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An Analysis of Training Effects on School Personnel's Knowledge, Attitudes, Comfort, and Confidence Levels Toward Educating Students about HIV/AIDS in Pennsylvania

Sharon Deutschlander
Indiana University of Pennsylvania

AN ANALYSIS OF TRAINING EFFECTS ON SCHOOL PERSONNEL'S KNOWLEDGE, ATTITUDES, COMFORT, AND CONFIDENCE LEVELS TOWARD EDUCATING STUDENTS ABOUT HIV/AIDS IN PENNSYLVANIA

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Sharon Deutschlander

Indiana University of Pennsylvania

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Indiana University of Pennsylvania
The School of Graduate Studies and Research
Department of Professional Studies

We hereby approve the dissertation of

Sharon Deutschlander

Candidate for the degree of Doctor of Education

_____ _____
George R. Bieger, Ph.D.
Professor of Education, Advisor

_____ _____
Cathy C. Kaufman, Ph.D.
Professor of Education

_____ _____
Linda R. Klingaman, Ph.D.
Professor of Health & Physical Education

ACCEPTED

_____ _____
Michele S. Schwietz, Ph.D.
Assistant Dean for Research
The School of Graduate Studies and
Research

Title: An Analysis of Training Effects on School Personnel's Knowledge, Attitudes, Comfort, and Confidence Levels Toward Educating Students about HIV/AIDS in Pennsylvania

Author: Sharon Deutschlander

Dissertation Chair: Dr. George R. Bieger

Dissertation Committee Members: Dr. Cathy C. Kaufman
Dr. Linda R. Klingaman

The purpose of this study was to determine the training effects on school personnel's knowledge, attitudes, comfort, and confidence levels toward educating students about HIV/AIDS in Pennsylvania. The following four research questions were explored: (a) What is the knowledge, attitudes, confidence, and comfort levels of school personnel regarding the teaching of HIV/AIDS to school aged children?; (b) How do HIV/AIDS trainings affect the knowledge, attitude, confidence, and comfort levels of school personnel?; (c) What extent do the demographics of the school personnel influence their knowledge, attitude, confidence, and comfort levels in teaching HIV/AIDS?; (d) Can knowledge of HIV/AIDS predict confidence, attitudes, and comfort levels?

The subjects (N=341) included in this study were part of the "HIV Update: A Workshop for Educators" sponsored by the Pennsylvania Department of Education. These trainings were made available to school personnel across the state of Pennsylvania during a three year period. Data was gathered from pre- and post-tests and included measures that targeted subjects' knowledge, attitudes, comfort levels, and confidence levels associated with HIV/AIDS. Survey questions were analyzed using descriptive

statistics, paired t-test, one-way analysis of variance (ANOVA), Tukey post hoc analysis, and the bivariate regression analysis.

The results of this study indicate that participation in six-hour HIV update trainings had a statistically significant positive effect on increasing school personnel's comfort, confidence, and knowledge levels. It was further determined the trainings improved participants' attitudes toward individuals with HIV/AIDS. Increasing participants' knowledge of HIV/AIDS was also shown to predict confidence, attitudes, and comfort levels of school personnel. This study indicates that HIV/AIDS update trainings should be a priority for school personnel in order to increase their knowledge, comfort, confidence, and attitudes in addressing the needs of students and their families in an appropriate educational setting.

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CHAPTER I

DESCRIPTION OF THE STUDY

When human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) were first identified over 25 years ago, educators and other school personnel found themselves at the forefront in the battle to prevent the disease from spreading. At that time the greatest concern was providing accurate information to adolescents and adults to discourage behaviors that would put one at risk of contracting the disease. Much has been learned about HIV since that time, but the threat to our society and especially to our nation's youth population is very real. Fifty percent of new HIV infection in our country each year occurs among the 13 to 24 year old age range (CDC, 2006). This is a stunning change from when HIV first came on the scene and considered to be a disease that was most likely to occur among the homosexual population. The Centers for Disease Control (CDC) reports that AIDS is now the fourth leading cause of death for all women ages 25-44 with the majority of cases contracted through heterosexual contact. Even more striking is the fact that among children ages 1 to 4, it is the seventh leading cause of death (Stine, 2003). The changes in the populations that see an increase in the number of HIV/AIDS cases require today's educator to not only be a disseminator of knowledge regarding the disease, but also be equipped to deal with difficult situations such as a child whose parents are HIV infected or having a student in one's class who is infected. In the past, educators have often been required to become critical leaders in addressing difficult social issues. With the significant increase in HIV/AIDS affected school age children and their families,

educators once again are being called upon to be a catalyst in the fight against this disease. How well prepared educators are to accept this leadership role will be determined by their ability to help individuals through the three phases of transition as identified by Bridges (2003). "Letting go of the old" requires change in attitudes and stereotypical thinking. "Moving through the neutral zone" creates a psychological realignment as one begins to understand how behavior increases the vulnerability to HIV infection. Furthermore, it is difficult to move beyond the anger and blaming stage as innocent children are diagnosed with HIV and become victims of someone else's behavior. The emotional and psychological changes people experience during the neutral zone are individually paced and necessary before advancing to the third phase of transition; however the neutral zone is the very core of the transition process. Bridges (2003) states: "If you escape prematurely from the neutral zone, you will not only compromise the change but also lose great opportunity. Painful though it is, the neutral zone is the individual's best chance to be creative, to develop into what they need to become and to renew themselves" (p. 9). This allows entrance into the final stage identified as a "new beginning." Finding the ability to energize society paradoxically starts with an ending.

Background

Acquired Immunodeficiency Syndrome (AIDS) has killed more than 25 million people since it was first recognized in 1981 and identified as one of the most destructive epidemics in history. In 2005 alone, AIDS claimed 3.1 million lives with more than half a million of those deaths being children (UNAIDS, 2005). Since the beginning of the AIDS epidemic, schools have been a focal point in energizing society to initiate changes

in behavior and respond appropriately to the threat of this disease. When the AIDS virus was identified as a social issue, educators across the nation gathered together to develop means of educating the school age population. The Pennsylvania Department of Education outlined requirements for HIV instruction in state schools. While the Pennsylvania School Code mandates that instruction regarding HIV and AIDS will be taught in the primary, intermediate or middle school and high school, the educational materials and instructional methods are established by the local school districts. The Pennsylvania School Code mandates that instruction will include "information about the nature of the diseases, treatments and cures, methods of transmission and how infection can be prevented" (Pennsylvania School Code, 1999, § 4.29). Schools must stress abstinence from sexual activity and illegal drug use as the only sure means of preventing transmission of the disease. The school code does allow school districts to choose not to discuss sexual activity as a means of transmitting the disease in the elementary school. Current Academic Standards for Health, Safety, and Physical Education (Pennsylvania School Code, 2002, Chapter 4, Appendix D, #006-276) include the following standard be met by the end of grade six:

> Standard 10.1.6.E: Identify health problems that can occur throughout life and describe ways to prevent them.
>
> - Diseases (e.g., cancer, diabetes, STD/HIV/AIDS, cardiovascular disease).

The standard associated with HIV/AIDS that must be met by the end of the ninth grade is as follows:

> Standard 10.1.9.A: Analyze factors that impact growth and development between adolescence and adulthood.

- STD and HIV prevention.

The standard associated with HIV/AIDS that must be met by the end of the 12th grade is as follows:

Standard 10.1.12.A: Evaluate factors that impact growth and development during adulthood and late adulthood.

- acute and chronic illness;
- communicable and non-communicable disease.

Effectively preventing HIV/AIDS requires leaders to identify the prevalence of the disease among the population and to implement prevention strategies that address influencing variables.

Epidemiology of Human Immunodeficiency Virus Among Children and Youth

The threat of HIV is becoming a significant problem worldwide to children and adolescents with more than one million infected. In the United States, HIV/AIDS has become the fifth leading cause of death among 15 to 24 year olds (CDC, 2006). While these statistics are staggering, it is important to be mindful of the varying degrees of risk behavior among adolescents. Of particular concern are the most vulnerable populations including runaways, those lacking communication skills, and those living in unprotected environments. These conditions result in prevalence rates much higher than other adolescent populations (Carasso, 1998; Kadiar, Garvie, Sinnock, Heston, & Flynn, 2006).

Data from the Youth Risk Behavior Surveillance Survey conducted by the Centers for Disease Control reported the cumulative estimated number of AIDS cases through 2006 to be 36,225 for youth between the ages of 13 to 24. The survey indicated

a decline between 1991 and 2007 in the number of high school students who had ever had sex and the number of teens who had four or more sex partners (CDC, 2007). These changes in sexual behavior also resulted in a 27% decrease in teen pregnancy from 1990 to 2000. They also effected changes in patterns of HIV infection among adolescents with a decrease in the number of HIV cases among females between 1999 and 2003. However, there was a significant increase in the number of diagnosed HIV cases among the adolescent male population. The changes in the male population were due to an increase in HIV diagnosis among young men having sex with men (Rangel, Gavin, Reed, Fowler, & Lee, 2006). A recent examination of the data from the Youth Risk Behavior Surveillance Survey indicates the decline in the number of high school students who have ever had sex has changed between 2005 and 2007. Incidence rates have leveled off with some data showing a slight increase in the number of adolescents who have had sex. There is also indication that the number of teens who have had four or more sex partners is also slightly increasing (CDC, 2007).

The progression of the disease is slowest in the adolescent population with 81% not progressing to AIDS within 12 months after being diagnosed (CDC, 2006). Those infected with HIV during their teen years will often not feel the true effects until they are in their 20s or 30s as the average time between infection and showing symptoms is approximately 10 years (Carasso, 1998). This contributes to the concern that infected adolescents are continuing to be involved in risky behavior placing their sexual partners in danger of contracting the disease. While the only defense against spreading the disease is to convince individuals to abstain from participating in risk behaviors, the adolescent's impulsive decision making and feelings of being invincible challenge the

ability to imagine possible future consequences for one's behavior (Weinberger, Elvevag, & Giedd, 2005). HIV infected infants and young children are innocent victims of others' risky behaviors. According to the Joint United Nations Program on HIV/AIDS, in the year 2003 an estimated 2.5 million children around the world who were under the age of 15 were living with HIV/AIDS. Most of these children became infected by HIV positive mothers either before or during birth or while breastfeeding (NAIAD, 2004).

The number of HIV positive infants and children in the United States is quite small compared to the rest of the world. Since 1981 through 2002, there were 9,300 children under the age of 13 reported as living with HIV/AIDS (NAIAD, 2004). The use of AZT and improved diagnostic and screening tests have helped prevent the spread of the HIV from mother to child. In the early to mid-1990s HIV infection through perinatal transmission was 1,650. This decreased to 188-236 in 2002. Screening tests to better ensure the safety of the nation's blood supply has also been successful (CDC, 2006).

Of the children who are HIV infected, approximately 20% develop serious diseases within the first year of life and die by the age of 4. The other 80% experience a slower progression of the disease with symptoms being delayed until they enter school or sometimes until they reach adolescence. Complicating this situation is the reality that most likely the child is not the only HIV infected person in the family. This increases the burden and hardship of having a child with a serious illness or being that child (NAIAD, 2004). Effectively preventing HIV/AIDS requires leaders to identify the prevalence of the disease among the population and to implement prevention strategies that address influencing variables.

School Personnel's Reaction Toward Educating Students about Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

In the early 1980s when the HIV epidemic first was identified as a life threatening disease, people looked to government health officials to get the disease under control expecting leaders in the medical field to quickly find an effective vaccine or antidote to prevent others from becoming sick and dying. Communities across the nation and around the world reacted to the situation as if people had the know-how and necessary procedures to solve the problem. It was viewed as a "technical problem" as identified by Heifetz and Linsky (2002). However, it was clearly an adaptive problem as medical personnel and scientists struggled to identify a cure or treatment for those inflicted with the disease. As they learned more about HIV/AIDS it became clear that those who would be doing the work to help solve the problem would be all people, as they realized that their behavior was the only means of controlling this challenging situation. In order to help people begin to address this problem as individuals, educating them became the focus of the fight. This required both elementary and secondary teachers to become knowledgeable in the area of HIV/AIDS education (Boscarino & Diclemente, 1996; Brucker & Hall, 1996; Frank, Foley, & Kuchuk, 1997; Stinnet, Cruce, & Choate, 2004).

Studies conducted in the 1980s and 1990s clearly focused on the effects of HIV/AIDS education on adolescents. Very few researched the effect HIV/AIDS had in the elementary school. This was unfortunate since HIV/AIDS education must be centered on teaching children at an early age about the disease with emphasis on prevention (Stinnet, Cruce, & Choate, 2004; Franks, Mille, Wolff, & Landry, 2004).

Besides being knowledgeable, teacher confidence, attitude and comfort level in teaching HIV/AIDS plays a major part in effective HIV/AIDS education. Many studies that evaluated teacher behaviors and attitudes were conducted in the late 1980s or early 1990s. One study that used college education students as the subjects, found that 44% were fearful of the idea of teaching AIDS education. This same study also found 20% believed it should be their right to refuse to teach an HIV positive child (Ballard, White, & Glascoff, 1990). A national sample of teachers surveyed in the mid-1990s found that 15% believed an HIV positive child should not be permitted to attend school. Twenty-two percent believed HIV positive children should be taught in a limited environment as to not expose other children to the virus (Brucker & Hall, 1996).

In a more recent study, the percentage of teachers who were fearful of having HIV positive children in their classrooms had dropped to ten percent. In this same study, teachers noted the desire to have more specified training and be better equipped to teach HIV/AIDS education. While they felt "somewhat prepared" to teach this area, most indicated they were self-taught and needed more opportunity for quality training (Dawson, Chunis, Smith, & Carboni, 2000).

Purpose of the Study

The purpose of this study was to determine the training effects on school personnel's knowledge, attitudes, comfort, and confidence levels toward educating students about HIV/AIDS in Pennsylvania. While some individuals believe that the AIDS epidemic is no longer a health issue, research clearly identifies the largest increase in HIV infection is among the adolescent population. As infected children and adolescents learn to live with a life threatening condition, society will look to the school

systems to provide education and support. The need for providing valid information and responding in a compassionate yet responsible manner will go beyond the school age population, as families and community members look to the school to have a leadership role in addressing this problem.

Specifically the study examined the school personnel's: (1) confidence in teaching HIV/AIDS; (2) comfort in dealing with sensitive issues associated with HIV/AIDS education; (3) attitudes toward people with HIV/AIDS; and, (4) knowledge of current HIV/AIDS prevalence rates, virus transmission, and treatment procedures.

Research Questions

The study investigated areas that need to be addressed to assure teachers in Pennsylvania are properly prepared to be leaders in the attempt to control the spread of HIV among school age children. The following research questions will be addressed:

1. What is the knowledge, attitudes, confidence, and comfort levels of school personnel regarding the teaching of HIV/AIDS to school aged children?
2. How do HIV/AIDS trainings affect the knowledge, attitude, confidence, and comfort levels of school personnel?
3. To what extent do the different roles of school personnel influence their knowledge, attitude, confidence, and comfort levels in teaching HIV/AIDS?
4. Can knowledge of HIV/AIDS predict confidence, comfort, and attitudes?

Conceptual Framework

The framework for this study was based on Managing Transitions, (Bridges 2003). Transformational leadership occurs when leaders broaden and elevate the

interests of people, generate awareness and acceptance, and when they stir people to look beyond self-interest for the good of the whole (Bridges, 1990). The HIV update trainings were the vehicle to initiate change in the knowledge, attitude, comfort levels, and confidence of school personnel. Transforming educators requires providing accurate and current information to eliminate misconceptions and prejudices. It also requires participants to be actively involved in experiential learning activities aimed at exploring their attitudes and comfort levels when teaching sensitive topics included in HIV/AIDS curriculum. As their knowledge and comfort levels increase, their confidence level also increases. Since confidence is an important quality of leadership, (Wren, 1995) it is theorized that this HIV/AIDS training will increase participants' ability to provide leadership through consistent and innovative teaching. It is a process of correcting misinformation, helping people let go of their prejudices and misconceptions, and encouraging a commitment to reducing the threat of HIV in the world. School personnel will take the lead, but then it is necessary for everyone to take responsibility. All human institutions must renew themselves continuously to avoid the disintegration of society's citizen or servant leadership. Schools have a history of servant leadership and share values that are the bedrock on which leaders build the edifice of achievement. Effective leaders heighten both motivation and confidence in their followers that allows individuals to achieve beyond their expectations and solve life threatening issues (Wren, 1995).

Dr. C. Everett Koop became the leader in addressing the HIV/AIDS issue in American communities all across the United States. He provided people with an understanding of their new vulnerability while also giving them the tools to control the

outcome. While his outspoken tactics regarding sexual activity were considered impetuous by some, the situation at hand required him to provide factual information at the risk of disturbing some. Dr. Koop demonstrated the ability to lead in the face of danger as described by Heifetz and Linsky (2002). He called for increased education for all individuals including the school age population regarding HIV/AIDS. This required the development of new curricula and teacher trainings. Religious groups sought to shut down this process in order to preserve deeply held values and ideas. In many instances they were successful in keeping schools from talking frankly about oral, vaginal, or anal sex. However, as the history of the disease demonstrates, factual information made way to center stage as individuals began to practice safer sexual behaviors, medical institutions established standard procedures to prevent the spread of the disease, and governmental research found treatments to prolong the lives of those who were HIV positive.

As the years progressed, there was a major shift in the HIV positive population as inflicted heterosexuals began to outnumber cases among homosexuals. Celebrities, both homosexual and heterosexual, became victims of the disease. This change once again raised the vulnerability level of every individual. There was a collaborated effort among diverse stakeholders to get the word out on how to prevent the disease from spreading. Athletes such as Magic Johnson and Arthur Ashe came forth to tell about their battle with HIV. Ryan White became a household name representing the many children who had innocently become victims of the disease. Musical artists collaborated to raise awareness and money to support further education and research. The homosexual population responded by pushing for more research and availability for treatment. The AIDS Quilt

made its way across the country being put on display to visually demonstrate how many had been faced with this deadly disease. Many of these groups were confronted with betrayal, marginalization, diversion, attacks, and seductions as they faced the dangers of leading the fight against HIV/AIDS.

The beginning of the 21st century once again saw changes in the pattern of the disease as the number of cases among those under 25 began to soar. This group now represents the fastest growing number of HIV positive individuals. Schools were identified as the means of addressing this trend, but many teachers were teaching outdated material from the 1980s and early 1990s. Some still harbored negative feelings about the sexually promiscuous population they held responsible for spreading the disease. However, as research clearly indicates many innocent children represented a growing number of HIV cases. The importance for teachers to take the lead in addressing needed changes became clear. Teachers would be faced with an increase in HIV positive students. They also were presented with a higher likelihood a child in their class might die from the disease. Surveys conducted throughout Pennsylvania in 2004 by university health education professors determined a lack of current knowledge regarding the disease, some discomfort in teaching sensitive topics, some prejudice feelings regarding people with HIV, and uncertainty about being around HIV positive individuals (Bowd, 1987; Ballard, et al, 1990).

The development of HIV/AIDS Update Trainings in Pennsylvania began with a grant from the Centers for Disease Control who provided monies to the Pennsylvania Department of Education (PDE). PDE then contracted with Indiana University of Pennsylvania to develop and provide the trainings for schoolteachers all across the

commonwealth. In developing the training, it was important for the professors to "get on the balcony" as described by Heifetz and Linsky (2002). It was necessary to look at the big picture and determine how to address discomfort, prejudice, and lack of knowledge in a way that would promote a healthy response. Finding out where people were at, hearing their stories, and reading their behavior was critical in reaching the goals of the training. Material was carefully selected to alternate between heavy, difficult information that touched people emotionally and fun, upbeat activities to lighten the mood. The presenters created a "holding environment" in which people felt comfortable addressing tough, diverse questions while maintaining composure. Activities were structured so that participants could interact casually with the hope that attitudes could be changed through their curiousness and experiences at the training.

One goal of the trainings was to place the work where it belongs (Heifetz & Linsky, 2002). The teachers represent the true mechanism through which students' lives will be affected. HIV trainings provided them with the opportunity to solve problems through group activities which often proved to be the most effective. It energized them to think critically and problem solve with their colleagues. A significant part of the training required the trainer to become an intervener through observations, questioning, and interpreting trainees' responses, attitudes, and behaviors. Teachers were encouraged to work together to address possible problems they may face in their home districts when trying to implement the HIV curriculum.

Dealing with the sensitive issues that teaching HIV/AIDS requires can cause one to lose heart by innocence becoming realism, curiosity becoming authoritative knowledge, and compassion becoming "the thick-skin of experience" (Hiefetz & Linsky,

2002). Resistance from members of the community, school administration, school boards, and parents can be difficult to overcome. Those leading the fight against HIV/AIDS must understand the boundaries of their role and maintain a strong group of allies. Schools should provide a sanctuary for students that equip them with the knowledge they will need to face a world that contains the deadly human immunodeficiency virus.

