have taken Drug and Health Issues for Educators at Montana State University. It is unknown if the class would have similar effects on other pre-service teachers in a different setting.

This study also has some uncontrolled threats to validity. There is the possibility of testing effects. The respondents were given an identical pre and post test to complete. The pre-test might have alerted them to the issues being measured. This may have caused the changes in the post-test.

History effects could have also caused the changes. An event that happened during the course of the class might have influenced the changes.

Theory Implications

Fullan's Theory of Educational Change argued that for change to be successful all three components of the educational change theory must occur. The three components were: 1) the possible alteration of beliefs, 2) the possible use of new materials, and 3) the possible use of new teaching approaches.

It appears that the course may have successfully fostered pre-service teachers' acceptance of all three components. Regarding the first component, Drug and Health Issues for Educators successfully fulfilled the alteration of beliefs by influencing how much pre-service teachers value health in schools.

Drug and Health Issues for Educators may have also successfully filled the two other components, the use of new teaching materials and teaching techniques. Hypotheses two (intention to include health in their teaching), four (ability to include health content in their area of teaching), and five (identify, provide information on, and find resources for a student with a health issue) provided evidence that the pre-service teachers may be willing and may know how to use new health related materials and teaching approaches. The theory implication is that Drug and Health Issues for Educators may be an effective and positive change agent.

Fullan contends that teacher certification programs failed to provide pre-service teachers the skills required to establish positive changes in schools. This study could not test if the abilities and beliefs pre-service teachers obtained during the course were sufficient to establish positive changes in schools.

Practice Implications

This research was conducted on a university course specially designed for pre-service teacher training in health. The results show that Drug and Health Issues for Educators may be an effective training class in health for pre-service teachers. Teacher certification programs could use the class as a guide for making changes to their health class. Teacher certification programs ought to include training in health that focuses on 1) the dissemination of content-related health information; 2) influencing pre-service teachers thoughts, beliefs, values, and attitudes toward health; 3) educating pre-service teachers how to identify, provide information on, and find resources for a student with a health issue; and 4) instructing pre-service teachers how to include health content in their area of teaching concentration or content area. The results of the study can only be generalized to education majors from Montana State University, but certification programs could use this course as a base for implementing or improving current pre-service teacher training in health.

Research Implications

There are many areas of research not covered in this study that could explore different aspects of this health training for pre-service teachers. Studies could be conducted to discern if single semester-long course is sufficient for providing effective pre-service teacher training in health. Long term studies are also needed to ascertain

whether this course has a lasting effect on these pre-service teachers and if the beliefs established during the course are enduring.

Hypothesis two measured pre-service teachers' intentions to include health in their area of teaching concentration or content area. The results of the t-tests and multiple regression showed that the course may have increases prospective teachers' intentions to include health. Unfortunately, a person's intentions may be different from their actions. The course might have increased pre-service teachers' intentions to include health but those intentions may not translate into actual health education in their classroom. Research is needed to determine what will influence a pre-service teacher to follow through on their intentions and actually include health instruction in the classroom.

Hypothesis five measured pre-service teachers' personal perceived ability to identify, provide information on, and find resources for a student with a health issue related to nutrition, sexuality, tobacco, alcohol, drugs, physical fitness, mental health, and relationships. Further research is needed to determine if these findings apply to other health areas not covered in the class. In addition, pre-service teachers believe they have the ability to identify, provide information on, and find resources for a student with a health issue, but performing these tasks in a busy classroom may be more difficult than anticipated.

Since hypotheses one, two, four, and 5B were retained, something happened during the course that influenced the changes. Since it is unknown whether the course caused the changes (due to the study design), qualitative research with students who have completed the course is needed to determine what precipitated the changes found by this

evaluation. One or all of the course objectives may have been responsible for the change or the change may have been due to the influence of the instructor, the homework, guest speakers, and/or the recitations. Students could be asked: what part or parts of the class were most beneficial, who or what had the most impact on their beliefs and opinions of school health, what barriers exist that would keep them from incorporating health into their teaching area, do they think they will use any of the skills they learned in the course, and what could turn their intentions into actual health instruction in the classroom. Qualitative research may also reveal other variables not measured on the survey that were responsible for changes.

Research is also needed to determine if these findings are continuous. Hopefully, when pre-service teachers complete the course they will continue to place a high value on health in schools, retain the intention and ability to include health in their teaching, and to contend with students' personal health issues. Research is needed to establish what can be done to make the beliefs, values, abilities, and intentions continuous. For example, Drug and Health Issues for Educators is a freshman level course. Retention of the course goals may be accomplished by converting the course into a required upper division course to be taken within the last year before certification.