Hypotheses

1. School personnel who participate in HIV/AIDS update trainings will demonstrate an increase in knowledge, confidence, and comfort levels toward educating students about HIV/AIDS.
2. An increase in knowledge of HIV/AIDS will result in an increase in confidence and comfort toward educating students about HIV/AIDS.
3. An increase in knowledge of HIV/AIDS will result in more positive attitude toward individuals with HIV/AIDS.

Definition of Terms

AIDS. Acquired immunodeficiency syndrome is the final and most serious stage of the disease caused by the human immunodeficiency virus. A CD4 + T-cell count below 200 per cubic milliliter in the presence of HIV infection constitutes an AIDS diagnosis. The average CD4 + T-cell count in healthy individuals is 1150 per cubic milliliter.

Attitude. A complex mental state involving beliefs, feelings, values, and dispositions to act in certain ways.

AZT. Zidovudine, Retrovir is an anti-HIV drug that reduces the amount of virus in the body. Anti-HIV drugs such as AZT slow down or prevent damage to the immune system, and reduce the risk of developing AIDS-related illnesses.

Comfort Level. Mental conditioning resulting in artificially created mental boundaries, within which an individual derives a sense of security.

Confidence Level. The trust or faith that one is capable and displays balanced perceptions and preparation.

Epidemiology. The branch of medical science that studies the occurrence, distribution, and control of a disease in populations (U.S. Department of Health and Human Services).

HIV. Human immunodeficiency virus is the virus that causes Acquired Immunodeficiency Syndrome (AIDS). HIV is in the retrovirus family, and two types have been identified: HIV-1 and HIV-2. HIV-1 is responsible for most HIV infections throughout the world, while HIV-2 is found primarily in West Africa. HIV attacks the body's immune system leaving it unprotected against infections and diseases.

Knowledge. Acquisition of accurate facts and information. The confident understanding of a subject, potentially with the ability to use it for a specific purpose.

Parents. The term parents includes in addition to a natural parent, a legal guardian or other person acting in *loco parents* or a person who is legally responsible for a child's welfare (U.S. Department of Education, 2004).

School Personnel. Includes school principals, guidance counselors, nurses, and teachers, (Pennsylvania Department of Education, 2004).

Secondary prevention. Identifying and treating people with an established disease in order to contain the spreading of the disease throughout the remaining population.

*T Cells. G*roup of white blood cells known as lymphocytes and play a critical in cell-mediated immunity. The T stands for thymus since it is the principal organ for their development. T cells are distinguished from other lymphocyte cells by the presence of a special receptor on their cell surface called the T cell receptor, (Wikipedia).

Methodology

A descriptive study was conducted using existing quantitative data that were collected through a survey administered to teachers, nurses, counselors, and school administrators who attended a one-day HIV update training in several intermediate units throughout the state of Pennsylvania. The trainings took place over a three year period. The survey from the CDC was given at the beginning and repeated at the end of each training. The survey's focused on four variables including knowledge level of HIV/AIDS, attitudes toward HIV infected individuals, confidence level in teaching HIV/AIDS education, and comfort level with sensitive topics. Pre- and post-test data were analyzed to determine changes in each of the four areas. Survey testing also helped determine differences in these four areas among school personnel. Surveys were anonymous and approved by the Indiana University of Pennsylvania's Review Board for the Protection of Human Subjects.

Significance of the Study

Schools provide a setting for equipping children and adolescents with the knowledge to protect themselves and others from acquiring HIV. The findings from

previous research indicate adolescents responded to the knowledge they received about the danger of engaging in risky HIV-related sexual behaviors. The percentage of high school students in the United States participating in those behaviors decreased. The number of students participating in injected drug use remained low (CDC, MMWR, 2006). However, there are still many adolescents participating in risky behavior compelling states to mandate HIV/AIDS education in the schools. This requires teachers to be knowledgeable in this area and possess the ability to help high risk adolescents assess their vulnerability to the disease and make necessary behavior changes. The number of infants and young children infected with HIV is also a recognized health problem requiring education to begin early in the school years. The increase of the disease among school age children will undoubtedly result in teachers at both the elementary and secondary school settings teaching students who are HIV/AIDS affected (Stinnett, Cruse, & Choate, 2004). It is difficult for many to acknowledge the large number of school age children who are already infected with HIV. School personnel are vitally important in leading the fight against HIV/AIDS by providing valid information, demonstrating appropriate behaviors when dealing with HIV infected students, and facilitating appropriate interventions to help all students understand the dynamics of confronting this disease. A firm set of professional and personal ethical standards, values, and vision is a hallmark of most successful leaders (Evans, 1996). These characteristics will be crucial in the education and commitment to our youth in their attempt to reduce the risk factors for HIV transmission. Outstanding school personnel demonstrate a sincerity and commitment toward their students that builds a level of trust necessary to address personal and sensitive issues. Appropriate and professional

boundaries for school personnel and students will be a challenge in addressing personal and life threatening issues. Building and maintaining healthy relationships is a basic requirement in the ability to influence others. In working with students and families of all cultures, leaders have a moral responsibility to increase their own cultural proficiency and awareness. School personnel will be challenged to work with people who are different from them in beliefs, attitudes, and values (Kaser, Mundry, Stiles, Loucks-Horsley, 2006). The results of this study may challenge school officials to provide school personnel with up to date and accurate HIV/AIDS in-service programs. There is limited research conducted on HIV/AIDS to date that is relevant to schools (Stinnett, Cruce, & Choate, 2004). This study will provide impetus to further research.

Delimitations of the Study

This study was limited to school personnel attending HIV/AIDS Update Training in Pennsylvania during 2003 to 2006. Therefore the results of the study will be representative of the knowledge, attitudes, comfort, and confidence levels of school personnel attending these trainings.

Limitations of the Study

The limitations of this study on the knowledge, attitudes, comfort, and confidence levels of school personnel in Pennsylvania are:

1. The self-report survey was identified as a limitation as the accuracy of the data was dependent upon respondents' honesty. Self reporting ones' attitudes, confidence, and comfort levels in dealing with sensitive topics may be biased by the participants' perceptions.

2. Use of a questionnaire cannot probe deeply into respondents' feelings or opinions, nor can items be clarified if respondents are uncertain of the meaning.

3. The project director was unable to personally conduct all of the 16 HIV Update Trainings. To insure standardization of the trainings, the project director provided a training of trainers that included the training materials and timeline for each topic.

4. The findings are limited to one researcher's analysis, therefore, conclusions of this study must be interpreted with caution.

Summary

In this chapter, the epidemiology of HIV/AIDS among children and adolescents and the problems associated with it have been introduced. The following chapters provide a review of the literature, the methodology of the study, an analysis of the data gathered, and a discussion of the results, conclusions, and recommendations for additional research in this area.

Conceptual Model

Integration of Bridges' Three Phases of

Transition with HIV/AIDS Training Model

Bridges Three Stages				HIV Update Trainings
Stage 1	Ending, losing, & letting go	Dealing with loss of the familiar	Anxiety, blame, fear & shock	Identify and address prejudices, misconceptions, misinformation about HIV/AIDS
Stage 2	The neutral Zone	Transitional period	Anxiety confusion, & uncertainty	Current HIV/AIDS update trainings
Stage 3	The new Beginning	Setting new goals	Integration & reinventing	Innovative teaching and increased comfort, knowledge and confidence in working with students to address HIV/AIDS epidemic, positive attitude, and leadership role

Figure 1. Conceptual model, three phases of transition.

Theoretical Model

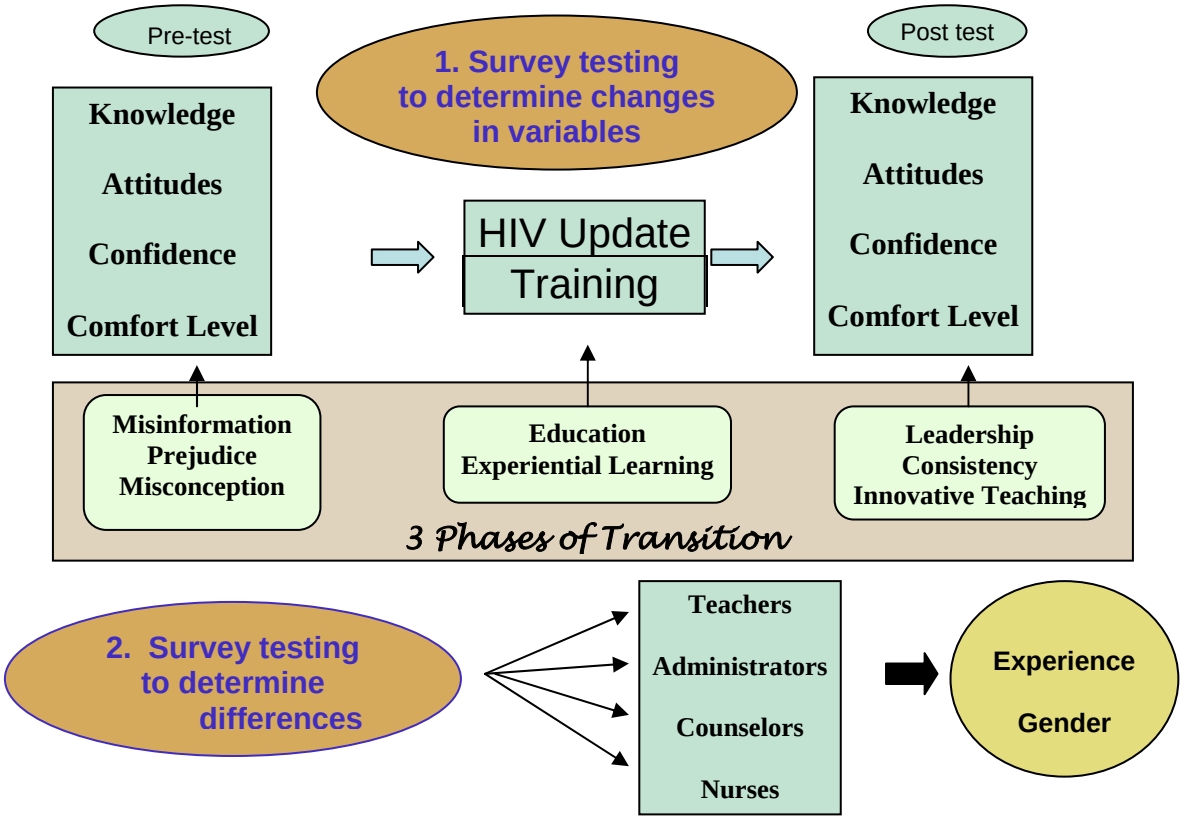

Figure 2. Theoretical model.

CHAPTER II

REVIEW OF THE LITERATURE

This review describes the background, scholarly research, and current trends of AIDS and HIV. The purpose of this study was to determine the training effects on school personnel's knowledge, attitudes, comfort, and confidence levels toward educating students about HIV/AIDS in Pennsylvania. Specifically the study examined the school personnel's: (1) confidence in teaching HIV/AIDS; (2) comfort in dealing with sensitive issues associated with HIV/AIDS education; (3) attitudes toward people with HIV/AIDS; and, (4) knowledge of current HIV/AIDS prevalence rates, virus transmission, and treatment procedures. It is hypothesized that increasing knowledge of school personnel through HIV/AIDS update trainings will have a positive effect on attitudes, confidence, and comfort levels in addressing HIV/AIDS in the school setting.

Across the nation, school districts have responded to the threat of HIV/AIDS by preparing students with the knowledge, attitudes and skills needed to avoid contracting this disease. Accordingly, HIV-related education and infection control policies have been implemented, curriculum strategies have been developed, and educators and other school personnel have been trained in the delivery and administration of HIV prevention education. As the world enters the third decade since this disease was identified, there is still no cure in sight leaving education as the most effective methods to prevent HIV infection. With the largest increases in HIV positive individuals found in youth populations, it is imperative that appropriate education geared at increasing knowledge and prevention strategies be employed (Dawson, Chunis, Smith, & Carboni, 2001). With medical and epidemiological information regarding HIV/AIDS constantly changing,

educators need current and accurate information on this vitally important health issue. Research has shown that often teachers lack adequate knowledge of the disease (Bowd, 1987; Ballard, et al., 1990) while even teachers with sufficient knowledge sometimes feel uncomfortable discussing these issues with students (Boscarino, Diclemente, 1996: Doherty-Poirier,Munro, Salmon, 1994). Teachers who lack a comfort level are unlikely to cover the material in class and are unlikely to be approached by students as a potential resource for vital information (Brooks, 1994).

Attitudes toward AIDS and persons who are HIV infected have been shown to affect student interactions and instruction (Stinnett, Cruce, & Choate, 2004). For example, beliefs that students who are HIV positive should not attend school were expressed by 15% of a national sample (Brucker, 1996). Despite the fact that it would be a violation of the law, 20% of pre-professional teachers believed HIV positive students should not be allowed to attend school (Ballard, et al, 1990). On the other hand, teachers who have been shown to be "more HIV disease knowledgeable" were more likely to teach a wider range of topics and are more likely to be approached and make referrals to community agencies (Remafedi, 1993). As noted before, prevention methods such as school-based HIV programs play a critical role in the health outcomes of our children and youth. Adequate training and informational resources for teachers are necessary to ensure that students receive the most effective HIV/AIDS prevention programs possible. Staff development programs for school personnel are important as the more effective educators carry out instructional programs, the more likely student will show increases in areas such as knowledge, skills, and attitudes (Stinnett, Cruce, & Choate, 1994).

History of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

The HIV/AIDS pandemic began in the mid to late 1970s with the dominant features of silence and fear. HIV did not present with noticeable signs or symptoms salient enough to be noticed (The History of AIDS, 1981-1986). By the 1980s, HIV spread to at least five continents with approximately 100,000 to 300,000 persons infected with the disease (Mann, 1989). As this disease continued to spread it became first known as the "gay compromise syndrome" (Brennan & Durack, 1981) while others called it GRID (gay-related immune deficiency), or AID (acquire immunodeficiency disease), or "gay cancer" and finally the "community-acquired immune dysfunction" (The History of AIDS 1981-1986). An unusual event of Kaposi's Sarcoma (KS) which is a rare form of benign cancer that occurred primarily in older people, presented in March 1981 in eight young gay men from New York (Hymes, Greene, & Marcus, 1981). At the same time, a technician for the CDC noticed a significant number of requests for the drug pentamine, used in the treatment of pneumocystis carinii pneumonia (PCP). Research into the demand led to reports of PCP occurring in five Los Angeles gay men (MMWR Weekly, 1981). Lack of research and knowledge about the transmission of this new disease generated concern and fear that the disease could be spread by people who did not present with any signs or symptoms.

In December 1981, the first cases of PCP were reported in the population of injection drug users (Masur, Michelis, Onorato, Stouwe, Wormser, Brettman, Lange, Murray, & Cunnighem, 1981). Research and studies on the sex practices of patients, injection drug users and blood transfusion recipients identified an infectious agent as the

cause of infection. Scientists were beginning to make the connection between an infectious agent as the cause and transmission possibly occurring through the blood. (Overview of HIV/AIDS, 2002).

By 1982 the disease still did not have an official name, with different groups referring to it in different ways. Findings of the disease in the non-homosexual population meant that names such as GRID were no longer relevant. The acronym AIDS was suggested at a meeting in Washington, D.C., in July (Time, 2003). By the next month AIDS was being used in newspaper and scientific journals (Marx, 1982). Later that year, AIDS was first properly defined and adopted by the CDC (MMWR, 1982). By the beginning of July, 1982 there were 452 cases from 23 states that had been reported to the CDC (CDC, 1982). Later that month, symptoms were also reported in Haitians and hemophiliacs in the United States (MMWR, 1982). With different populations reporting symptoms of HIV/AIDS, fear and concern continued to escalate. Transmission of the disease was still a mystery.

In 1983, reports of AIDS among non-drug using women that presented with no other identified risk factors suggested the disease may also be transmitted through heterosexual intercourse (MMWR, 1983). Children were also identified with AIDS during this period, leading to the assumption that transmission of the disease may occur through casual contact. Later it was identified that children became infected from their mothers during birth (Oleski, 1983). In May 1983 doctors at the Institute Pasteur in France reported that they had isolated a new virus, which they suggested might be the cause of AIDS (Barre-Sinoussi, Chermann, Nugeyre, Chamaret, Douguet, Axler-Blin, Brun-Vezinet, Rouzious, Rozembaum, & Montagnier, 1983). A few months later the

virus was named lymphadenopathy-associated virus or LAV. Anxiety continued as the transmission of AIDS could not be clearly identified. The CDC released the following statement in an attempt to relieve fears of casual contact as a means of transmission of AIDS:

> The cause of AIDS is unknown, but it seems most likely to be caused by an agent transmitted by intimate sexual contact, through contaminated needles, or, less commonly, by percutaneous inoculation of infectious blood and blood products. No evidence suggests transmission of AIDS by airborne spread. The failure to identify cases among friends, relative, and co-workers of AIDS patients provides further evidence that casual contact offers little or no risk . . . the occurrence in young infants suggest transmission from an affected mother to a susceptible infant before, during, or shortly after birth. (MMWR, 1983)

By the end of 1983, the number of AIDS cases in the United States had risen to 3,064 and of these 1,292 had died (The History of AIDS, 1981-1986).

On April 23, 1984, the United States Health and Human Services Secretary, Margaret Heckler announced that Dr. Robet Gallo at the National Cancer Institute claimed that he had isolated the retrovirus that caused AIDS and named it human T-cell lymphotropic virus-type III (HTLV III) (Altman, 1984). By the end of 1984, there were 7,699 AIDS cases reported with 3,665 deaths in the United States (MMWR, 1985).

In May 1986 the International Committee on the Taxonomy of Viruses discovered that LAV and HTLV III viruses were the same. Both names were dropped and replaced with the new term Human Immunodeficiency Virus (HIV) (Coffin, Haase, Levy,

Montagnier, Oroszlan, Teich, Temin, Toyoshima, Varmus, Vogt, & Weiss, 1986). It was also determined that HIV could be spread through bodily fluids such as blood, semen, vaginal fluid, amniotic fluid, breast milk, and cerebrospinal fluids (Overview of HIV/AIDS, 2002). By the end of 1986 there were 85 countries reporting 38,401 cases of AIDS with the regional breakdown of Africa 2,323, United States, 31,741, Asia, 84, Europe 3,858, and Oceania 395 (Bureau of Hygiene & Tropical Diseases, 1986).

In 1987, President Ronald Reagan made his first major speech on AIDS to the Philadelphia College of Physicians noting that 36,000 Americans had been diagnosed with AIDS and 20,000 of those had died (The History of AIDS 1987-1992). In October, AIDS became the first disease ever debated on the floor of the United Nations (UN) General Assembly. The UN was mobilized in the worldwide fight to stop the spread of AIDS under the leadership of the World Health Organization (WHO) (Mann, 1989).

During 1988, the United States promoted a national AIDS education campaign, distributing 107 million copies of "Understanding AIDS," written by Surgeon General C. Everett Koop. This booklet covered topics such as how HIV is transmitted, risk behaviors, the correct use of condoms, AIDS testing and how to talk to children about HIV and AIDS (U.S. Department of Health and Human Services, 1988). During this year, the first official syringe exchange program was introduced in the United States to help prevent the transmission of HIV by injection drug users. This program became controversial and led to Congress prohibiting the use of federal funds to support this initiative (National Research Council and Institute of Medicine, 1995).

Significant changes in the epidemic have occurred over time. In 1992, the CDC announced that AIDS became the leading cause of death in men between the ages of 25

and 44. By 1994, AIDS had spread significantly to other populations and was identified as the leading cause of death among all Americans in this age group but by 1997 had dropped to the eighth leading cause of death in this age group. Between 1992 and 1997, the number of persons reported living with AIDS increased in all groups as a result of the 1993 expanded AIDS case definition and, more recently, improved survival rates due to new Highly Active Anti-Retroviral Therapy (HAART) treatment. Women accounted for fewer than 14% of persons over age 13 years living with AIDS in 1992, compared with 20% in 1998. By December 1998, approximately 297,136 persons were reported to be living with AIDS, compared with 269,775 in 1997.

In 1999 new AIDS cases declined while reports of new HIV infections increased. Young people between the ages of 13 to 24 accounted for 50% of the new HIV cases. The increase of HIV in young people is theorized to be a result of the population returning to unsafe sex practices and high risk behaviors first characterized by the AIDS epidemic (AIDS is Spreading, 1999). Health risk behaviors that contribute to the transmission of HIV/AIDS are often established during youth and continue into adulthood (Kann, Warren, Harris, Collins, Douglas, Collins, Williams, Ross, & Kilbe, 1993). Because the time between contracting HIV and presenting with the symptoms of AIDS is approximately 10 years, many people exhibiting AIDS in their early twenties probably were infected in adolescence (Earl, 1995). While the numbers of AIDS cases and deaths declined, there has not been a decline in the number of HIV infections in women and adolescents (Young People at Risk, 1999). At the 13th annual conference held in Durban, South Africa it was announced that 34 million people were infected with HIV worldwide (AIDS Conference Convenes in Africa, 2000).

In 2001, CDC introduced the Serostatus Approach to Fighting the HIV Epidemic (SAFE), which established a framework to improve the health of persons living with HIV and preventing transmission of the virus to others (Jansen, Holtgrave, Valdiserri, Shepherd, & Gyle, 2001). Two years later in 2003, CDC implemented the Advancing HIV Prevention (AHP) initiative which formally adopted prevention for the population living with HIV as a core element of a comprehensive HIV prevention program (CDC, 2003). This is significant because historically, most programs were designed for persons who were at risk of contracting HIV/AIDS.

The Joint United Nations Program on HIV/AIDS (UNAIDS) stated that at the end of 2005 an estimated 40.3 million people were living with HIV/AIDS worldwide (UNAIDS, 2005). The following year, more than 1 million persons were reported living with HIV/AIDS in the United States with an estimated 40,000 new cases of HIV expected to occur (CDC, 2006).

The continued search for the origin of HIV/AIDS is critical in preventing the spread of this disease and stopping this deadly pandemic. The disease cannot be cured, but it can be prevented (Be A Face for Change, 1998). Former U.S. Surgeon General Everett Koop stated that education is our best weapon; actually it is our only weapon. We must educate everyone about the disease so each person can take responsibility to stop the spread of this disease (Stine, 2005). It is extremely important for schools to take the lead in educating youth to bring the HIV/AIDS epidemic under control.

Children and Adolescents at Risk of Becoming Human Immunodeficiency Virus Infected

Half of all new infections in the United States occur among individuals under the age of 25. This accounts for 20,000 new cases of HIV positive children, adolescents, and young adults each year or two new HIV cases in this population every hour (AIDS Action Council, 2001). Since HIV infection is closely associated with one's behavior, concerns regarding adolescent risk behavior play a major role in reducing HIV infection among the school age population. Those participating in unprotected sexual activity or injecting drugs put themselves at increased risk for contracting HIV.

The CDC conducts a biennial national survey known as the Youth Risk Behavior Surveillance (YRBS) which uses independent, three-stage cluster sampling to obtain cross-sectional data which represents public and private school students in grades 9 through 12. While not all states participate in the survey, it has been determined to be representative of all 50 states and the District of Columbia. The sample size of these surveys has ranged from 10,904 to 16,296. This corresponded to a 60% to 70% response rate. Students anonymously complete questions regarding their sexual activity and drug use. Specific questions include whether they have had sexual intercourse, have engaged in sexual intercourse with multiple partners during their lifetime, the frequency of sexual intercourse during the past three months, and use of condoms during last sexual intercourse. The survey also asked students to indicate if they had ever used a needle to inject illegal drugs. A 14 year (1991-2005) longitudinal analysis of the survey indicated a 13% decrease in sexual experiences among high school students. There was also a decrease of 24% in the number of students reporting having had multiple sex partners (4

or more) during their lifetime. High school students reported an increase of condom use by 36% during this time period. There was no significant change in interjection-drug use. This statistic remained constant at less than 4% injecting illegal drugs (Brener, Kann, Lowry, Wechsler, & Romero, 2006).

While the improvement in reducing risk behavior as reported by the YRBS is encouraging, the increase in HIV infection among school age children remains a challenge. Nearly 47% of high school students reported having had sexual intercourse, and 37% had not used a condom during their last sexual intercourse. Higher levels of risk behavior were found when gender and race were used to select a population. Nearly 75% of Black males and 58% of Hispanic males reported having had sexual intercourse. This was also true for female students with 61% Black females and 44% Hispanic females reporting having had sexual intercourse. The overall prevalence rate of having sexual intercourse was nearly 68% among Black students, 51% among Hispanic students, and 43% among White students. Sixteen percent of males reported having had sexual intercourse with multiple partners (4 or more) compared to 12% of females. The overall prevalence of having multiple sex partners was higher among Black students than Hispanic or White students. The survey found that more males used a condom during their last sexual intercourse (70%) compared to females (nearly 56%) (YRBS, 2006).

The increase in HIV infection among adolescents has been attributed to the feelings of being invincible that are often experienced during this time of life. Some question whether providing knowledge alone can convince adolescents to not become engaged in risk behaviors as the idea that they personally could become a victim is often difficult for them to perceive (Dawson, et al., 2001). Youth are more vulnerable to HIV

infection because of their age, biological development, and emotional development (Kaiser, 2004). Men may feel that having sexual intercourse with young females is safer because they are less likely to be sexually experienced and therefore, are less likely to be HIV infected. Young females are infected on an average, 10 years earlier than males (Kiragu, 2001). In addition, those who are newly infected with HIV are more infectious (Fan, Conner, & Villarreal, 2004).

While adolescents' vulnerability to contracting the disease has been readily identified, perhaps the most ignored population is young children whose HIV infection is a result of another's behavior. In 2002, the United Nations reported that half of the persons living with HIV worldwide were women (UNAIDS, 2002). This results in children being born who acquire HIV infection perinatally. The CDC reports that there are at least 10,000 children living with HIV in North America and hundreds of new infections occurring each year. Because of advancement in diagnosis and treatment, these children are living longer. Seventy-five percent are living at age five with the mean survival rate of 9.4 years. There is also the probability that there are children living who have not yet been diagnosed, have no reported symptoms, or have not received proper medical care to make a diagnosis. Children with HIV typically require special education services due to an increase in learning difficulties, behavioral and emotional problems, and medical care. As the disease progresses, the need for the child to be absent can result in lower academic performance and the possibility of becoming isolated from one's peer group (Wishnietsky, 1996). Young children who are at risk of being HIV positive most likely have family members who are HIV positive. This puts the child in an environment in which he/she is likely to experience the severe illness or death of a family member.

This creates more difficulties for a child to maintain a stable and secure environment (Franks, Miller, Wolff, & Landry, 2004). This situation is particularly disturbing among the minority population. AIDS cases in African-American and Hispanic children account for 80% of all infected children less than 13 years old (CDC, 2002).

The Role of the Parents and Families

A critical component in addressing the HIV/AIDS epidemic among children and youth is to assist parents in developing skills that have been noted to reduce the chances of youth participating in risk behaviors. Some of the most important factors that have been found to prevent youth from participating in unhealthy behaviors, delinquency, and drug use were identified as having a positive parent-child relationship, parental disapproval of inappropriate behaviors, and parental monitoring (Coombs, Paulson, & Richardson, 1991). Establishing a positive relationship with their children during infancy and continuing through adolescence has been associated with strong protective factors and lower risk behaviors in youth. One study found approximately half of adolescents report a "great" relationship with their mothers and 29% report the same with their fathers. Only about 18% of the students reported a "great" relationship with both parents. The research indicates the greatest significance related to lower risk behavior of youth occurs when a "great" relationship is established with both parents. With respect to the young age of onset of risk behaviors, programs to encourage parent-child relationships should center on developmental strategies and begin during infancy (McBride, Freier, Hopkins, Babikian, Richardson, Helm, Boward, Marshak, & Sector Health Care Affairs, 2005).

The importance of parent-adolescent communication that includes a broad-range of topics has been identified in protecting youth from sexual risk behaviors. The perception of positive communications with their mothers delays the onset of early sexual activity (O'Sullivan, Jaramillo, Moreau, & Meyer-Bahlburg, 1999). Open and positive parent-adolescent communication that is bi-directional, including both good listening and speaking, has a greater impact on their child's behavior (Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Whitaker, Miller, May, & Liven, 1999). Parent-adolescent discussions that extend beyond the objective facts to the emotional aspects and issues are more likely to result in adolescents disclosing their HIV status (Parsons, Butler, Kocik, Norman, & Nuss, 1998). This is important to reduce the risk of HIV transmission and is significant in secondary prevention in stopping the infection from progressing to AIDS.

Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome Education and Prevention

The role of education in sexual health promotion and HIV/AIDS prevention has been widely acknowledged with evidence that youth who receive HIV/AIDS and sex education are less likely to engage in sexual activity (Jemmott, Jemmott, & Fong, 1992; World Bank, 2002). Teaching adolescents is a complicated and difficult task especially in topics that are sensitive and personal. Teachers have been identified as the main key to success of school based HIV/AIDS and sex education programs (Boscarino & DiClemente, 1996; Dawson, Chunis, Smith, & Carboni, 2001). Equipping school personnel with the knowledge and skills to effectively teach sensitive topics requires specialized and effective training (Schaalma, Abraham, Gillmore, Kok, 2004). National

and state health goals and objectives have been established to help guide local school districts and communities toward a healthier nation.

Healthy People 2010 is a framework of national health objectives designed to identify the most significant preventable threats to health and establishes national goals to reduce these threats. *Healthy People 2010* builds on initiatives of the past two decades. The 1979 Surgeon General's Report, *Healthy People*, and *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* both established national health objectives and served as the basis for the development of state education plans. *Healthy People 2010* was developed through a broad consultation process, built on the best scientific knowledge and designed to measure programs over time. The 28 focus areas of *Healthy People 2010* were developed by leading federal agencies with the most relevant scientific expertise. The Healthy People Consortium is an alliance of more than 350 national membership organizations and 250 state health, mental health, substance abuse, and environmental agencies. Additionally, through a series of regional and national meetings and an interactive web site, more than 11,000 public comments on the draft objectives were received. The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010 also provided leadership and advice in the development of national health objectives. The significance of HIV/AIDS as a major health concern is identified by *Healthy People 2010* objective 7-2 specific to HIV/AIDS education for school age children. The specific objective 7-2 targets the increase in the number of schools providing comprehensive

school health education related to HIV/AIDS and STD infection from the baseline of 65% to the target in 2010 of 90%.

Objective 7-2 states:

> Increase the proportion of middle, junior high, and senior high schools that provide comprehensive school health education to prevent health problems in the following areas: unintentional injury; violence; suicide; tobacco use and addiction; alcohol or other drug use; unintended pregnancy; HIV/AIDS, and STD infection; unhealthy dietary patterns; inadequate physical activity; and environmental health.

Teacher preparation programs are incorporating HIV/AIDS prevention as part of teacher education. Standard four of the National Council for Accreditation of Teacher Education (NCATE) recognizes that adequate teacher preparation, which includes knowledge, skills, and dispositions to effectively help students learn, requires that teacher education candidates have extensive and substantive experiences to address the issues of diversity that affect teaching and student learning (National Council for Accreditation of Teacher Education, 2002). The goal of this NCATE standard is to prepare teachers to implement effective teaching practices that emphasize a sense of fairness toward all children regardless of the many difficulties that the students may face. Teachers should learn about exceptionalities, inclusion, and gender differences and their impact on students' learning. Although seldom considered in this light, HIV/AIDS comprise a prominent diversity issue due to gender equity, prejudice, discrimination, and poverty (NCATE, 2002). As teachers become better informed about HIV/AIDS, they will acquire important skills that allow them to discriminate myth from fact and examine

personal prejudices, attitudes, and values necessary in developing tolerance for people and issues of diversity.

School Personnel's Confidence Level Toward Educating Students about Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

A study by Richter in 1997 found that the confidence levels of educators teaching HIV/AIDS in schools was deficient. Specific areas educators were found to be lacking in confidence were: (1) 46.2% felt they did not know how to help students develop skills to refrain from or delay engaging in sexual intercourse; (2) 39.8% did not feel that they could explain to students at an appropriate age how a condom should be used; (3) 45.3% of the teachers did not feel they could impart skills to help students refrain from drug injecting behaviors; and, (4) 32.9% felt they could not influence the negative attitudes of students toward people infected with HIV/AIDS (Richter, 1997).

At the secondary level teachers were required to address adolescent risk behaviors such as drug use and unprotected sex. Teachers were called upon to provide newly learned information and lead discussions on difficult topics. Many felt uncomfortable and unprepared to teach sensitive material, while some in the community reacted with anger and accusation that teachers were discussing inappropriate topics in their classrooms (Glenister, Castigha, Kanski, & Haughey, 1990). Many teachers who felt they had sufficient knowledge were not confident discussing issues related to transmission of HIV with their students especially topics such as safer sex and homosexuality (Remfedi, 1993). While most states mandated HIV/AIDS education, a major concern was whether teachers were adequately prepared to present HIV/AIDS

information and lead discussions about sensitive information students needed to protect themselves against the disease (Brook, 1994).

School Personnel's Knowledge of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

On average, teachers receive six hours of formal training on HIV/AIDS (Glenister, Castiglia, Kanski, & Haughey, 1990) and in states with mandated HIV/AIDS requirements, only one-third of teachers completed any in-service training on the topic in the two years prior to the study (MMWR, 1996). In a more recent study, the percentage of teachers who were fearful of having HIV positive children in their classrooms had dropped from 44% to 10%. In this same study, teachers noted the desire to have more specified training and be better equipped to teach HIV/AIDS education. While they felt "somewhat prepared" to teach this area, most indicated they were self-taught and needed more opportunity for quality training. These results confirm a need for increased emphasis on teacher pre-service and in-service training for educators. Students will often confide in trusted school personnel, regardless of their position, therefore all personnel not just health educators should receive HIV/AIDS training (Dawson, et al., 2001).

Studies conducted in the 1980s and 1990s clearly focused on the effects of HIV/AIDS education on adolescents and high school personnel with few researching the effect HIV/AIDS in the elementary school or the level of training provided to elementary staff. In a 1992 study 40% of the school districts that required HIV/AIDS instruction provided no in-service training. HIV/AIDS education must be centered on teaching children at an early age about the disease with emphasis on preventing it. Focusing on

secondary schools to provide the majority of education and prevention curriculum is starting too late (Franks, Mille, Wolff, & Landry, 2004).

School Personnel's Attitudes and Comfort Level Discussing Sensitive Issues

Besides being knowledgeable, teacher attitude and comfort level in teaching HIV/AIDS plays a major part in effective HIV/AIDS education. Many studies that evaluated teacher behaviors and attitudes were conducted in the late 1980s or early 1990s. One study that used college education students as the subjects, found that 44% were fearful of the idea of teaching HIV/AIDS education. This same study also found 20% believed it should be their right to refuse to teach an HIV positive child (Ballard, White, & Glascoff, 1990). A national sample of teachers surveyed in the mid 1990s found that 15% believed an HIV positive child should not be permitted to attend school. Twenty-two percent believed HIV positive children should be taught in a limited environment as to not expose other children to the virus (Brucker & Hall, 1996).

In 1994 Gingis and Basen-Engquist found more than half of all HIV/AIDS education teachers surveyed were comfortable teaching the following areas: abstinence, HIV/AIDS virus transmission, intravenous drug use, monogamy, and condom use. These same educators felt unprepared and uncomfortable teaching area such as counseling and testing services, compassion for HIV/AIDS infected individuals, homosexuality, and the relationship between drug use and sexual behaviors. School personnel are less comfortable with issues that are perceived as ethical topics and more confident and comfortable with strictly information or facts. This study also reported the teaching methods included films and videos 87% of the time, followed by lecture and discussion

(47%), and involving community agencies and awareness 34% of the time. Less than one third of all the teachers who used guest speakers were least comfortable using role plays, peer educators, peer resistance, problem solving, or decision making as part of their teaching methods (Gingis & Basen-Engquist, 1994).

Teachers who communicate to students that they are endorsed, recognized, and acknowledged as valuable individuals, the more likely students will perceive their teachers as trustworthy and earn their respect and thus be more successful in attempts to influence their students (Turman & Schrodt, 2006). HIV/AIDS education must extend beyond basic facts and knowledge to become effective prevention. In order to influence student risk behaviors in a positive manner, school personnel must establish trust and respect in the student-teacher relationship. Attitudes of discrimination and prejudice devalue and negate student-teacher rapport and should not be under estimated as a factor in educational effectiveness. Emphasis on identifying school personnel who have a good rapport with students is a priority since HIV/AIDS prevention programs are found to be more effective when student-teacher relationships are open and trusting (Ahmed, Flisher, Mathews, Jansen, Mukoma, & Schaalma, 2006).

School Personnel Training for Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

Preventing HIV transmission is the major defense against AIDS, and education is recognized as the key to prevention and most effective beginning at an early age (Ballard, White, & Glascoff, 1990). Supporters of school-based AIDS/HIV education point out that elementary and secondary schools have the opportunity to educate approximately 90% of the youth about HIV infection (Black & Jones, 1988). Studies have shown that

HIV/AIDS education programs can increase a student's knowledge and tolerance and influence subsequent behavior (Kirby, Short, Collins, Rugg, Dolb, Howard, Miller, Sonenstein, & Zabin, 1994). The importance of providing prevention and education at an early age was also addressed at a global level by the United Nations General Assembly Special Session on HIV/AIDS in 2001. The group set the following goal: by 2005, ensure that at least 90% and by 2010 at least 95% of adolescents have access to the information and education to develop the necessary skills to reduce the risk of HIV infection (Young People, 2004).

Preparing school personnel to deal with HIV/AIDS in schools is a challenging and complex problem. In addition to proper HIV trainings that provide update and accurate information, school personnel also need to know the practical steps they can take to prevent the spread of HIV infection in their schools and deal with the social and emotional issues inherent with this epidemic (Franks, Miller, Wolfe, & Landry, 2004). In 1988 a study by Paulk & Helge on 109 teacher training universities, 62% did not offer HIV education courses as part of their preparation program (Paulk & Helge, 1988). HIV/AIDS education should be included as part of a comprehensive health education course at the college level and updated on a regular basis once employed by a school district (American Academy of Pediatrics, 1998). In addition, it has been recommended that inservice programs for school personnel on HIV/AIDS be provided by the local school district as part of their professional development plan.

Many training materials and models such as *Teacher Educator's Resource Guide to HIV/AIDS Prevention* (American Association of Colleges for Teacher Education, 1998, 2002), *Managing Chronic Illness in the Classroom (*Wishnietsky & Wishnietsky,

1996), *Preparing Schools for Children with HIV* (University of Colorado Health Sciences Center School of Nursing, 1994), and *HIV Prevention Strategic Plan Through 2005* (CDC, 2001) have been developed and implemented in schools. School personnel must be properly trained to use the information and curriculums to be effective. Kerr, Allensworth, and Gayle (1989) found that 55% of 2,855 school employees surveyed indicated the need for in-service programs on HIV/AIDS in their school districts. In the same study only 42% claim to have had specific instruction to provide accurate and current information about this disease to students (Kerr, Allensworth, & Gayle, 1989).

School personnel need to be aware of their own and others' attitudes about HIV/AIDS. Training programs must provide the opportunity for assessment of positive or negative attitudes about people with HIV/AIDS, how they feel about teaching children HIV infected, and other ethical issues related to this epidemic. A study reported that negative attitudes based on inadequate knowledge can be addressed through training. Attitudes based on discrimination or prejudices should be acknowledged. In regards to more positive attitudes about children with HIV/AIDS in school, an important factor is the teacher's confidence in his/her ability to handle situations appropriately (Franks, Miller, Wolfe, & Landry, 2004). This study supports the HIV/AIDS training program designed to address the social, psychological, and environmental factors of the disease as well as accurate and current information.

Broadly accessible HIV/AIDS training had a positive impact on instructional practices. Training attendance resulted in more comprehensive HIV instruction, broader topic coverage, and instruction that addressed students' skills, not merely knowledge and

attitudes (Lohrmann, Blake, Collins, Windsor, & Parrillo, 2001). The same study reported that teachers who attended recent training initiated skills based instruction shown effective in reducing HIV risks behavior. The need for additional HIV/AIDS trainings was significantly noted as a critical health topic. Educator are not adequately prepared to present quality HIV/AIDS curriculums to their students and training opportunities for school personnel on this topic are lacking (Worrell, 2001).

Summary

In recent years the number of AIDS cases in the 13-24 age group has declined, however the number of HIV infections has increased for this age group. With no cure for HIV/AIDS in sight, the key to stop the spread of this infection is through education. Adolescents often do not present with signs or symptoms that they are HIV infected for ten years. During this period they infect others not knowing they are HIV infected. The cycle continues and the epidemic will cause the nation to face the staggering human and economic costs. HIV/AIDS prevention and education targeted toward youth are necessary to mitigate the impact of the HIV/AIDS pandemic. Section 4.29 of the Pennsylvania State Code requires the public schools to provide HIV/AIDS education to all students at the elementary, middle, and high school levels. Because 95% of all United States youth aged 5-17 are enrolled in schools, HIV/AIDS education can be an effective method of prevention. Providing quality HIV/AIDS education starts with properly trained school personnel demonstrating confidence, comfort, positive attitudes and current knowledge in this area.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine the training effects on school personnel's knowledge, attitudes, comfort, and confidence levels toward educating students about HIV/AIDS in Pennsylvania. Specifically the study examined school personnel's confidence in teaching HIV/AIDS, comfort in dealing with sensitive issues associated with HIV/AIDS education, attitudes toward people with HIV/AIDS, and knowledge of current HIV/AIDS prevalence rates, virus transmission, and treatment procedures. Descriptions of the participants and subject selection, research instrument, survey procedures, research design, and methods of analysis are discussed in this chapter.