In addition to exploring if pre-service teachers retain the goals of the course, it is important to look at what happens to these pre-service teachers when they are teaching. Research is needed to determine if teachers want to integrate health into their classes that they are allowed to do so. District policies may restrict what teachers can say regarding certain health material or if they can teach particular health topics. In addition, the

community they teach in may not support health education in the school and may restrict a teacher's ability to teach health and deal with students' personal health issues. There may be many unseen obstacles that keep teachers from integrating health material and helping students with personal health issues.

Current research has found that pre-service teachers needed time to comprehend how integral health is to a student's learning ability and they need to change their beliefs, attitudes, values, and thoughts regarding health to be effective teaching school health. In addition, research has stated that pre-service teacher's beliefs, attitudes, values, and thoughts should be studied to understand what influences them to teach health. Furthermore, a study by Wood (1996) found that pre-service teachers supported health training that extended beyond curricular content and teaching strategies. The results of this study provided additional supporting evidence for these findings.

Conclusion

There was evidence for accepting hypotheses one, two, four, and 5B. Training in health may have an influence on how a pre-service teacher values health education in the school, their intentions to include and confidence in including health in their teaching, and their ability to provide a student with information on a personal health issues.

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APPENDICES

APPENDIX A

QUESTIONNAIRE

Evaluation of HDHL 106

Drug and Health Issues for Educators

Spring 2000

The purpose of this survey is to help evaluate this course. The answers you give will be kept confidential, and will not affect your grade. Answer the questions based on what you really believe.

Please read the instructions carefully. Make sure that you answer every item and that you circle only one answer per item. There are no right or wrong answers. Please fill in the four questions below to generate an ID code for this survey. This will only be used for statistical analysis.

ID Code questions.

- Year you graduated from high school or received your GED (e.g. graduated from high school in 1995 = 1 9 9 5) ___ ___ ___ ___
- Month you were born (e.g. born in June = 0 6) ___ ___
- Number of siblings born before you (e.g. 2 older brothers and 1 older sister born before you =0 3) ___ ___
- The color of your eyes: green=1; blue=2; brown=3; hazel=4; other=5 (e.g. eyes are green=1) ___
- The day you were born (e.g. born on the 28th = 28) ___ ___

Thank you very much for your help!

Please circle one answer for each question.

1. How strongly do you agree or disagree that teaching health is as important as teaching core subjects (for example: reading, writing, arithmetic)?

1 strongly agree
2 agree
3 disagree
4 strongly disagree

2. How important or unimportant is a K-12 student's health in their ability to learn in school.

1 very important
2 important
3 of little importance
4 unimportant

3. How likely or unlikely is it that you intend to integrate health information in your area of teaching concentration or content area? (For example: If your content area is Mathematics how likely or unlikely is it that you intend to integrate health information in math classes you teach after graduation.)

1 very likely
2 likely
3 unlikely
4 very unlikely

4. How confident are you in your ability to integrate health information in your area of teaching concentration or content area?

1 very confident
2 confident
3 little confidence
4 not at all confident

Please circle one answer for each question.

How strongly do you agree or disagree that you are able to **identify** a student of yours with a problem in the area of...				
	strongly agree	agree	disagree	strongly disagree
5. nutrition.	1	2	3	4
6. sexuality.	1	2	3	4
7. tobacco.	1	2	3	4
8. drugs.	1	2	3	4
9. alcohol.	1	2	3	4
10. physical fitness.	1	2	3	4
11. mental health issues.	1	2	3	4
12. relationship issues.	1	2	3	4

How strongly do you agree or disagree that you are able to **provide information for** a student of yours with an issue in the area of.....				
	strongly agree	agree	disagree	strongly disagree
13. nutrition.	1	2	3	4
14. sexuality.	1	2	3	4
15. tobacco.	1	2	3	4
16. drugs.	1	2	3	4
17. alcohol.	1	2	3	4
18. physical fitness.	1	2	3	4
19. mental health issues.	1	2	3	4
20. relationship issues.	1	2	3	4

Please circle one answer for each question.

How strongly do you agree or disagree that you are able to **find resources for** a student of yours with a problem in the area of.....				
	strongly agree	agree	disagree	strongly disagree
21. nutrition.	1	2	3	4
22. sexuality.	1	2	3	4
23. tobacco.	1	2	3	4
24. drugs.	1	2	3	4
25. alcohol.	1	2	3	4
26. physical fitness.	1	2	3	4
27. mental health issues.	1	2	3	4
28. relationship issues.	1	2	3	4

How **comfortable** are you teaching your students about...				
	very comfortable	comfortable	uncomfortable	not at all comfortable
29. nutrition.	1	2	3	4
30. sexuality.	1	2	3	4
31. tobacco.	1	2	3	4
32. drugs.	1	2	3	4
33. alcohol.	1	2	3	4
34. physical fitness.	1	2	3	4
35. mental health issues.	1	2	3	4
36. relationship issues.	1	2	3	4

Please circle one answer for each question.