The subjects included in this study were part of the "HIV Update: A Workshop for Educators" sponsored by the Pennsylvania Department of Education. These trainings were made available to school personnel across the state of Pennsylvania over a three year period. The trainings began in 2003 and extended to 2006. Data were gathered from pre and post tests and included measures that targeted subjects' knowledge, attitudes, comfort levels, and confidence levels associated with HIV/AIDS. The research was supported with monies provided by the Centers for Disease Control in a grant awarded to Christine Black, Ph.D., Project Director.

Sampling Frame

The subjects included in the three year study were teachers, counselors, school nurses, and administrators from 16 of the 29 Intermediate Units that divide Pennsylvania's educational system into geographical regions. This represented 47 of the

commonwealth's 67 counties and 345 of the 501 school districts. Each school district is under the authority of the Commonwealth's General Assembly and a locally elected school board. School districts receive monies through state and federal funding which subsidize a local tax base. Leadership within each school district is provided by the superintendent of schools who oversees school principals as they direct the everyday operation of an assigned school building. The number of administrators within each school district varies according to enrollment and geographical size of the district (Pennsylvania Department of Education, 2007).

The districts represented in this study included rural, suburban, and urban schools. While all Intermediate Units were contacted, 12 chose not to participate. Another Intermediate Unit in Eastern Pennsylvania scheduled the training, but it was cancelled due to low enrollment. Nonparticipants included school personnel from the two largest urban school districts in Pennsylvania, Philadelphia and Pittsburgh. Two other intermediate units in Western Pennsylvania also did not participate as well as four in the east central part of the state, one in the East, and five in Southeastern Pennsylvania.

School personnel were also provided opportunities to participate through workshops at two state conferences. This included the Pennsylvania State Association for Health, Physical Education, Recreation, and Dance. This conference is held annually in alternating geographical locations. The year of the data collection, the conference was held in Southwestern Pennsylvania at Seven Springs Resort. This conference attracts health and physical educators from around the state. Others chose to participate in a workshop held at the Keystone Health Promotion Conference in Southeastern Pennsylvania in the Harrisburg area. This conference is attended by health educators,

school nurses, and administrators interested in current health education issues. Both of these conferences took place during the second year of data collection. The HIV Update Training for School Personnel was part of a slate of workshops offered during the week long conferences.

Sample

The sample included 376 school personnel representing 44 counties from across Pennsylvania. The majority of the participants were teachers accounting for 62.8% of the total sample. Nurses were the second largest group making up 31.7%. Few administrators attended the workshops with only 1.5% identified. The "other" group consisted of 4.1% of total sample. This included school counselors and school psychologists. Experience working in schools ranged from beginning personnel to those with 40 years of experience. School personnel with five years or less made up the largest group of participants comprising 22.3% of the total group. Those in the 6 to 10 years represented 19.6% and 11 to 15 years made up 16.7% of the total participants. Other years of experience ranges were 21 to 25 years comprised 10.3%, 26 to 30 years at 9.1%, and 31 to 35 years represented 10.3 of the total sample population. The group between 16 and 20 years of experience accounted for 11.1% of the total group. The smallest group was those individuals who had between 36 to 40 years of experience totaling only .6%. The average number of years worked in the school setting was 15.5. The participants were mostly women who outnumbered men by a ratio of 3 to 1. Fifty-nine percent of the participants indicated they typically teach a course or unit on HIV/AIDS. Forty-five percent reported never having any formal HIV/AIDS curricula training. Participants were released from duties during the school day to attend the training.

The convenience sample was taken from an existing group of individuals who had responded to a notification by their respective Intermediate Units that a training workshop titled HIV-Update: A Workshop for Educators would be held at selected sites throughout Pennsylvania. Enrollment in the workshop was on a first come, first serve basis. Workshop attendance varied and ranged from a small group of 8 to a large group of 58. Each workshop lasted 6 hours and provided information and experiential learning activities that included a social history, epidemiology, medical aspects, and educational aspects of HIV disease. The workshop also provided an overview of the Pennsylvania state standards that relate to teaching HIV/AIDS in the schools. Participants were also provided with several resources to enhance their teaching performance in the classroom.

Research Design

The basic design of this three year study was quasi-experimental. Selection of subjects was limited to those who worked in an Intermediate Unit that chose to participate in the trainings. It was also limited to those school districts that made the information about the trainings available to their personnel and provided an opportunity for them to attend. Attendees to the trainings became subjects for the study by agreeing to complete a pre-test and post-test. These surveys included items that were grouped in the following manner: those identified as measuring confidence in teaching HIV/AIDS, those that indicated comfort in dealing with sensitive issues associated with HIV/AIDS education, those that assessed attitudes toward people with HIV/AIDS, and those that tested knowledge of current HIV/AIDS prevalence rates, virus transmission, and treatment procedures. Testing was completed to determine changes in the variables that occurred from the beginning to the end of the trainings.

Subjects were also divided into four groups that included teachers, administrators, nurses, and others. Included in the other group were school counselors and psychologists. Testing was completed to determine differences among groups' responses to comfort, confidence, attitudes, and knowledge of HIV/AIDS education. Responses were compared at both pre-test and post-test.

The three phases of transition were matched with a component of the data collection and HIV/AIDS training. The pre-test was used to determine misinformation, prejudice, and misconceptions identified by Bridges (2003) as characteristics of those in the first phase of transition. The HIV Update Training, considered the second phase of transition, consisted of experiential learning presentation and activities for school personnel that provided current information in an attempt to make participants more knowledgeable regarding HIV/AIDS. It is theorized that providing individuals with factual knowledge has a positive effect on the attitudes, confidence, and comfort levels when teaching HIV/AIDS. The post-test was identified as the third phase of transition. With increased knowledge, a more positive attitude, and increased confidence and comfort levels in teaching HIV/AIDS, school personnel will be more prepared to take leadership roles in the fight against HIV/AIDS. Innovative and consistent teaching result from assuring school personnel are adequately prepared to provide direction through effective leadership.

Research Instrument

Permission for conducting pre- and post-testing during each training workshop was granted after a review by the Indiana University of Pennsylvania's Institutional Review Board. At the beginning of each workshop, subjects were given an explanation

about the purpose and procedures of the data collection. They were assured that surveys would not be linked in any way to the participant's identity and that participation was voluntary. Once this had been outlined for the participants, the researcher/faculty member in charge of the training distributed and collected the informed consent form. All participants at the trainings agreed to complete the surveys as requested. White envelopes containing the pre-test and the post-test were then distributed to each participant. They were asked to complete the pre-test at the beginning of the training and place it back in the envelope. At the conclusion of the day, they were asked to retrieve the post-test from the envelope, complete it, and return it to the envelope. The envelope was then sealed by the participant before handing it to the faculty member. Each pre-test and post-test had been previously coded to assure proper matching.

The survey instrument was developed from materials provided by the Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control (CDC). Guidelines and eight sample assessment forms were provided by the CDC through a booklet entitled *Evaluating HIV Staff Development Programs*. It was designed to assist those who provide HIV staff development programs in evaluating the quality of the program. The booklet presents several assessment devices that may be used as they are or modified to meet the needs of individual programs. The project director chose to use the following four assessments with some modifications: *Instructional Confidence, Comfort on Sensitive Topics, Attitudes Toward People with HIV or AIDS, Knowledge of HIV and AIDS* (see Appendix B). Modifications were made to the knowledge instrument only. The survey was reviewed by three experts in the health education field and determined to have content

validity. For this research project Intermediate Unit 10 was randomly chosen as the pilot to determine if the instruments met the needs of the study. All Intermediate Units that had 20 or more participants were included in the random sampling procedure. A reliability coefficient of .808 was found using Cronbach's Alpha Reliability. The survey was broken into four subscales that matched the four assessment areas.

Instructional Confidence

A 10-item assessment instrument was used to determine participants' level of confidence in their abilities to provide an effective HIV/AIDS instructional program for their students. Items were scored on a 5-point scale with 1 being "Not at All Confident" to 5 being "Completely Confident." A total score for all 10 items was obtained for each educator with a range of 50 (indicating a high degree of confidence) to 10 (indicating a low degree of confidence). The reliability for this subscale in the present study was determined to be .938.

Comfort with Sensitive Topics

During instructional units in HIV/AIDS, sensitive topics relating to intravenous drug use and sexual behaviors will be part of the curriculum. It is important that educators handle this information in a comfortable manner in order to assure students likewise are comfortable discussing this topic in their classrooms. A 10-item instrument was used to determine educators' comfort levels when discussing HIV/AIDS related topics. They were asked to indicate their comfort level on a 5-point scale with 5 being "completely comfortable" to 1 being "not comfortable at all." Scores on the 10 items were totaled with a range being from 50 (indicating the highest degree of comfort) to 10

(indicating the lowest degree of comfort). An item by item analysis was conducted as some topics related to HIV/AIDS education are considered more sensitive than others. For example, discussing "male and female genitalia" is thought to produce more discomfort than discussing "injected drug use." The item by item analysis assisted in determining specific areas that caused more discomfort for the educator. The reliability for this subscale in the present study was determined to be .968.

Attitudes Toward People with Human Immunodeficiency Virus or Acquired Immunodeficiency Syndrome

People who are HIV infected or have AIDS are often stigmatized by intolerant people. Attitude has been found to be a predisposing factor of behavior. Therefore, those who have an intolerant attitude toward those with HIV/AIDS display intolerant behavior as well. Changing negative attitudes toward those with HIV/AIDS is a key factor in developing effective educational programs in schools. A 10-item instrument was used to measure the subjects' attitudes toward people with HIV or AIDS. They responded to a 5-point scale for each item. When the 10 items were totaled the scores ranged from 50 (indicating high acceptance of persons with HIV or AIDS) to 10 (indicating low acceptance of persons with HIV or AIDS). The reliability for this subscale was determined to be .825.

Knowledge of Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome

A 20-item instrument was used to determine participants' functional knowledge about HIV and AIDS. Questions were carefully selected to include only information that was necessary to reduce the risk of HIV transmission. More general information about HIV and AIDS was not included in the survey. The instrument served two purposes. It was used to determine the accuracy of the educators' knowledge about HIV and AIDS. It was also used to determine the educators' confidence in their knowledge about HIV and AIDS. When presented with the 20 statements, they were to determine if they were factual by choosing one of the following responses: "I am sure it's true; I think it's true; I don't know; I think it's false; I am sure it's false."

When scoring the instrument for knowledge, the respondent was given one point for items that were true if they answered "I am sure it's true" or "I think it's true." Otherwise they were given no points. If the item was false, they received one point if they answered "I think it's false" or "I am sure it's false." No points were given for any other response. The total points were then calculated with a possible range being from 0 points (no items correct) to 20 points (all items correct). An item by item analysis was conducted to determine those content areas that were missed most frequently and those that the group of subjects answered right as a whole.

This instrument could also be scored for confidence in having correct knowledge about HIV and AIDS. Responses were scored on a 5-point scale with the highest number of points being assigned when the individual correctly answered the question and had the highest degree of confidence ("I am sure it's true" or "I am sure it's false"). A response

indicating a lower degree of confidence ("I think it is true" or "I think it is false") was marked lower, and a response marked "I don't know" or incorrectly marked received the lowest points on the 5-point scale. Items marked "I don't know" received higher scores than an incorrect answer as it is considered more dangerous to relay incorrect information as factual knowledge than it is to understand one does not know. Scores were totaled for the 20-item knowledge instrument and ranged from 100 (all answers were correct with a high degree of confidence) to 25 (all answers were incorrect with a high degree of confidence). An item by item analysis was conducted to determine those content areas that indicated a need for more accurate information. The reliability for this subscale was determined to be .724.

Procedures

The HIV/AIDS training programs were provided throughout the commonwealth through a funded grant from the Centers for Disease Control which was awarded to the Pennsylvania Department of Education. Indiana University of Pennsylvania (IUP) was selected through a competitive selection process to develop and administer the trainings. The project director created the format for the training after researching current literature in the area of HIV/AIDS education. After outlining the content that should be included in a teacher update, the project director created a training manual that was distributed to all participants at the trainings. The manual included all PowerPoint slides that were used for instruction during the trainings. It also included selected articles to provide participants with the latest information regarding HIV/AIDS among the school age population. The book titled Aids Update (Stine, 2003) published by the CDC was given to each participant as well. The project director selected all videos, websites, activities,

discussion questions and debate topics to be included in the training. The amount of time spent on each area was determined by the project director and teaching faculty were instructed to remain on the suggested schedule.

The workshop was divided into two content areas that included a general background covering the epidemiological and medical aspects of HIV disease, and an HIV curriculum component that addressed important instructional issues. A segment of the training provided an opportunity for the participants to work with the Pennsylvania State Standards for Health Education that related to HIV/AIDS curriculum.

The format for each workshop included 6 hours of training. A "Lunch and Learn Activity" was designed to have participants watch a video while eating a catered lunch provided as part of the training. The morning topics included "The Epidemiology of the Disease" and the "Medical Aspects of HIV Disease." The medical aspects was broken into subtopics and included phases of infection, transmission modes, risks of infection, diagnosing HIV/AIDS, treatment and prevention, and psychosocial implications. The afternoon session focused on "HIV Curricula." Topics for this section of the workshop included "Overcoming Obstacles to Effective HIV Programs," "A Rationale for HIV Education: Children and Youth at Risk," "HIV in the Classroom: What Teachers Need to Know," and "Teaching Methods and Choosing Materials."

Nine faculty members were selected to serve as trainers for the HIV/AIDS update trainings. Eight of the members were health educators from the Department of Health and Physical Education at IUP. One was a faculty member in the Department of Nursing. The following year one more member from the Department of Health and Physical Education was added to the list of trainers. Before any of the programs began, a training

of the trainers was conducted by the project director. This training lasted for one day and provided time for all trainers to become familiar with the materials, the instructional delivery methods that were to be used, and the overall format of the training. Its purpose was to assure that there was consistency established for all trainings. All trainings were conducted by at least two faculty members. The project director was the only one who conducted some of the trainings as the lone trainer.

The packets containing the pre-test and post-test also included a Participant Satisfaction form. This form requested each participant to evaluate the workshop topics on the quality of the presentation. It also asked them to rate the quality of the workshop activities and the physical environment. Both of these sections provided a 3 point scale with excellent, satisfactory, and poor being the choices. An overall rating of the HIV Update Workshop was also requested with a 5 point scale being provided that ranged from excellent to poor. The data from this survey were not analyzed as part of this study.

Faculty members were responsible for passing out the informed consent form and the evaluation packets. They provided directions for completing the packets, making sure each packet was properly sealed, and returning them to the university. They were turned in to the project director who gave them to the project evaluator for creation of a database. All data have been stored in the office of the project evaluator over the past three years. The data continues to be considered as primary data since no formal analyses have been conducted and no publications have been submitted. Year One data have been presented in descriptive form at the 2006 American Alliance for Health, Physical Education, and Recreation National Conference.

Data Analysis

The study utilized a pre-test-post-test to determine training effects on school personnel's knowledge, attitudes, comfort, and confidence levels toward educating students about HIV/AIDS. T-tests were conducted to compare pre-test and post-test measures. Analysis of variance was used to determine differences in the responses of teachers, school nurses, administrators, and others identified as counselors and school psychologists. Bivariate regression analyses were conducted with knowledge representing the independent variable and confidence, comfort, and attitude representing the dependent variables. Linear regression analysis was conducted to determine if instructor knowledge could predict confidence, comfort and attitudes. Throughout the study a significance level of .05 was used. Demographic information was acquired at the conclusion of the pre-test. Descriptive statistics were used to explore selected descriptive characteristics of the sample. All data analyses were conducted using an SPSS software program.

CHAPTER IV

RESULTS OF DATA ANALYSIS

Introduction

The knowledge, attitude, confidence, and comfort levels of school personnel in Pennsylvania regarding HIV/AIDS and teaching this topic to school age children were determined and analyzed from data gathered over a three year period. The chapter was be divided into the following sections: (a) description of the sample; (b) analysis of pre- and post-testing data to determine changes in variables as a result of a one-day HIV training update; (c) comparison of knowledge, confidence, attitude, and comfort levels between teachers, school nurses, and other school personnel; (d) the effect of increasing knowledge on attitudes toward HIV infected individuals, confidence level in teaching HIV/AIDS education, and comfort level with sensitive topics; and, (e) identification of predictors of instructor confidence in teaching HIV sensitive material to school age children.

Description of the Sample

Sixteen trainings were held throughout the commonwealth of Pennsylvania to provide teachers, nurses, and other school personnel with updated information regarding HIV/AIDS education. Participants were asked to be part of the study and all agreed by completing a survey. While 376 participants were surveyed, 35 were excluded because of incomplete questionnaires. This was due to some being present at the beginning of the training when the pre-test was administered but unable to stay for the duration of the training. Therefore, they did not complete the post-test. Others arrived at the training

midday and only completed the post-test. The remaining 341 subjects were included in the analysis. As shown in Table 1, the majority (76.8%) of the subjects were females with 262 participating. Seventy-eight males (23.2%) also participated in the study. Most of the participants were either teachers (62.8% of total participants) or nurses (31.7% of total participants). Only five administrators attended the HIV Update Trainings (1.5% of total participants). School personnel listed as "other" included school counselors, school psychologists, and social workers. Their total number was 14 (4.1% of total participants). Most of the males who attended the training were teachers (91.1%). Females were more evenly divided between teachers (54.2%) and nurses (40.1%). Of the few administrators who attended the trainings, 60% were females and 40% were males. Females again outnumbered male participants in the "other" category 12 to 2.

Table 1

Occupation and Gender Description of Participants

			Occupation				
			Administrators	Teachers	Nurses	Other	Total
Gender	Females	Count	3	142	105	12	262
		% within Gender	1.1%	54.2%	40.1%	4.6%	100.0%
		% within Occupation	60.0%	66.4%	97.2%	85.7%	76.8%
		% of Total	.9%	41.6%	30.8%	3.5%	76.8%
	Males	Count	2	72	3	2	79
		% within Gender	2.5%	91.1%	3.8%	2.5%	100.0%
		% within Occupation	40.0%	33.6%	2.8%	14.3%	23.2%
		% of Total	.6%	21.1%	.9%	.6%	23.2%
Total		Count	5	214	108	14	341
		% within Gender	1.5%	62.8%	31.7%	4.1%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.5%	62.8%	31.7%	4.1%	100.0%

Table 2 provides an outline of the subjects' number of years in the educational setting. Those with the least amount of experience (1 to 5 years) accounted for the largest group of participants making up 22.3% of the sample. The majority of the sample (58.6%) had 15 or fewer years of experience. Those with the most experience (36 to 40 years) were the smallest group making up less than one percent of the sample.

Table 2

Subjects' Number of Years in Education

Number of Years in Education	Frequency	Percent
1 to 5	76	22.3
6 to 10	67	19.6
11 to 15	57	16.7
16 to 20	38	11.1
21 to 25	35	10.3
26 to 30	31	9.1
31 to 35	35	10.3
36 to 40	2	.6
Total	341	100.0

To help determine subjects' background in teaching HIV/AIDS education, they were asked if they had ever taught a unit on this topic or an entire course. Table 3 illustrates approximately one-half (50.4%) indicated they had taught an instructional unit on HIV/AIDS. None of the administrators and only one of those in the "other" category had taught such a unit. The majority of those who taught were teachers who made up 89% of respondents who indicated they had taught an HIV/AIDS unit. Nurses comprised the second largest group making up 10% of those who had experience teaching an HIV/AIDS unit.

Table 3

Experiences Teaching HIV/AIDS Unit

			Occupation				
			Administrators	Teachers	Nurses	Other	Total
Teach Unit	No	Count	5	61	90	13	169
		% within Teach Unit	3.0%	36.1%	53.3%	7.7%	100.0%
		% within Occupation	100.0%	28.5%	83.3%	92.9%	49.6%
		% of Total	1.5%	17.9%	26.4%	3.8%	49.6%
	Yes	Count	0	153	18	1	172
		% within Teach Unit	.0%	89.0%	10.5%	.6%	100.0%
		% within Occupation	.0%	71.5%	16.7%	7.1%	50.4%
		% of Total	.0%	44.9%	5.3%	.3%	50.4%
Total		Count	5	214	108	14	341
		% within Teach Unit	1.5%	62.8%	31.7%	4.1%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.5%	62.8%	31.7%	4.1%	100.0%

Table 4 provides information regarding the number of subjects who have taught an entire HIV/AIDS course. Only 44 teachers and 7 nurses had ever taught an entire course on HIV/AIDS. Subjects were only asked if they had taught a course on HIV/AIDS. They were not given a length of time that would be considered a "course." This could result in some courses being a full year of instruction, a semester, or a shorter period of time.

Table 4

Experiences Teaching HIV/AIDS Course

			Occupation				
			Administrators	Teachers	Nurses	Other	Total
Teach Course	No	Count	5	170	101	14	290
		% within Teach Course	1.7%	58.6%	34.8%	4.8%	100.0%
		% within Occupation	100.0%	79.4%	93.5%	100.0%	85.0%
		% of Total	1.5%	49.9%	29.6%	4.1%	85.0%
	Yes	Count	0	44	7	0	51
		% within Teach Course	.0%	86.3%	13.7%	.0%	100.0%
		% within Occupation	.0%	20.6%	6.5%	.0%	15.0%
		% of Total	.0%	12.9%	2.1%	.0%	15.0%
Total		Count	5	214	108	14	341
		% within Teach Unit	1.5%	62.8%	31.7%	4.1%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.5%	62.8%	31.7%	4.1%	100.0%

Subjects were asked to indicate if they had ever received any previous training on how to teach HIV/AIDS. As indicated in Table 5, two of the administrators (40%) had received training. Thirty-five percent of the "other" category had also received previous training. Half of the school nurses had been to a training before this HIV/AIDS update, and nearly 60% (59.3) of the teachers also had been previously trained to teach this topic.

Table 5

Subjects' Previous HIV/AIDS Training

			Occupation				
			Administrators	Teachers	Nurses	Other	Total
Previous Training	No	Count	3	87	54	9	153
		% within Pre. Training	2.0%	56.9%	35.3%	5.9%	100.0%
		% within Occupation	60.0%	40.7%	50.0%	63.3%	44.9%
		% of Total	.9%	25.5%	15.8%	2.6%	44.9%
	Yes	Count	2	127	54	5	188
		% within Pre. Training	1.1%	67.6%	28.7%	2.7%	100.0%
		% within Occupation	40.0%	59.3%	50.0%	35.7%	55.1%
		% of Total	.6%	37.2%	15.8%	1.5%	55.1%
Total		Count	5	214	108	14	341
		% within Pre. Training	1.5%	62.8%	31.7%	4.1%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.5%	62.8%	31.7%	4.1%	100.0%

Analysis of Pre-Test and Post-Test

Surveys were administered to determine how knowledgeable school personnel were in regards to HIV/AIDS information. They were also asked items that measured their level of comfort with the sensitive topics associated with teaching HIV/AIDS and how confident they felt as an instructor of this topic. Attitudes toward people with HIV

and AIDS were also measured through the survey. The effects of the HIV Update Training on these four variables were compared through paired-sample t tests.

Effects of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome Update Training on Confidence Levels

School personnel were asked a set of ten questions to determine their confidence in being able to effectively provide HIV/AIDS education to students. Table 6 provides the results of their perceived confidence levels before and after the training session. On a 50 point scale (with 50 indicating a high degree of confidence and 10 indicating a low level of confidence), the subjects' mean score in the pre-test was 36.04 (*sd* = 6.429). Their average score increased to 42.87 (*sd* = 5.269) on the post test.

Table 6

Comparison of Confidence Level Before and After Training

	Mean	N	Standard Deviation	Standard Error Mean
Confidence Pre-Test	36.04	330	6.429	.354
Confidence Post-Test	42.87	330	5.269	.290

A paired-samples *t* test was conducted to compare the mean pre-test scores to the mean post test scores. As illustrated in Table 7, the significance test shows there is a significant difference between the pre-test and post-test in terms of instruction confidence ($t(329) = -21.445$, $p<.001$). The mean difference shows the post-test has a higher mean indicating a higher level of confidence at the conclusion of the training.

Table 7

A Comparison of the Mean Pre-Test and Post-Test Confidence Scores

	Paired Differences							
	Mean	Standard Deviation	Standard Error Mean	95 Percent Confidence Interval of the Difference Upper	Lower	t	df	Sig. (2-tailed)
Confidence Pre-Test & Post-Test	-6.824	5.781	.318	-7.450	-6.198	-21.445	329	.000***

Mean scores and standard deviations were computed for each question on the confidence survey. Table 8 provides a comparison of pre-test and post-test results for individual confidence items. Being able to discuss high-risk drug behaviors with students was the item that received the highest mean score in the pre-test (M = 3.89, *sd* = .849). Being able to obtain up-to-date information about HIV/AIDS received the highest mean score in the post test (M = 4.62, *sd* = .539). Explaining how to use a condom to students

received the lowest mean score in both the pre-test (M = 3.34, *sd* = 1.115) and in the post test (M = 3.88, *sd* = 1.028).

Table 8

Comparison of Item Pre-Test and Post-Test Scores

	Pre-Test		Post-Test	
How confident are you that you can:	Mean	Standard Deviation	Mean	Standard Deviation
Obtain up-to-date information about HIV/AIDS	3.85	.859	4.62	.539
Present accurate information about HIV/AIDS to students	3.63	.902	4.49	.622
Answer parents' questions about HIV education	3.44	.909	4.33	.663
Discuss high-risk sexual behavior with students	3.82	1.000	4.38	.722
Help students develop skills to postpone sexual behavior	3.41	.917	4.09	.790
Explain to students how a condom should be used	3.34	1.115	3.88	1.028
Discuss high-risk drug behaviors with students	3.89	.849	4.38	.683
Help students refrain from injecting drugs	3.45	.903	4.05	.834
Increase students' tolerance toward people with AIDS	3.60	.841	4.33	.723
Help students reach more accurate perceptions of their own vulnerability to HIV infection	3.62	.789	4.38	.658

Note. Scores based on five point Likert with five indicating "completely confident" and One indicating "not at all confident."

Table 9 provides split pre-test and post-test scores for each item on the confidence survey according to gender. A score of 5 indicated "completely confident" and 1 indicated "not at all confident." Results from the survey given before the training indicated being most confident discussing high-risk drug behaviors with students had the highest mean for both women (M = 3.88, *sd* = .929) and men (M = 4, *sd* = .906). Pre-test results showed the lowest confidence level mean score for women was explaining to students how to use a condom (M = 3.36, *sd* = 1.110). The lowest confidence level item for men was helping students develop skills they needed to postpone sexual involvement (M = 3.25, *sd* = .980). Being confident in one's ability to obtain up-to-date information about HIV/AIDS was the item that received the highest mean score in the post-test for confidence levels for both women (M = 4.61, *sd* = .534) and men (M = 4.64, *sd* = .560). The item to receive the lowest mean score on the post-test w was also the same for both women and men. As was the case on the pre-test, the lowest mean for women (M = 3.90, *sd* = 1.008) on the survey at the conclusion of the training remained confidence in explaining to students how to use a condom. This same item likewise received the lowest mean score among the men (M = 3.81, *sd* = 1.094).

Table 9

Comparison of Individual Confident Items on Pre-Test and Post-Test by Gender

How Confident Are You That You Can	Women Pre-Test		Women Post-Test		Men Pre-Test		Men Post-Test	
	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
Obtain up-to-date information about HIV/AIDS	3.82	.878	4.61	.534	3.94	.790	4.64	.560
Present accurate information about HIV/ AIDS to students	3.60	.892	4.50	.612	3.72	.933	4.45	.658
Answer parents' questions about HIV education	3.43	.913	4.34	.670	3.46	.903	4.28	.643
Discuss high-risk sexual behavior with students	3.88	.929	4.40	.693	3.62	1.191	4.31	.811
Help students develop skills to postpone sexual behavior	3.46	.893	4.12	.786	3.25	.980	3.96	.797
Explain to students how a condom should be used	3.36	1.110	3.90	1.008	3.28	1.138	3.81	1.094
Discuss high-risk drug behaviors with students	3.85	.830	4.34	.698	4.00	.906	4.50	.619
Help students refrain from injecting drugs	3.45	.884	4.05	.824	3.46	.971	4.06	.873
Increase students' tolerance toward people with AIDS	3.62	.831	4.37	.677	3.53	.875	4.18	.849
Help students reach more accurate perceptions of their own vulnerability to HIV infection	3.62	.795	4.39	.645	3.62	.773	4.36	.702

Table 10 provides comparison of means of the total confidence survey for both pre-test and post-tests. A total score of 50 indicated a subject was "completely confident" and a total score of 10 denoted a subject was "not at all confident." Pre-test scores for women resulted in a mean of 36.05 (*sd* = 6.465). The mean for the men's pre-test scores was 35.73 (*sd* = 6.556). Post-test mean scores on the confidence survey were 43.00 (*sd* = 5.287) for women and 42.55 (*sd* = 5.263) for men.

Table 10

Comparison of Women and Men's Mean Score on Confidence Survey

	Gender	N	Standard	Error	Mean
Total Confidence	Females	258	36.05	6.465	.402
Pre-Test	Males	78	35.73	6.556	.742
Total Confidence	Females	257	43.00	5.287	.330
Post-Test	Males	77	42.55	5.263	.600

Table 11 provides the results of an independent-samples t-test comparing the mean scores on the pre-test and post-test surveys for instructor confidence. No significant difference was found ($t(334) = .386$, $p > .05$) between the confidence scores of women and men subjects in the pre-test. An independent-samples *t* test was calculated to compare the mean scores of women and men on the 10-item post-test survey that measured instructor confidence. No significant difference was found ($t(332) = .668$, $p > .05$). The mean score for the women was not significantly different from the mean score for the men. The results of the post-test are also reported in Table 11.

Table 11

Independent Samples Test: Women and Men's Pre-Test and Post-Test Scores in Confidence

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Confidence Interval of the Difference Lower	Upper
Confidence Pre-Test	Equal Variances Assumed	.025	.874	.386	334	.700	.323	.838	1.325	1.972
Confidence Post-Test	Equal Variances Assumed	1.640	.201	.668	332	.504	.458	.686	-.891	1.808

Effects of Human Immunodeficiency Virus/

Acquired Immunodeficiency Syndrome Update

Training on Comfort Levels

A 10 item survey was administered to the participants to determine their level of comfort in discussing sensitive items with their students. As illustrated in Table 12, the mean comfort score on the survey given prior to the training was 40.52 (*sd* = 7.709). The mean score for comfort levels on the survey given at the conclusion of the training was 45.21 (*sd* = 5.698). The highest possible score on this instrument was 50 which indicated a high level of comfort when discussing sensitive topics with one's students. The lowest score was 10 indicating one was not comfortable at all talking with students about topics considered to be sensitive.

Table 12

Comparison of Comfort Levels Before and After Training

	Mean	N	Standard Deviation	Standard Error Mean
Comfort Pre-Test	40.52	335	7.709	.421
Comfort Post-Test	45.21	335	5.698	.311

A single-sample t test was conducted to compare the mean pre-test and post test scores for comfort levels. The results shown in Table 13 show there is a significant difference between the pre-test and post-test in terms of comfort with sensitive topics ($t(334) = -14.386$, $p < .001$). The mean difference shows the post-test has a high mean indicating subjects felt more comfortable talking with students about sensitive topics at the conclusion of the training.

Table 13

Comparison of Mean Pre-Test and Post-Test Comfort Level Scores

	Paired Differences							
	Mean	Standard Deviation	Standard Error Mean	95 Percent Confidence Interval of the Difference Upper	Lower	t	df	Sig. (2-tailed)
Comfort Pre-Test Comfort Post-Test	-4.693	5.970	.326	-5.334	-4.051	-14.386	334	.000***

In order to further analyze the comfort levels of the subjects, pre-test and post-test means and standard deviations were calculated. Table 14 illustrates the mean scores based on a 5 point likert scale with 5 being "completely comfortable" and 1 being "not at all comfortable." All of the individual post-test means were higher than pre-test means. The item received the highest score on the pre-test was comfort in discussing alcohol use with students (M = 4.35, *sd* = .699). Discussing how HIV is transmitted received the highest mean score on the post-test (M = 4.71, *sd* = .503). The item receiving the lowest score on both the pre-test and post-test was discussing condom use with students (Pre-test M = 3.68, *sd* = 1.108); Post-test M = 4.22, *sd* = .960).

Table 14

Comparison of Item Pre-Test and Post-Test Scores

	Pre-Test		Post-Test	
How comfortable are you in discussing the following topics with your students?	Mean	Standard Deviation	Mean	Standard Deviation
How HIV is transmitted	4.16	.850	4.71	.503
Injected drug use	4.08	.876	4.58	.608
Sexual intercourse	3.93	.985	4.44	.795
AIDS	4.11	.868	4.65	.557
Alcohol use	4.35	.699	4.70	.503
Condom use	3.68	1.108	4.22	.960
Sexual abstinence	4.17	.872	4.61	.645
Male genitalia	3.72	1.057	4.36	.903
Female genitalia	4.00	1.015	4.44	.826
Nonsexual ways of displaying affection	4.00	.921	4.47	.756

Note. Scores based on 5 point Likert scale with 5 indicating high level of comfort and 1 indicating very low level of comfort.

Table 15 provides an overview of the comparison by gender to individual items regarding comfort with sensitive topics. When the mean scores for each gender were calculated for the pre-test, the item receiving the lowest mean score for both women and men was in response to their comfort level in discussing condom use. The mean score for women was 3.73 (*sd* = 1.100), and for men the mean score was 3.53 (*sd* = 1.125). The highest mean score on the post-test was also the same item for both women (M = 4.31, *sd* = .735) and men (M = 4.41, *sd* = .551). This represented subjects' responses to their comfort level when discussing alcohol use with their students. For the post-test, condom use remained the item receiving the lowest mean score for both genders. Women's mean score of the post-test for this item was 4.24 (*sd* = .936). The mean score for men was 4.15 (*sd* = 1.045). Alcohol use remained the item that received the highest post-test mean score for men (M = 4.73, *sd* = .501). Being comfortable discussing how HIV is transmitted received the highest mean score among the women (M = 4.71, *sd* = .502).

Table 16 provides a comparison of women and men's mean scores for the comfort with sensitive topics survey. A total score of 50 indicates being "completely comfortable" with discussing sensitive topics. A total score of 10 indicates being "not at all comfortable" discussing such topics with students. The mean score on the pre-test for women was 40.74 (*sd* = 7.757). Women's post-test mean score was 45.37 (*sd* = 5.656). Men's pre-test mean composite score for this survey was 39.22 (*sd* = 8.025). Men's post-test mean composite score was 44.68 (*sd* = 5.808).

Table 15

Comparison of Individual Comfort Items on Pre-Test and Post-Test by Gender

	Women Pre-Test		Women Post-Test		Men Pre-Test		Men Post-Test	
How comfortable are you in Discussing the following Topics with your students?	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
How HIV is transmitted	4.18	.838	4.71	.502	4.10	.891	4.72	.507
Injected drug use	4.08	.875	4.56	.616	4.09	.885	4.64	.581
Sexual intercourse	3.96	.962	4.43	.804	3.81	1.058	4.47	.768
AIDS	4.13	.844	4.66	.542	4.01	.947	4.63	.605
Alcohol use	4.31	.735	4.69	.504	4.46	.551	4.73	.501
Condom use	3.73	1.100	4.24	.934	3.53	1.125	4.15	1.045
Sexual abstinence	4.22	.831	4.62	.632	4.00	.980	4.60	.690
Male genitalia	3.96	1.026	4.39	.875	3.79	1.155	4.28	.992
Female genitalia	4.08	.955	4.51	.744	3.73	1.159	4.19	1.020
Nonsexual ways of displaying affection	4.09	.891	4.53	.711	3.69	.958	4.26	.859

Note. Scores based on 5 point Likert scale with 5 indicating high level of comfort and 1 indicating very low level of comfort.

Table 16

Comparison of Women and Men's Mean Score on Comfort Survey

	Gender	N	Standard Mean	Standard Error Deviation	Mean
Total Comfort Pre-Test	Females	260	40.74	7.757	.481
	Males	78	39.22	8.025	.909
Total Comfort Post-Test	Females	259	45.37	5.656	.351
	Males	78	44.68	5.808	.658

Table 17 illustrates the results of an independent samples *t* test comparing the means of women and men's pre-test and post-test scores regarding their comfort level in discussing sensitive topics with students. No significant difference was found between gender in the pre-test (t (336) = 1.506, p> .05). The mean scores of women and men were also not found to be significant during the post-test (t (335) = .935, p> .05).

Table 17

Independent Samples Test: Women and Men's Pre-Test and Post-Test Scores in Comfort

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	Lower	Upper
Comfort Pre-Test	Equal Variances Assumed	.452	.502	1.506	336	.133	1.521	1.009	-.465	3.506
Comfort Post-Test	Equal Variances Assumed	.046	.831	.935	335	.350	.687	.735	-.759	2.133

Effects of Human Immunodeficiency Virus/

Acquired Immunodeficiency Syndrome

Update Training on Attitude

Participants were asked to respond to 10 survey items to measure attitudes toward people with HIV or AIDS. Total scores of 50 indicated positive attitudes toward

individuals with HIV or AIDS. Total scores of 10 indicated negative attitudes toward those with HIV or AIDS. Table 18 provides descriptive statistics for the pre-test and post-test. The survey administered prior to the training had a mean score of 43.95 (*sd* = 5.181). The test administered at the conclusion of the training had a mean score of 46.06 (*sd* = 4.764).

Table 18

Comparison of Attitude Before and After Training

	Mean	N	Standard Deviation	Standard Error Mean
Attitude Pre-Test	43.95	336	5.181	.283
Attitude Post-Test	46.06	336	4.764	.260

A paired-samples *t* test was conducted to compare the mean pre-test scores to the mean post-test scores. The test showed there was a significant difference between the pre-test and post-test means in terms of attitude toward people with HIV or AIDS (t (335) = -9.992, $p < .001$). The mean difference indicated the post-test had a higher mean indicating more favorable attitudes toward people with HIV/AIDS at the conclusion of the training. Table 19 provides a summary of the results.

Table 19

A Comparison of Mean Pre-Test and Post-Test Scores for Attitude

	Paired Differences							
	Mean	Standard Deviation	Standard Error Mean	95 Percent Confidence Interval of the Difference Upper	Lower	t	df	Sig. (2-tailed)
Attitude Pre-Test Attitude Post-Test	-2.116	3.882	.212	-2.533	-1.699	-9.992	335	.000***

When individual items on the attitude survey were examined, allowing people who are in HIV infected to work in restaurants and cafeterias received the lowest mean score on the pre-test (M = 3.59, *sd* = 1.086). Two items received the highest mean scores on the pre-test survey. They included whether students infected with HIV should be allowed to eat lunch in the school cafeteria (M = 4.66, *sd* = .601) and whether students who have HIV/AIDS should be segregated from other students (M = 4.66, *sd* = .620). In the post-test the item receiving the lowest mean score remained whether people who are HIV infected should be allowed to work in restaurants or cafeterias (M = 4.09, *sd* = 1.031). The item that received the highest mean score was being comfortable attending a faculty meeting with someone infected with HIV (M = 4.82, *sd* = .546). Participants responded to items using a 5-point likert scale with 5 representing a more positive attitude toward individuals with HIV or AIDS. Table 20 provides a summary of mean scores on attitude items included in the study.

When comparing women and men's responses, both genders' mean scores were lowest for allowing people who have HIV/AIDS to work in restaurants and cafeterias on the pre-test (M = 3.67, *sd* = 1.061 for women; M = 3.35, *sd* = 1.138 for men). This same item was also identified as having the lowest mean score on the post-test (M = 4.16, *sd* = .987 for women; M = 3.85, *sd* = 1.140 for men). The item having the highest mean score on the pre-test for women was allowing HIV infected students to eat lunch in the school cafeteria (M = 4.69, *sd* = .555). This was also the item that received the highest mean score on the post-test for women (M = 4.83, *sd* = .491). Another item, being comfortable attending a faculty meeting with someone who was HIV infected received the same mean

Table 20

Comparison of Item Pre-Test and Post-Test Scores for Attitude

	Pre-Test		Post-Test	
How confident are you that you can:	Mean	Standard Deviation	Mean	Standard Deviation
I would be comfortable having a student with HIV/AIDS in my classroom	4.44	.670	4.73	.546
A student infected with HIV should be allowed to eat lunch in the school cafeteria	4.66	.601	4.81	.524
I would avoid a student whose family member is HIV infected	4.51	.886	4.67	.856
I would be comfortable attending a faculty meeting with someone infected with HIV	4.63	.708	4.82	.546
Students who have HIV/AIDS should be segregated from other students	4.66	.620	4.70	.788
Students who are HIV infected should not play sports with other students	3.98	.962	4.20	.988
I would feel comfortable individually tutoring a student infected with HIV	4.50	.720	4.74	.548
People who are HIV infected should be allowed to work in restaurants and cafeterias	3.59	1.086	4.09	1.031
I would be afraid to shake hands with a teacher infected with HIV	4.53	.774	4.63	.872
I would feel comfortable hugging a friend who is HIV infected	4.40	.929	4.70	.756

Note: Scores based on 5 point Likert scale with 5 indicating a more positive attitude toward people with HIV or AIDS and 1 indicating a less positive attitude toward those with HIV/AIDS.

score for women on the post-test (M = 4.83, *sd* = .539). The item with the highest mean score on the men's pre-test was in response to segregating students who have HIV/AIDS from other students (M = 4.65, *sd* = .530). Being comfortable attending a faculty meeting with someone infected with HIV obtained the highest mean score on the men's post-test (M = 4.78, *sd* = .573). For each of the responses on the attitude survey, a value of 5 represented the most positive attitude toward people with HIV or AIDS. A value of 1 represented the most negative attitude toward people with HIV or AIDS (Table 21).