How strongly do you agree or disagree that it is the **school's responsibility** to teach K-12 students about...				
	strongly agree	agree	disagree	strongly disagree
37. nutrition.	1	2	3	4
38. sexuality.	1	2	3	4
39. tobacco.	1	2	3	4
40. drugs.	1	2	3	4
41. alcohol.	1	2	3	4
42. physical fitness.	1	2	3	4
43. mental health issues.	1	2	3	4
44. relationship issues.	1	2	3	4

How interested are you in **integrating** the following health issues into your area of teaching concentration or content area?				
	very interested	interested	uninterested	not at all interested
45. nutrition	1	2	3	4
46. sexuality	1	2	3	4
47. tobacco	1	2	3	4
48. drugs	1	2	3	4
49. alcohol	1	2	3	4
50. physical fitness	1	2	3	4
51. mental health issues	1	2	3	4
52. relationship issues	1	2	3	4

Please circle one answer for each question.

How strongly do you agree or disagree that you, as a teacher, have the **responsibility to provide information** for a student of yours with an issue in the area of...				
	strongly agree	agree	disagree	strongly disagree
53. nutrition.	1	2	3	4
54. sexuality.	1	2	3	4
55. tobacco.	1	2	3	4
56. drugs.	1	2	3	4
57. alcohol.	1	2	3	4
58. physical fitness.	1	2	3	4
59. mental health issues.	1	2	3	4
60. relationship issues.	1	2	3	4

How strongly do you agree or disagree that you, as a teacher, have the **responsibility to find resources** for a student with an issue in the area of ...				
	strongly agree	agree	disagree	strongly disagree
61. nutrition.	1	2	3	4
62. sexuality.	1	2	3	4
63. tobacco.	1	2	3	4
64. drugs.	1	2	3	4
65. alcohol.	1	2	3	4
66. physical fitness.	1	2	3	4
67. mental health issues.	1	2	3	4
68. relationship issues.	1	2	3	4

Please circle one answer for each question.

The questions about your background will be used only to describe the types of people completing this survey.

69. The lifestyle I lead is...

1 very healthy
2 healthy
3 unhealthy
4 very unhealthy

70. My general health status is...

1 excellent
2 good
3 average
4 fair
5 poor

71. My health is ___ to me.

1 very important
2 important
3 of little importance
4 unimportant

72. What is your major?

1 Elementary Education
2 Secondary Education
3 Teaching Option in one of the following Departments (Art Education, Biology, Chemistry, English, Family and Consumer Science/Extension, Health Enhancement, History, Mathematics, Modern Languages, Music, Physics)
4 Technology Education
5 Non-Degree, Teaching Certification
6 Other (please specify) _____

73. What is your classification?

1 Freshman
2 Sophomore
3 Junior
4 Senior
5 Graduate Student (including Non-degree, Teaching Certification-only)
6 Other (please specify) _____

74. What is your age? _____

75. How religious do you consider yourself to be?

1 very religious
2 religious
3 somewhat religious
4 not at all religious

76. How would you describe your ethnic background?

1 American Indian/Alaskan Native
2 Asian/Pacific Islander
3 Hispanic
4 Black (non-Hispanic)
5 White (non-Hispanic)
6 Other (please specify) _____

77. What is your gender?

1 Female
2 Male

78. Approximately how many lectures did you miss this semester? _____

79. Approximately how many recitations did you miss this semester?_____

80. What grade do you expect to receive in this class? A B C D F

81. Is there anything else you would like to add?

☺ ☻ Thank You For Your Help! ☺ ☻

APPENDIX B

SCRIPT FOR PILOT TEST

We are developing a questionnaire that will be used in spring semester's class. The questionnaire will be used to help us evaluate the class. We would like to know if we have written a good questionnaire - one that people understand and can answer.

Please:

1. Read the cover page
2. Complete the questionnaire - you do not have to fill in your social security number on the cover page
3. If there is a question that is unclear please circle it and write what is unclear next to the question (e.g. a certain word in the question, the response choices).

If you have other comments please talk to me or write them on the questionnaire itself. Will only use your answers to the questions to help evaluate the questionnaire. This should take no more than 15 minutes to complete. Thank you.

Check:

-how much time it takes