Table 22 provides a comparison of mean total scores for women and men on the survey that measured attitude toward people with HIV or AIDS. A score closer to 50 indicated a more positive attitude while a score closer to 10 indicated a more negative attitude toward individuals with HIV or AIDS. The mean score for women on the pre-test was 44.21 (*sd* = 4.834). After the training the mean score for women on the post-test was 46.38 (*sd* = 4.307). The mean score for men on the pre-test attitude survey was 42.90 (*sd* = 6.161). Men's post-test mean score was 45.10 (*sd* = 5.956).

Table 21

Comparison of Individual Attitude Items on Pre-Test and Post-Test by Gender

	Women Pre-Test		Women Post-Test		Men Pre-Test		Men Post-Test	
	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
I would be comfortable having a student with HIV/AIDS in my classroom	4.46	.629	4.75	.513	4.37	.791	4.65	.641
A student infected with HIV should be allowed to eat lunch in the school cafeteria	4.69	.555	4.83	.491	4.58	.730	4.73	.617
I would avoid a student whose family member is HIV infected	4.51	.936	4.68	.858	4.50	.698	4.64	.852
I would be comfortable attending a faculty meeting with someone infected with HIV	4.64	.686	4.83	.539	4.60	.782	4.78	.573
Students who have HIV/AIDS should be segregated from other students	4.67	.645	4.73	.705	4.65	.530	4.58	1.013
Students who are HIV infected should not play sports with other students	4.03	.936	4.27	.946	3.81	1.033	3.97	1.093
I would feel comfortable individually tutoring a student infected with HIV	4.55	.659	4.77	.488	4.35	.880	4.63	.705
People who are HIV infected should be allowed to work in restaurants and cafeterias	3.67	1.061	4.16	.987	3.35	1.138	3.85	1.140
I would be afraid to shake hands with a teacher infected with HIV	4.55	.741	4.64	.861	4.46	.878	4.62	.915
I would feel comfortable hugging a friend who is HIV infected	4.44	.896	4.72	.758	4.24	1.022	4.65	.753

Note. Scores based on 5 point Likert scale with 5 indicating a more positive attitude toward people with HIV or AIDS and 1 indicating a less positive attitude toward those with HIV/AIDS

Table 22

Comparison of Women and Men's Mean Score on Attitude Survey

	Gender	N	Standard Mean	Standard Error Deviation	Mean
Attitudes	Females	260	44.21	4.834	.300
Pre-Test	Males	78	42.90	6.161	.698
Attitudes	Females	260	46.38	4.307	.267
Post-Test	Males	77	45.10	5.956	.674

An independent-samples *t* test was calculated to compare the composite mean scores on the attitude test of women to those of men. The Levene's Test for Equality of Variances determined the variances of the two groups were not the same ($p = .008$). Therefore, the test assuming unequal variances was used to determine significance. No significant difference was found (t (106.985) = 1.731, $p > .05$) between women and men in the pre-test that surveyed attitudes toward people with HIV or AIDS. No significant difference was found between women and men's attitudes in the post-test (t (102.313) = 1.762, $p > .05$). Table 23 provides a summary of the test for significance results.

Effects of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome Update Training on Knowledge

Subjects were administered a 20-item knowledge test before and after the HIV/AIDS Update Training to determine the training's effect on knowledge related to HIV/AIDS. Each item provided a 5 point scale for responses ranging from "I am sure it's true" to "I am sure it's false." To determine accuracy of the educators' knowledge, the respondents were given one point if the item was true and they answered either "I am sure it's true" or "I think it's true." They received zero points for answering "I don't know;" "I think it's false;" or "I am sure it's false." If the item was false, they were given one point if they answered "I am sure it's false" or "I think it's false." They were given no points if they answered any of the following: "I don't know;" "I think it's true;" or "I am sure it's true." The highest possible score was 20 indicating the respondent

Table 23

Independent Samples Test: Women and Men's Pre-Test and Post-Test Scores in Attitudes

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	Lower	Upper
Attitude Pre-Test	Equal Variances Assumed	7.229	.008	1.969	336	.050	1.314	.667	.002	2.627
	Equal Variances Not Assumed			1.731	106.985	.086	1.314	.759	-.191	2.819
Attitude Post-Test	Equal Variances Assumed	7.169	.008	2.091	336	.037	1.278	.611	.076	2.481
	Equal Variances Not Assumed			1.762	102.313	.081	1.278	.725	-.160	2.717

answered all knowledge items correctly. The lowest possible score was 0 indicating the respondent did not answer any of the items correctly. Table 24 provides the pre-test and post-test scores on accuracy of respondent knowledge. It shows a mean score of 8.58 (*sd* = 2.461) on the pre-test and a mean of 13.16 (*sd* = 2.312) on the post-test. Respondents' knowledge scores increased from pre-test to post-test.

Table 24

Comparison of Knowledge Accuracy Pre-Test and Post-Test

Pair 1	Mean	N	Standard Deviation	Standard Error Mean
Knowledge Pre-Test	8.58	323	2.461	.137
Knowledge Post-Test	13.16	323	2.312	.129

Table 25 shows the results of a paired-samples t test conducted to determine differences between pre-test and post-test accuracy of knowledge among the participants. The mean difference between the two tests was -4.579 indicating a higher positive score on the post-test. A significant difference in accuracy of knowledge was found $t(322) = -25.001$, $p<.001$).

Table 25

Paired-Samples Test: Pre-Test and Post-Test Scores on Knowledge Accuracy

	Paired Differences							
	Mean	Standard Deviation	Standard Error Mean	95 Percent Confidence Interval of the Difference Upper	Lower	t	df	Sig. (2-tailed)
Knowledge Pre-Test Knowledge Post-Test	-4.579	3.292	.183	-4.939	-4.219	-25.001	322	.000***

In order to determine the educators' confidence in their knowledge the 5-point likert scale was used ranging from "I am sure it's true" to "I am sure it's false." A composite score of all 20 items was calculated for each subject. Scores closer to 100 indicated accurate responses with a high level of confidence in knowledge about HIV/AIDS. Scores closer to 20 indicated a low level of knowledge and lesser confidence in one's answer. Table 26 indicates the mean score for the participants on the pre-test was 64.42 (*sd* = 4.874). The mean score on the post-test was 77.11 (*sd* = 8.249).

Table 26

Comparison of Confidence of Knowledge Before and After Training

	Mean	N	Standard Deviation	Standard Error Mean
Knowledge Pre-Test	64.62	327	4.874	.270
Knowledge Post-Test	77.11	327	8.249	.456

A paired-samples *t* test was calculated to compare the mean pre-test scores to the mean post-test scores. The significance test output shown in Table 27 indicates there is a significant difference between the pre-test and post-test in terms of confidence of knowledge about HIV and AIDS (t (326) = -24.258, p<.001). The mean difference shows the post-test has a higher mean score.

Table 27

A Comparison of Mean Pre-Test and Post-Test Scores for Confidence of Knowledge

	Paired Differences							
	Mean	Standard Deviation	Standard Error Mean	95 Percent Confidence Interval of the Difference Upper	Lower	t	df	Sig. (2-tailed)
Knowledge Pre-Test Knowledge Post-Test	-12.483	9.376	.515	-13.496	-11.471	-24.258	326	.000***

Abbreviated versions of the items included in the knowledge survey are included in Table 28. Mean scores for each item are based on a 5-point scale with correct answers coded as 5 and incorrect answers coded as 1. Other choices for the respondent included "I think it's true," "I think it's false," or "I don't know." The item answered incorrectly most often by the participants in the pre-test was in regards to whether the small risk of transmission of HIV through a blood transfusion was due to improper screening the blood (M = 2.23, *sd* = 1.055). The item with the highest mean score on the pre-test inquired as to whether a new medication had been produced that helped people live longer and slowed the progression of the HIV disease (M = 4.49, *sd* = .587). The item answered incorrectly most often on the post-test was whether most school children had acquired HIV infection through vertical transmission from their mothers (M = 1.76, *sd* = 1.280). The item with the highest mean score in the post-test was the same as the highest score in the pre-test asking subjects about the advent of new medication to help those infected with HIV live longer and slow the progression of the disease (M = 4.88, *sd* = .388). Three items had lower mean scores on the post-test than on the pre-test. They included whether a downward trend in annual HIV infections in the USA was occurring (M = 2.51, *sd* = 1.224 for the pre-test; M = 2.08, *sd* = 1.516 for the post-test); if the majority of school age children who are infected with HIV acquired it through vertical transmission from their mothers (M = 2.57, *sd* = .972 for the pre-test; M = 1.76, *sd* = 1.280 for the post-test); and Highly Reactive Anti-Retroviral Therapy is the use of six or more drugs in combination (M = 2.56, *sd* = .656 for pre-test; M = 2.38, *sd* = 1.545 for post-test).

Table 28

Comparison of Item Pre-Test and Post-Test Scores for Confidence of Knowledge

	Pre-Test		Post-Test	
True or false Knowledge Item	Mean	Standard Deviation	Mean	Standard Deviation
Fifty percent of new HIV cases are found in those under 25 year of age	3.80	.837	4.78	.663
Only about 12 percent of HIV positive individuals are aware that they are infected	3.55	.805	4.70	.668
There is currently a downward trend in annual HIV infections in the USA	2.51	1.224	2.80	1.516
Heterosexual contact is the route of transmission most likely for young women to contract HIV	4.03	.768	4.71	.692
Young females are biologically more susceptible to contracting HIV infection than older females	3.11	1.052	4.80	.607
The majority of school age children who are HIV infected acquired it though vertical transmission from their mothers	2.57	.972	1.76	1.280
One of the greatest risks of HIV transmission occurs within the first several months of infection	3.30	.950	4.69	.719
Acute retroviral Syndrome is a life-threatening condition typically experienced during the later stages of HIV disease	2.77	.667	3.41	1.561
Urine, saliva, sweat, or tears do not transmit HIV	3.65	1.292	4.65	2.947
The small risk of contracting HIV through a blood transfusion is typically due to inappropriately screening the blood	2.23	1.055	2.58	1.626

Table 28 (Continued)

Comparison of Item Pre-Test and Post-Test Scores for Confidence of Knowledge

True or false Knowledge Item	Pre-Test Mean	Pre-Test Standard Deviation	Post-Test Mean	Post-Test Standard Deviation
The advent of new medication is helping people live longer and slow the progression of the HIV disease	4.49	.587	4.88	.388
Rapid Tests for HIV antibody can produce results in as little as three minutes	3.29	.743	4.39	1.047
Highly Reactive Anti-Retroviral Therapy is the use of six or more drugs in combination	2.56	.656	2.38	1.545
Post-Exposure Prophylaxis (PEP) is recommended only after a confirming test indicates seropositivity for HIV	3.02	.700	3.33	1.561
A new vaccine for AIDS has been developed and is given in three doses	3.40	.886	4.10	1.242
A new CDC prevention initiative includes making HIV antibody testing a routine part of medical care	3.19	.763	3.94	1.250
The majority of federal HIV/AIDS spending is allotted to conducting research	2.62	.760	2.82	1.619
Alcohol is the number one drug of choice for teens	4.09	.810	4.71	.621
STDs known to be transmitted orally include herpes, gonorrhea, HPV, and HIV	3.45	1.128	4.53	1.003

Table 28 (Continued)

Comparison of Item Pre-Test and Post-Test Scores for Confidence of Knowledge

True or false Knowledge Item	Pre-Test Mean	Pre-Test Standard Deviation	Post-Test Mean	Post-Test Standard Deviation
One characteristic of successful HIV/AIDS programs is the simplistic "just-say-no" educational approach	3.06	1.183	3.86	1.510

Note. Scores based on 5 point scale with 5 indicating correct response and 1 indicating incorrect response.

Table 29 provides an overview of the mean scores for each item for both women and men. The item with the lowest pre-test mean score for both genders was whether the small risk of contracting HIV through a blood transfusion was due to inappropriate blood screening. The mean score for this item for women was 2.24 (*sd*) = 1.047 and 2.19 (*sd* = 1.087) for men. The item receiving the lowest mean score on the post-test was also the same for both genders. Responding to whether the majority of children who are HIV infected acquired it through vertical transmission from their mothers resulted in a mean score of 1.73 (*sd* = 1.27) for women and a mean score of 1.86 (*sd* = 1.295) for men. The highest mean score for both genders was for the same item on the pre-test and post-test. In responding to whether new medication is helping people live longer, women's mean score was 4.52 (*sd* = .538) on the pre-test and 4.88 (*sd* = .398) on the post-test. Men's pre-test mean score on this item was 4.41 (*sd* = .725) and 4.86 (*sd* = .354) on the post-test.

Three items had mean scores on the post-test that were less than the mean scores on the pre-test for both genders. Whether there was currently a downward trend in annual HIV infections in the USA, women's pre-test mean was 2.53 (*sd* = 1.297) and post-test mean was 2.05 (*sd* = 1.500). Men's pre-test mean was 2.47 (*sd* = .945) and post-test mean was 2.19 (*sd* = 1.573). Another item identified was whether school age children who are HIV infected acquired it through vertical transmission from their mothers. The pre-test mean score for women was 2.52 (*sd* = 9.70) and their post-test score was 1.73 (*sd* = 1.276). The men's mean pre-test score for this item was 2.73 (*sd* = .970) and their pre-test mean score was 1.86 (*sd* = 1.295). The third item to receive a higher pre-test mean score than post-test was if Highly Reactive Anti-Retroviral Therapy

Table 29

Comparison of Individual Confidence of Knowledge Items on Pre-Test and Post-Test by Gender

	Women Pre-Test		Women Post-Test		Men Pre-Test		Men Post-Test	
	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
Fifty percent of new HIV cases are found in those under 25	3.78	.869	4.78	.724	3.87	.723	4.81	.399
Only about 12 percent of HIV+ individuals are aware that they are infected	3.59	.850	4.71	.676	3.41	.793	4.65	.644
There is currently a downward trend in annual HIV infections in the USA	2.53	1.297	2.05	1.500	2.47	.945	2.19	1.573
Heterosexual contact is the route of transmission most likely for young women to contract HIV	4.04	.752	4.77	.605	4.01	.824	4.50	.902
Young females are biologically more susceptible to contracting HIV infection than older females	3.09	1.074	4.82	.646	3.20	.979	4.77	.456
The majority of school age children who are HIV infected acquired it through vertical transmission from their mothers	2.52	.970	1.73	1.276	2.73	.970	1.86	1.295
One of the greatest risks of HIV transmission occurs within the first several months of infection	3.30	.980	4.71	.705	3.29	.850	4.62	.765
Acute Retroviral Syndrome is a life-threatening condition typically experienced during the later stages of HIV disease	2.76	.716	3.52	1.579	2.78	.472	3.04	1.446
Urine, saliva, sweat, or tears do not transmit HIV	3.66	1.279	4.73	3.290	3.62	1.343	4.39	1.201
The small risk of contracting HIV through a blood transfusion is typically due to inappropriately screening of blood	2.24	1.047	2.59	1.649	2.19	1.087	2.54	1.553

Table 29 (Continued)

Comparison of Individual Confidence of Knowledge Items on Pre-Test and Post-Test by Gender

	Women Pre-Test		Women Post-Test		Men Pre-Test		Men Post-Test	
	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.	Mean	Standard Dev.
The advent of new medication is helping people live longer and slow the progression of the HIV disease	4.52	.538	4.88	.398	4.41	.725	4.86	.354
Rapid Tests for HIV antibody can produce results in a little as three minutes	3.29	.778	4.49	.970	3.28	.619	4.07	1.226
HAART is the use of more drugs in combiniation	2.57	.674	2.45	1.611	2.52	.596	2.12	1.275
PEP is recommended only after a confirming test indicates sorpositivity for HIV	3.05	.732	3.41	1.567	2.90	.568	3.04	1.518
A new vaccine for AIDS has been developed and is given in three doses	3.42	.891	4.17	1.224	3.32	.870	3.86	1.283
A new CDC prevention initiative includes making HIV antibody testing a routine part of medical care	3.21	.773	4.02	1.250	3.14	.729	3.68	1.224
The majority of federal HIV/AIDS spending is allotted to conducting research	2.62	.758	2.93	1.639	2.63	.771	2.45	1.500
Alcohol is the number one drug of choice for teens	4.08	.821	4.73	.595	4.13	.774	4.66	.703
STDs that transmit orally include herpes, gonorrhea, HPV, and HIV	3.37	1.157	4.54	.997	3.68	.994	4.50	1.026
One characteristic of successful HIV/AIDS programs is the simplistic “just say-no” educational approach	3.04	1.168	3.91	1.520	3.11	1.240	3.71	1.477

Notes. Scores based on 5 point scale with 5 indicating correct response and 1 including incorrect response.

uses six or more drugs in combination (Women's pre-test M = 2.57, *sd* = .674 and post-test M = 2.45, *sd* = 1.611; Men's pre-test M = 2.52, *sd* = .596 and post-test M = 2.12, *sd* = 1.275). One item received a lower mean score on the post-test than pre-test for men. It was in regard to use of federal HIV/AIDS spending (M = 2.63, *sd* = .771 on pre-test; M = 2.45, *sd* = 1.500 on post-test).

Table 30 compares the mean scores of women and men for the knowledge survey component of the study. Subjects that answered all the knowledge questions correctly received a score of 100. Composite scores close to 20 indicate incorrect scores. Women's mean composite score for the knowledge pre-test survey was 64.70 (*sd* = 5.057). Men's mean composite pre-test score was 64.70 (*sd* = 4.186). Post-test mean composite scores on the knowledge survey for women was 77.93 (*sd* = 8.497). Men's mean composite score was 74.23 (*sd* = 6.620).

Table 30

Comparison of Women and Men's Mean Score on Confidence of Knowledge Survey

	Gender	N	Standard Mean	Standard Error Deviation	Mean
Knowledge Pre-Test	Females	258	64.60	5.057	.315
	Males	79	46.70	4.186	.471
Knowledge Post-Test	Females	253	77.93	8.497	.534
	Males	75	74.23	6.620	.764

An independent-samples *t* test compared the pre-test mean scores on the knowledge survey of women and men. No significance difference between the two groups was found on the pre-test ($t(335) = .874$, $p > .05$). The Levene's Test for Equality of Variances determined the variances of the two groups were not the same in the post-test ($p = .016$). Therefore equal variances were not assumed in the post-test significance test. The independent-samples *t* test determined there was a significant difference between the women's group of subjects and the men's group of subjects ($t(153.204) = 3.974$, $p < .001$).

Table 31

Independent-Samples Test: Women and Men's Pre-Test and Post-Test Scores for Confidence of Knowledge

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Confidence Interval of the Difference Lower	Upper
Knowledge Pre-Test	Equal Variances Assumed	.664	.416	-.159	335	.874	-.099	.626	-1.331	1.132
	Equal Variances Not Assumed			-.175	153.959	.861	-.099	.566	-1.218	1.020
Knowledge Post-Test	Equal Variances Assumed	5.888	.016	3.476	326	.001	3.706	1.066	1.609	5.804
	Equal Variances Not Assumed			3.974	153.204	.000***	3.706	.933	1.864	5.549

Determining Differences Among School Personnel

Participants in the study consisted of administrators, teachers, and school nurses. Members of the sample who identified themselves as school psychologists, counselors, and social workers were categorized as "other." Pre-test and post-test results were analyzed to determine if there were significant differences between these groups.

One-way ANOVA tests were computed to compare the confidence level scores of the four groups. There was a significant difference among groups in the pre-test ($F(3, 332) = 9.558$, $p<.001$). Tukey's *HSD* revealed there was a significant difference between administrators who scored lower (M = 27.40, *sd* = 3.912) than teachers (M = 37.22, *sd* = 6.570). There was also a significant difference between teachers and school nurses (M = 34.00, *sd* = 5.640). Those in the "other" category (M = 35.00, *sd* = 5.916) were not significantly different than any of the other categories. The results are provided in Tables 32 and 33.

Table 32

ANOVA Test for Differences in Confidence Pre-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1117.588	3	372.529	9.558	.000***
Within Groups	12939.266	332	38.974		
Total	14056.854	335			

Table 33

Post Hoc Test for Differences in Confidence Pre-Test Among School Personnel

Dependent Variable: Confidence Pre-Test Tukey HSD		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Upper	Lower
(I) Occupation	(J) Occupation					
Administrators	Teachers	-9.816(*)	2.824	.003**	-17.11	-2.52
	Nurses	-6.600	2.858	.098	-13.98	.78
	Other	-7.600	3.285	.097	-16.08	.88
Teachers	Administrators	9.816(*)	2.824	.003**	2.52	17.11
	Nurses	3.216(*)	.744	.000***	1.29	5.14
	Other	2.216	1.784	.600	-2.39	6.82
Nurses	Administrators	6.600	2.858	.098	-.78	13.98
	Teachers	-3.216(*)	.744	.000***	-5.14	-1.29
	Other	-1.000	1.836	.948	-5.74	3.74
Other	Administrators	7.600	3.285	.097	-.88	16.08
	Teachers	-2.216	1.784	.600	-6.82	2.39
	Nurses	1.000	1.836	.948	-3.74	5.74

Note. The mean difference is significant at the .05 level

The survey administered at the end of the training determined there were no significant differences in confidence levels among school personnel ($F(3, 330) = 2.305$, $p>.05$. Table 34 provides the results of the one-way ANOVA test.

Table 34

ANOVA Test for Differences in Confidence Post-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	190.281	3	63.427	2.305	.077
Within Groups	9082.258	330	27.522		
Total	9272.539	333			

Differences in comfort levels were also analyzed. As noted in Table 35, a significant difference among school personnel was determined to exist in the comfort pre-test scores ($F(3, 334) = 5.186$, $p<.01$). Tukey's *HSD* results, located in Table 36, found the significant difference existed between teachers (M = 41.56, *sd* = 8.168) and school nurses (M = 38.33, *sd* = 6.662). Scores among administrators (M = 34.40, *sd* = 7.092) were not significantly different than those of teachers, nurses, or "others." Scores of those in the "others" category (M = 40.23, *sd* = 7.596) were also not different than teachers or nurses.

Table 35

ANOVA Test for Differences in Comfort Pre-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	920.450	3	306.817	5.186	.002**
Within Groups	19761.778	334	59.167		
Total	20682.228	337			

Table 36

Post Hoc Test for Differences in Comfort Pre-Test Among School Personnel

Dependent Variable: Comfort Pre-Test Tukey HSD		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Upper	Lower
(I) Occupation	(J) Occupation					
Administrators	Teachers	-7.156	3.480	.170	-16.14	1.83
	Nurses	-3.930	3.520	.680	-13.02	5.16
	Other	-5.831	4.048	.475	-16.28	4.62
Teachers	Administrators	7.156	3.480	.170	-1.83	16.14
	Nurses	3.226(*)	.914	.003**	.87	5.58
	Other	1.325	2.197	.931	-4.35	7.00
Nurses	Administrators	3.930	5.520	.680	-5.16	13.02
	Teachers	-3.226(*)	.914	.003**	-5.58	-.87
	Other	-1.901	2.260	.835	-7.74	3.94
Other	Administrators	5.831	4.048	.475	-4.62	16.28
	Teachers	-1.325	2.197	.475	-7.00	4.35
	Nurses	1.901	2.260	.835	-3.94	7.74

Note. The mean difference is significant at the .05 level

A one-way ANOVA was computed to determine differences in comfort level in teaching HIV/AIDS education. A significant difference was found to exist among the four groups of personnel ($F(3, 333) = 6.305$, $p<.001$). Table 37 provides the results of the test. Tukey's HSD was used to determine the nature of the significance. Table 35 indicates a significant difference between administrators with a lower score (M = 38.40, sd = 4.450) and teachers with a higher mean score(M = 45.96, *sd* = 5.699). Significant differences were also found between teachers (higher) and nurses (M = 44.48, *sd* = 5.242).

Table 37

ANOVA Test for Differences in Comfort Post-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	584.639	3	194.880	6.305	.000***
Within Groups	10292.820	333	30.909		
Total	10877.460	336			

Table 38

Post Hoc Test for Differences in Comfort Post-Test Among School Personnel

Dependent Variable: Comfort Post-Test Tukey HSD		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Upper	Lower
(I) Occupation	(J) Occupation					
Administrators	Teachers	-7.562	2.515	.015*	-14.06	-1.07
	Nurses	-6.077	2.544	.081	-12.64	.49
	Other	-3.138	2.926	.706	-10.69	4.42
Teachers	Administrators	7.562(*)	2.515	.015*	1.70	14.06
	Nurses	1.486	.659	.111	-.22	3.19
	Other	4.424(*)	1.589	.029*	.32	8.53
Nurses	Administrators	6.077	2.544	.081	-.49	12.64
	Teachers	-1.486	.659	.111	-3.19	.22
	Other	2.938	1.633	.275	-1.28	7.15
Other	Administrators	3.138	2.926	.706	-4.42	10.69
	Teachers	-4.424(*)	1.589	.029*	-8.53	-.32
	Nurses	-2.938	1.633	.275	-7.15	1.28

Note. The mean difference is significant at the .05 level

Attitude scores were also analyzed for both the pre-test and the post-test to determine significant differences between the four groups of school personnel. Table 39 shows no significant difference was found ($F(3, 334) = .053$, $p>.05$). The personnel from all four groups did not differ significantly in their attitudes toward people with HIV/AIDS in the pre-test.

Table 39

ANOVA Test for Differences in Attitude Pre-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.292	3	1.431	.053	.984
Within Groups	9075.865	334	25.173		
Total	9080.157	337			

Post-test scores for attitude were examined on the post-test. No significant differences were found for post-test attitude among the four groups of school personnel ($F(3, 334) = 1.324$, $p>.05$). Table 40 provides an overview of the ANOVA test results.

Table 40

ANOVA Test for Differences in Attitude Post-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	89.754	3	29.918	1.324	.266
Within Groups	7544.758	334	22.589		
Total	7634.512	337			

A one-way ANOVA test was computed to determine differences among school personnel's knowledge about HIV/AIDS. Table 41 provides the results of that test which indicate there was no significant difference among the groups at the beginning of the training ($F(3, 333) = .823$, $p > .05$).

Table 41

ANOVA Test for Differences in Knowledge Pre-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.406	3	19.469	.823	.482
Within Groups	7880.977	333	23.667		
Total	7939.383	336			

Significant differences in knowledge level among the four groups of school personnel were analyzed. Table 42 shows the results of a one-way ANOVA test that found significant differences ($F(3, 324) = 9.246$, $p < .001$). Tukey's *HSD* was used to determine where those differences occurred. As shown in Table 41, it was found that teachers' lower mean score (M = 75, *sd* = 7.406) was significantly different than nurses' higher mean score (M = 80.38, *sd* = 9.099). Administrators (M = 74.80, *sd* = 8.955) and those in the "others" category (M = 78.42, sd = 5.501) did not differ significantly from the other groups.

Table 42

Post Hoc Test for Differences in Knowledge Post-Test Among School Personnel

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1753.421	3	584.474	9.246	.000***
Within Groups	20480.166	324	63.210		
Total	22233.610	336			

Table 43

Post Hoc Test for Differences in Knowledge Post-Test Among School Personnel

Dependent Variable: Knowledge Post-Test Tukey HSD		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Upper	Lower
(I) Occupation	(J) Occupation					
Administrators	Teachers	-.611	3.598	.998	-9.90	8.68
	Nurses	-5.575	3.640	.420	-14.98	3.83
	Other	-3.617	4.232	.828	-14.55	7.31
Teachers	Administrators	.611	3.598	.998	-8.68	9.90
	Nurses	-4.964(*)	.956	.000***	-7.43	-2.50
	Other	-3.006	2.361	.581	-9.10	3.09
Nurses	Administrators	5.575	3.640	.420	-3.83	14.98
	Teachers	4.964(*)	.956	.000***	2.50	7.43
	Other	1.958	2.424	.851	-4.30	8.22
Other	Administrators	3.617	4.232	.828	-7.31	14.55
	Teachers	3.006	2.361	.581	-3.09	9.10
	Nurses	-1.958	2.424	.851	-8.22	4.30

Note. The mean difference is significant at the .05 level

The Effect of Increasing Knowledge on Attitudes, Comfort, and Confidence Levels

Linear regression was used to determine the effect increasing school personnel's knowledge would have on their instructor confidence, attitudes toward persons with HIV or AIDS, and their comfort level in discussing sensitive topics with their students.

Tables 44 through 46 provide the analysis results of the linear regression using knowledge as a predictor of instructor confidence levels. A significant regression equation was found ($F(1, 331) = 9.952$, $p<.01$) with an R^2=. Subjects' predicted confidence scores are equal to 21.280 + .228 (knowledge score) when knowledge is measured on a 100 point survey. Subjects' average confidence survey scores increase by .228 for each increase in knowledge. The relationship is positive.

Table 44

Model Summary for Linear Regression: Knowledge and Confidence Pre-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.171(a)	.029	.026	6.409

Note. (a) Predictors: (Constant), Knowledge Pre-Test.

Table 45

ANOVA Summary Table for Linear Regression: Knowledge and Confidence Pre-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	408.832	1	408.832	9.952	.002(a)**
	Residual	13597.168	331	41.079		
	Total	14006.000	332			

Note. (a) Predictors: (Constant), Knowledge Pre-Test; (b) Dependent Variable: Confidence Pre-Test.

Table 46

Coefficients Table for Linear Regression: Knowledge and Confidence Pre-Test

		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	21.280	4.679		4.549	.000	12.075	30.485
	Knowledge Pre-Test	.228	.072	.171	3.155	.002**	.086	.370

Note. (a) Dependent Variable: Confidence Pre-Test.

A simple linear regression was calculated predicting subjects' confidence based on their knowledge scores on the post-test survey. The regression equation was not significant ($F(1, 322) = 2.223$, $p<.001$ with an R^2 of .007. Instructor confidence cannot be predicted from knowledge test scores. Tables 47 through 49 provide information about the linear regression model.

Table 47

Model Summary for Linear Regression: Knowledge and Confidence Post-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.083(a)	.007	.004	5.243

Note. (a) Predictors: (Constant), Know_Comp2.

Table 48

ANOVA Summary for Linear Regression: Knowledge and Confidence Post-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61.114	1	61.114	2.223	.137(a)
	Residual	8850.467	322	27.486		
	Total	8911.580	323			

Note. (a) Predictors: (Constant), Know_Comp2; (b) Dependent Variable: Confidence_Comp2.

Table 49

Coefficients Table for Linear Regression: Knowledge and Confidence Post-Test

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	38.848	2.742		14.168	.000	33.454	44.243
	Knowledge Post-Test	.053	.045	.083	1.491	.137	-.017	.122

Note. (a) Dependent Variable: Confidence Post-Test.

Knowledge was also used to predict the comfort level of school personnel in discussing sensitive topics associated with HIV/AID education with their students. A single linear regression was calculated predicting subjects' comfort levels based on their knowledge. A significant regression equation was found ($F(1, 333) = 22.331$, $p<.001$ with an R^2 of .063). The regression formula to determine comfort equals 14.221 + .405 (knowledge score on pre-test. The relationship is positive. Tables 50 through 52 provide information regarding the linear regression.

Table 50

Model Summary for Linear Regression: Knowledge and Comfort Pre-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.251(a)	.063	.060	7.612

Note. (a) Predictors: (Constant), Knowledge Pre-Test.

Table 51

ANOVA Summary for Linear Regression: Knowledge and Comfort Pre-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1293.794	1	1293.794	22.331	.000(a)***
	Residual	19292.935	333	57.937		
	Total	20586.728	334			

Note. (a) Predictors: (Constant), Know_Comp1; (b) Dependent Variable: Com_Comp1.

Table 52

Coefficients Table for Linear Regression: Knowledge and Comfort Pre-Test

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	14.221	5.546		2.564	.011	3.312	25.131
	Knowledge Pre-Test	.405	.086	.251	4.726	.000***	.236	.573

Note. (a) Dependent Variable: Comfort Pre-Test.

A simple linear regression was calculated predicting subjects' comfort discussing sensitive topics with their students based on their knowledge. The regression equation was significant ($F(1, 325) = 6.342$, $p<.05$) with an R^2 of .019. Subjects' comfort is equal to 37.799 + .096 (knowledge score on post-test). The relationship was positive. Tables 53 through 55 provide information about the linear regression.

Table 53

Model Summary for Linear Regression: Knowledge and Comfort Post-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.138(a)	.019	.016	5.678

Note. (a) Predictors: (Constant), Knowledge Post-Test.

Table 54

ANOVA Summary for Linear Regression: Knowledge and Comfort Post-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	204.444	1	204.444	6.342	.012(a)*
	Residual	10477.636	325	32.239		
	Total	10682.080	326			

Note. (a) Predictors: (Constant), Know_Comp2; (b) Dependent Variable: Com_Comp2.

Table 55

Coefficients Table for Linear Regression: Knowledge and Comfort Post-Test

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	57.799	2.955		12.791	.000	31.985	43.613
	Knowledge Post-Test	.096	.038	.138	2.518	.012*	.021	.171

Note. (a) Dependent Variable: Comfort Post-Test.

A simple linear regression was conducted predicting subjects' attitudes toward people with HIV/AIDS based on their knowledge scores. A significant regression equation was determined ($F(1, 333) = 25.475$, $p<.001$) with an R^2 of .071. Subjects' predicted attitude toward people with HIV/AIDS equals 25.524 + .285 (knowledge scores). The relationship is positive. Tables 56 through 58 illustrate the linear regression model.

Table 56

Model Summary for Linear Regression: Knowledge and Attitude Pre-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.267(a)	.071	.068	5.014

Note. (a) Predictors: (Constant), Knowledge Pre-Test 1.

Table 57

ANOVA Summary for Linear Regression: Knowledge and Attitude Pre-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	640.399	1	640.399	25.475	.000(a)
	Residual	8370.914	333	25.138		
	Total	9011.313	334			

Note. (a) Predictors: (Constant), Knowledge Pre-Test; (b) Dependent Variable: Attitude Pre-Test.

Table 58

Coefficients Table for Linear Regression: Knowledge and Attitude Pre-Test

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	25.524	3.653		6.987	.000	18.338	32.710
	Knowledge Post-Test	.285	.056	.267	5.047	.000***	.174	.396

Note. (a) Dependent Variable: Attitude Pre-Test.

A simple linear regression model was calculated for predicting post-test attitudes from post-test knowledge scores. A significant regression equation was found (F (1, 326) = 12.046, p<.05) with an R^2 equal to .036. Subjects' post-test attitude toward people with HIV/AIDS equals 37.607 + .110 (knowledge score on post-test). There was a positive relationship. Tables 59 through 61 provide information summarizing the linear regression.

Table 59

Model Summary for Linear Regression: Knowledge and Attitude Post-Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.189(a)	.036	.033	4.713

Note. (a) Predictors: (Constant), Knowledge Post-Test.

Table 60

ANOVA Summary for Linear Regression: Knowledge and Attitude Post-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	267.601	1	267.601	12.046	.001(a)***
	Residual	7242.055	326	22.215		
	Total	7509.655	327			

Note. (a) Predictors: (Constant), Knowledge Post-Test; (b) Dependent Variable: Attitude Post-Test.

Table 61

Coefficients Table for Linear Regression: Knowledge and Attitude Post-Test

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	37.607	2.450		15.347	.000	32.786	42.428
	Knowledge Post-Test	.110	.032	.189	3.471	.001***	.048	.172

Note. (a) Dependent Variable: Attitude Post-Test.

Summary

This chapter presented an analysis of the data gathered from the pre-test and post-test. Chapter V includes the discussion, conclusion, and recommendations that resulted from the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the training effects on knowledge, attitude, and confidence levels of school personnel in Pennsylvania regarding HIV/AIDS and identify their comfort level in teaching this topic to school age children. A total of 376 school personnel completed pre-test and post-test surveys at six hour HIV/AIDS update trainings held in selected intermediate units in Pennsylvania. Analyses were conducted to determine significant differences in knowledge, attitude, confidence, and comfort levels as a result of the trainings. Other variables included demographics such as gender, role of school personnel, and years of experience. The effect of increased knowledge on attitude, confidence, and comfort levels was also examined.

Chapter I presented the theoretical model used to examine the knowledge, attitude, confidence, and comfort levels of school personnel regarding HIV/AIDS education. It also laid the foundation for studying the effects of school personnel attending a six hour update training on HIV/AIDS education. Chapter II provided a history of HIV/AIDS, the role of parents and families in addressing the disease, and how teachers and other school personnel have responded to the need for educating students on HIV/AIDS issues. Chapter III laid the foundation for studying current attitudes, knowledge, confidence, and comfort levels of school personnel regarding HIV/AIDS education. It also presented the means for determining the differences among school personnel regarding HIV/AIDS education. Data were divided into gender for examination as well by division into school roles, specifically teachers, administrators,

nurses, and others. Chapter IV provided the results from the analysis conducted on the pre-test and post-test that measured attitudes, knowledge, confidence, and comfort levels of school personnel regarding HIV/AIDS education. Chapter V summarizes the results presented in Chapter IV, provides implications for education, and makes recommendations for further study.

Summary of Research Findings

Four research questions were addressed throughout this study. One of those examined the confidence, comfort, attitude, and knowledge levels of school personnel in Pennsylvania regarding HIV/AIDS and teaching this topic to school age children. The second research question analyzed the effects that participating in a six hour training had on these four variables.

There are relatively few recent studies that have measured confidence, comfort, attitude, and knowledge regarding HIV/AIDS among school personnel. One study conducted by Richter in 1997 found that helping students develop skills to refrain from or delay engaging in sexual intercourse was identified as a specific area that teachers did not feel confident in addressing. It was also found that teachers did not feel they could impart skills to help students refrain from injecting drugs of influence their students to have more positive attitudes toward people infected with HIV/AIDS. Another study found even teachers who felt they had sufficient knowledge on the subject were not confident discussing issues of HIV with their students especially topics related to safer sex and homosexuality (Remfedi, 1993).

Of the 341 subjects participating in this study, a mean score of 36.4 out of a possible 50 points was found on the confidence survey. These educators indicated the

item they were most confident in teaching dealt with discussing high-risk drug behavior with their students. As in previous studies, discussing sensitive topics relating to sexual issues was identified as the area educators were least confident in teaching. This study particularly identified explaining to students how to correctly use a condom as the area they were least confident in teaching.

Participating in the six hour training was determined to have a positive effect on increasing confidence among school personnel. At the conclusion of the training, the average score increased from 36.04 to 42.87 out of a possible 50. Explaining how to properly use a condom was still identified as the area school personnel felt least confident instructing.

Studies that have examined teachers' attitudes and comfort level discussing issues related to HIV/AIDS have also been limited. Most studies were conducted in the 1980s and early 1990s. A study published in 1996 found that 15% of teachers surveyed believed an HIV positive child should not be permitted to attend school. Twenty-two percent believed HIV positive children should be taught in a separate environment so as not to expose the other children (Brucker & Hall, 1996). Other studies found while teachers were comfortable teaching abstinence, HIV/AIDS virus transmission, intravenous drug use, monogamy, and condom use, they felt unprepared and uncomfortable teaching students how to seek counseling and be tested for the virus. They also found it difficult to teach students to have compassion for HIV/AIDS infected individuals and homosexuals. They reported being less comfortable with ethical topics and more comfortable and confident teaching factual information (Gingis & Basen-Engquist, 1994).

Participants in this study identified condom use as the area most uncomfortable discussing with their students. They also indicated in the pre-test that discussing sexual intercourse would make them uncomfortable. These participants indicated they were more comfortable discussing alcohol use with their students and how HIV is transmitted. This again reflects more comfort with factual information and less comfort with ethical topics. School personnel in this study were more favorable having HIV infected students interact with the other students in the school. Most agreed that students infected with HIV should be allowed to eat lunch in the school cafeteria and should not be segregated from the other students. The area the participants felt least comfortable with was allowing HIV infected individuals to work in restaurants and cafeterias.

The six hour training was determined to have a positive effect on helping school personnel feel more comfortable discussing HIV/AIDS related issues with their students. At the conclusion of the training, participants' average composite score for comfort went from 40.52 out of 50 to 45.21. Scores on the attitude survey showed a slight increase from a mean of 43.95 to 46.06 out of 50. This was still determined to be significant by a paired sample t-test. School personnel responses were higher for having a positive attitude toward individuals with HIV/AIDS when compared to the mean scores for confidence and comfort in teaching HIV/AIDS.

Prior research indicates only about one-third of teachers had completed any training sessions on HIV/AIDS within the past two years (MMWR, 1996). According to another study, teachers indicated a desire to have more specific training and be better equipped to teach HIV/AIDS education (Dawson, et al., 2001). The need for educating school personnel is clearly needed to provide accurate information to students. The HIV

Update Trainings were found to be effective in increasing knowledge of school personnel. The mean score on the pre-test was 64.22 out of a possible score of 100. At the conclusion of the training, the mean score rose to 77.11.

The third research question examined the differences in confidence, comfort, attitudes, and knowledge among school personnel. Personnel were divided into teachers, nurses, administrators, and a category called "others" which included school counselors and psychologists. During the pre-test a significant difference in confidence levels was found with teachers reporting the highest degree of confidence and administrators indicating the lowest degree of confidence. At the conclusion of the training, no significant difference among the four identified groups existed. For the variable "comfort" teachers again were found to have a significantly higher level than nurses. Administrators and those in the "others" category were not found to be significantly different. On the post-test, teachers again had significantly higher scores than nurses. The post-test also showed there was a significant difference between teachers (higher) and administrators (lower). When attitudes of the four groups were compared on the pre-test and the post-test, no significant differences were found to exist among any of the groups. It was found that nurses had a significantly higher level of knowledge regarding HIV/AIDS than teachers. Administrators and "others" did not differ significantly from the other groups in their level of knowledge.

The fourth research question asked whether increasing one's knowledge would result in being more confident and comfortable teaching HIV/AIDS as well as having a more positive attitude toward those infected with HIV/AIDS. There was a positive relationship between knowledge and confidence in the pre-test indicating that as

knowledge increased, one's level of confidence also increased. However, this did not hold true for the post-test. It did not show a significant relationship. Knowledge was found to have a positive effect on comfort level when teaching HIV/AIDS in both the pre-test and the post-test. It was also found on both pre-test and post-test surveys that increasing one's knowledge about HIV/AIDS resulted in more positive attitudes toward people with inflicted with the disease. The results of these bivariate regressions demonstrate the importance of increasing knowledge among school personnel in order to provide effective HIV/AIDS education. The theoretical model has been revised to show the effect of increasing knowledge had on the other three variables (Figure 3).

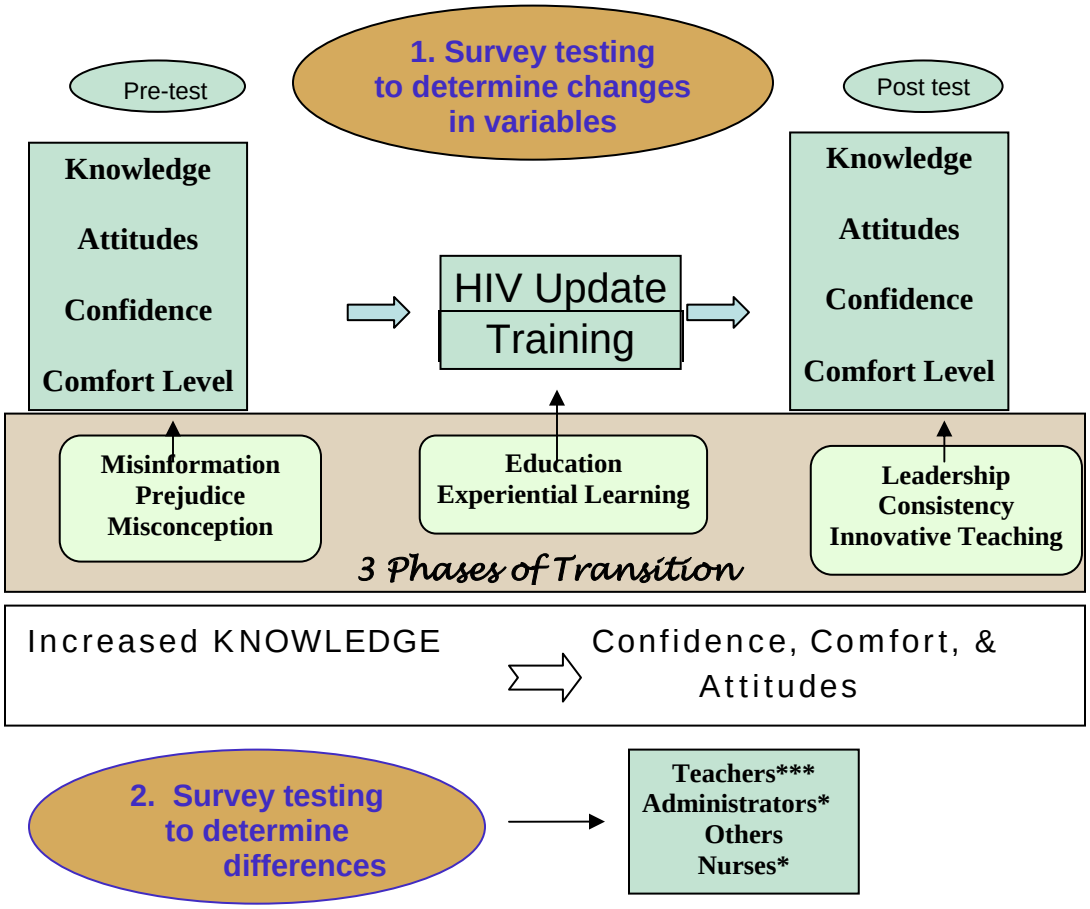

Figure 3. Theoretical model showing effect increasing knowledge had on variables.

Educational Implications

The increase in HIV infection among youth, making it the fifth leading cause of death among 15 to 24 year olds (CDC, 2006) and the seventh leading cause of death among children ages 1 to 4 (Stine, 2003), clearly indicates a need for educators to be properly trained to address the problems associated with this disease. Since the effects of HIV/AIDS infection go beyond the school walls, it is important for schools to play a leadership role for the entire community. This includes helping people move from stereotypical thinking, realigning their emotions and attitudes, and assisting them in confronting the problems of HIV/AIDS in a positive manner. Bridges (2003) identifies this process as the three phases of transition.

In order to be effective, school personnel must help increase awareness that although people infected with HIV are living longer, the disease still lingers as a major threat to health particularly among vulnerable populations. Heifetz and Linsky (2002) suggest providing accurate and current information helps to eliminate misconceptions and results in people looking beyond their self-interests for the good of society. Before one is able to provide such leadership, it is important to determine one's own attitudes and knowledge.

This study provided an overview of the effects on school personnel's knowledge, attitudes, comfort, and confidence levels in being able to successfully take part in the fight against HIV/AIDS. The participation in six-hour HIV update trainings was determined to have a positive effect on increasing one's comfort, confidence, and knowledge levels. It was also determined the trainings improved one's attitudes toward individuals with HIV/AIDS. Teachers were found to be more comfortable teaching

HIV/AIDS than nurses, while nurses were found to have a higher level of knowledge regarding HIV/AIDS. This information is important when strategizing the best way to disseminate knowledge and change behavior. Perhaps teachers are better equipped to deal with students in a classroom setting, while school nurses should be utilized as resources for knowledge and discussions with individual students. It was also determined that increasing the knowledge level of school personnel had a positive effect on comfort in teaching HIV/AIDS and attitudes toward those with HIV/AIDS. The results of the pre-test showed an increase in knowledge was associated with an increase in confidence in teaching HIV/AIDS. However, in the post-test this association was no longer significant. This could imply that as knowledge increased during the training participants realized how much more they had to learn about HIV/AIDS decreasing their level of confidence as instructors.

The positive effects of the HIV/AIDS training sessions suggest that need for school personnel to be properly trained in developing leadership skills in this area. This includes increasing their knowledge about the disease, helping them be more confident and comfortable providing prevention education, and developing more positive attitudes toward those infected with the disease.

Recommendations

Every day, 6,000 people under the age of 25 are newly infected with HIV/AIDS. Every hour, 40 children die of AIDS. With no cure for HIV infection in sight, the need for effective trainings for school personnel is obvious. Education remains the most effective tool in preventing the disease from spreading and helping those who already have become victims of HIV/AIDS. It has been suggested that HIV/AIDS education be

included as part of a comprehensive health education course at the college level for those preparing to become educators. It has also been suggested that this education be updated on a regular basis once employed by a school district (American Academy of Pediatrics, 1998). Studies have indicated teachers are interested in having more specified training to help them be more prepared to teach in this area. Many who must teach HIV/AIDS claim they are self-taught and need more opportunity for quality training (Dawson, et al., 2000).

This study shows positive effects as a result of the six-hour training sessions. It is unclear from the study, however, if these positive effects continued for a reasonable length of time. It is recommended that further studies be conducted to determine how often trainings be provided to assure school personnel maintain adequate knowledge, comfort, confidence, and attitude levels needed to provide quality education.

The majority of the participants in this study were women. Men only comprised 23.2% of the sample. The significant increase in the number of HIV cases among the adolescent male population (Rangel, et al., 2006) indicates a need for male educators to be properly trained to serve as mentors and role models in helping young male children and teens address this issue. It is recommended that male educators be encouraged to become involved in increasing their awareness and competency in teaching HIV/AIDS education.

This study also indicated a lack of participation among administrators. While they may not be involved in direct instruction, their support for HIV/AIDS education in the school system is crucial. It is recommended that administrators demonstrate their leadership in fighting this disease by participating in trainings for school personnel. Teachers who attended this training were all from the health and physical education field.

While it is more likely that they will be the ones to provide instruction in this area, it is recommended that teachers from other disciplines become aware of the implications of HIV/AIDS on the entire school system and community. It would also be helpful for them to learn the proper way to deal with this disease should one of their students be HIV positive or have AIDS. Being sensitive to students whose family members are struggling with the disease is also helpful.

Administrators are in the leadership role of the school and as such they are expected to be well educated and understand the social, educational, psychological, and medical needs of their students. They should be required to attend regular trainings and courses that address HIV/AIDS policy, educational resources, updated HIV/AIDS information, and HIV/AIDS guidelines and legislative mandates. Administrators will then be more confident and effective in the prevention of HIV infection among adolescents (Dawson, 2001). One avenue available to administrators is through The Pennsylvania Inspired Leadership (PIL) Program. This is a statewide, standards-based continuing professional education program for school leaders. The comprehensive, cohort-based program is focused on developing the capacity of leaders to improve student achievement. The program is offered by the Department of Education in collaboration with the Pennsylvania Intermediate Units and other partners (PDE). This initiative should include in the curriculum requirements means to address HIV/AIDS in the school system. Research demonstrates that effective school leaders have an impact on student achievement. A focused program of continuing professional education can help leaders develop the knowledge and skills they need to become more effective in improving the learning environment for teacher sand students. This legislation will make better use of

Act 48 credits by requiring certain school administrators to participate in professional education activities that are focused on practices that have the greatest impact on improving student achievement (PDE). Effective education for all school personnel will contribute to the prevention and control of the HIV epidemic among adolescents. Administrators must lead the way in igniting a formidable effort to address the teaching and learning issues surrounding HIV infected children and adolescents.

It was also identified that school personnel were least comfortable and confident in discussing with students the use of condoms. This is an area in the training that must be strengthened. Using condoms during sexual intercourse is the only means of preventing the spread of HIV if young people choose to be sexually active rather than abstinent. School personnel who can only discuss abstinence as a means of prevention are limited in helping students make good decisions. The training should also be revised to address school personnel's misconceptions about vertical transmission of HIV. These were the two main areas identified in the post-test for training revisions. Education must be ongoing and available to all personnel working with the school due to children with HIV living longer, thus all educators, teacher assistants, cafeteria personnel, custodial staff, clerical support staff, and bus drivers will be working with HIV infected students at some point.

When dealing with a disease that is the result of risk behavior, it is most effective to begin prevention as early as possible. There are very few research studies that provide information related to HIV/AIDS education in the elementary school (Stinnet, et al., 2004). It is recommended that research be conducted to determine effective teaching strategies for providing prevention programs to children at an early age.

Further studies that examine the effectiveness of HIV/AIDS trainings for school personnel need to be conducted in order to address the health issues of the nation. These studies need to increase awareness, address attitudes, and help school personnel become effective in leading the fight against HIV/AIDS.

Conclusions

Providing trainings for school personnel regarding HIV/AIDS is necessary to prevent the current spread of HIV/AIDS among school age children. Education has long been identified as the key to prevention and is most effective if begun at an early age (Ballard, et al., 1990). Previous studies have shown education is effective in increasing students' knowledge and tolerance of others. It has also been proven to influence subsequent behavior (Kirby, et al., 1994). Conclusions from this study indicate a need for further research to determine the best means of addressing the increasing number of HIV/AIDS infections among youth. To accomplish this, educators must accept their role as the vehicle to change misconceptions and prejudices that exist in society. They must begin be examining their own attitudes and beliefs. In order to address this, effective professional development opportunities must be provided. It is going to take strong leaders in the school setting to help prevent HIV/AIDS among children and adolescents. If school personnel can increase their knowledge of HIV/AIDS, they can then become more proficient in teaching young people about HIV/AIDS (Dawson, 2001).

In 1987, President Ronald Reagan made a major speech on AIDS and in October of the same year AIDS was the first disease ever debated on the floor of the United Nations. The importance of HIV/AIDS nationally and internationally continued to be addressed by President Clinton as he established the Clinton HIV/AIDS Initiative in

2002. This initiative was designed to close the gap on treatment access by negotiating lower prices for lifesaving antiretroviral treatment, and by working with governments to improve the national health care systems required to deliver crucial medicines. On December 1, 2008, President Bush was awarded the "International Medal for PEACE" from the Global PEACE Coalition in recognition of his unprecedented contribution to the fight against HIV/AIDS and other diseases. President Bush has made a historic commitment in the fight against global HIV/AIDS. Since 2001, more than $148 billion has been allocated to fight HIV/AIDS both at home and abroad. The United States is helping to turn the tide against the global HIV/AIDS epidemic. The President's Emergency Plan for AIDS Relief (PEPFAR) is the largest commitment by any nation to combat a single disease in human history.

Our President elect, Barack Obama has pledged that, in the first year of his presidency, he will develop and begin to implement a comprehensive national HIV/AIDS strategy that includes all federal agencies. This strategy will be designed to reduce HIV infections, increase access to care, and reduce HIV-related health disparities. His strategy will include measurable goals, timelines, and accountability mechanisms. Our past and future presidents continue to serve as national and international leaders in the endeavor to stop the spread of HIV/AIDS.

There has been much debate about the HIV/AIDS pandemic tied to ethical and moral issues; however it is time to move past the misconceptions and prejudices of

HIV/AIDS in hopes that one day we will have a generation living without this devastating disease.

> Education is the most powerful weapon that can be used to change the world. It is also a weapon that the world cannot do without in the fight against HIV/AIDS. Education saves lives and ignorance is lethal.
>
> Nelson Mandela

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APPENDICES

APPENDIX A

School Personnel Informed Consent Form

Dear School Personnel:

You are invited to participate in the research study. The following information is provided in order to help you make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask. You are eligible to participate because you are attending this workshop for educators.

The purpose of this study is to evaluate the effectiveness of this HIV/AIDS staff/professional development program.

Participation in this study is entirely voluntary. You are free to decide not to participate in this survey or you may withdraw at any time. If you choose to participate, you may withdraw at any time by notifying the researcher or informing the person administering the survey. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence and will have no bearing on the services you receive from the University. The survey is anonymous and information you provided will be considered only in combination with that of other participants. The information obtained in the study may be published in scientific journals or presented at scientific or professional meetings but your identity will never be disclosed in any manner.

If you are willing to participate in this study, please sign the statement below and return it to the person administering the survey. When you complete the final survey, you will be given an information sheet that will provide contact information if you wish to receive results of the study.

_____ _____

Participant Name Date

_____

Participant Signature

Researcher(s)

Dr. Christine Black
Associate Professor
Health and Physical Education
237 Zink Hall
Indiana, PA 15705

Dr. Linda Klingaman
Professor
Health and Physical Education
210 Zink Hall
Indiana, PA 15705

Appendix B

HIV-Update Pre-Test/Post-Test

Directions: Please respond anonymously. Read each item and check the response block that fits best for you regardless of district restrictions.

Instruction Confidence

	How confident are you that you can:	Completely Confident	Very Confident	Somewhat Confident	Not Very Confident	Not at all Confident	
1.	Obtain up-to-date information about HIV/AIDS?						
2.	Present accurate information about HIV infection and AIDS to students?						
3.	Answer parents' questions about HIV education?						
4.	Discuss high-risk sexual behavior with students?						
5.	Help students develop skills they will need to postpone sexual involvement?						
6.	Explain to students at appropriate ages how a condom should be used?						
7.	Discuss high-risk drug behaviors with students?						
8.	Help students refrain form injecting drugs?						
9.	Increase students' tolerance toward people with AIDS?						
10.	Help students reach more accurate perceptions of their own vulnerability to HIV infection?						

Directions: Please read each item and check the response block that fits best for you.

Comfort with Sensitive Topics

	How comfortable are you in discussing the following topics with students'	Completely comfortable	Very Comfortable	Somewhat comfortable	Not very comfortable	Not at all comfortable	
1.	How HIV is transmitted						
2.	Injected Drug Use						
3.	Sexual Intercourse						
4.	AIDS						
5.	Alcohol Use						
6.	Condom Use						
7.	Sexual Abstinence						
8.	Male genitalia						
9.	Female Genitalia						
10.	Nonsexual ways of displaying affection						

*Assume for purposes of completing this inventory that your district's policies permit the discussion of
all topics listed.

Directions: Please read each item and check the response block that fits best for you.

Attitudes toward People with HIV or AIDS

		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
1.	I would be comfortable having a student with AIDS in my classroom.						
2.	A student who is infected with HIV should be allowed to eat lunch in the school cafeteria.						
3.	I would avoid a student whose family member had AIDS.						
4.	I would be comfortable attending a faculty meeting with someone who has infected with HIV.						
5.	Students who have AIDS should be segregated from other students.						
6.	Students who have AIDS should not play sports with other students.						
7.	I would feel comfortable individually tutoring a student infected with HIV.						
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	

8.	People who have AIDS should be allowed to work in restaurants and cafeterias.						
9.	If I thought a teacher was infected with HIV, I would be afraid to shake hands with that teacher.						
10.	I would feel comfortable hugging a friend who has AIDS.						

Directions: Please read each item and check the response block that you believe is a correct answer.

Knowledge of HIV and AIDS

		I am sure it's true	I think it's true	I don't know	I think it's false	I am sure it's false	
1.	Fifty percent of all new HIV cases are found in the age group under 25.						
2.	Only about twelve percent of HIV positive individuals are aware that they are infected.						
3.	There is currently a downward trend in annual HIV infections in the USA.						
4.	Heterosexual contact is the route of transmission most likely for young women to contract HIV.						
5.	Young females are biologically more susceptible to contracting HIV infection than older women.						
6.	The majority of school age children who have HIV Disease acquired it through vertical transmission from their mothers.						
7.	One of the greatest risks for HIV transmission occurs within the first several months of infection.						
8.	Acute Retroviral Syndrome is a life-threatening condition typically experienced during the later stages of HIV Disease.						
		I am sure it's true	I think it's true	I don't know	I think it's false	I am sure it's false.	
9.	Urine, Saliva, sweat or tears do not transmit the HIV virus.						

10.	The small risk of contracting HIV through a blood transfusion is typically due to inappropriately screening the blood.						
11.	The advent of new medication is helping people live longer and slow the progression of HIV Disease						
12.	Rapid Tests for the HIV antibody can produce results in as little as three minutes.						
13.	Highly Reactive Anti-Retroviral Therapy (HAART) is the use of six of more drugs in combination.						
14.	Post-Exposure Prophylaxis (PEP) is recommended only after a confirming test indicates seropositivity for HIV.						
15.	A new vaccine for AIDS has been developed and is given in three doses.						
16.	A new CDC prevention initiative includes making HIV antibody testing a routine part of medical care.						
17.	The majority of Federal HIV/AIDS spending is allotted to conducting more research.						
18.	Alcohol is the number one drug choice for teens.						
19.	Sexually Transmitted Infections known to be transmitted orally include herpes, gonorrhea, HPV, and HIV.						
20.	One characteristic of successful HIV/AIDS programs is the simplistic "just-say-no" educational approach.						

Demographics

Please do <u>not</u> use your name or <u>make any reference to your school district.</u>

1.	Number of years in education or teaching _____
2.	Occupation: Administration ___ Teacher ____ Certification/Discipline_____ Grade

	level(s)_____ School Nurse_____ If yes, are you involved in classroom instruction? Grade Level(s)_____ Other _____ Please Specify_____
3.	Do you typically teach an HIV/AIDS unit? ___No ____Yes

4.Do you typically teach an HIV/AIDS course? ___No ___Yes

5.Have you previously had any formal HIV/AIDS curricula training? ___No ___Yes

If yes, check all that apply:

___Undergraduate Course
___ Unit in undergraduate course
___Graduate Course
___Online Course
___In-service program
___Other: Specify

_____
___Unit in graduate course
_____

6. Gender: _____Female _____Male