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South Africa, HIV/AIDS, and Education

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University of San Francisco

South Africa, HIV/AIDS, and Education

A Field Project Proposal Presented to
The Faculty of the School of Education
International and Multicultural Education Department

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts in International and Multicultural Education

By
Katie Roberts
May 2018

South Africa, HIV/AIDS, and Education

In Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

in

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by
Katie Roberts
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UNIVERSITY OF SAN FRANCISCO

Under the guidance and approval of the committee, and approval by all the members, this field project (or thesis) has been accepted in partial fulfillment of the requirements for the degree.

Approved:

Dr. Manuel Alejandro Pérez
Instructor/Chairperson

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Abstract

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) are huge problems in South Africa. HIV is a disease that attacks a person's immune system and, if not properly treated, can lead to AIDS. While there is a treatment—antiretroviral drugs—HIV remains a highly stigmatized disease. People are often afraid to be tested because they feel they will be ostracized from their community. This field project focuses on reducing stigma so people are unafraid to get tested or seek treatment. Created to benefit both teachers and their learners, the goal of this mathematics curriculum (consisting of 12 lesson plans and worksheets) is to begin HIV/AIDS awareness in school so accurate information is learned and stigma is reduced. The 12 lesson plans developed integrates HIV/AIDS content into the South African government-issued grade 4 curriculum. Each lesson plan reviews the mathematical concept being taught at that time, and also covers one component of HIV. HIV topics include transmission, current statistical breakdown by demographic factors, and HIV positive mothers. The data used in the lesson plans are based on the most current South African data. While education in the current school system is a promising tool to combat stigma related to HIV, additional research and considerations must be taken before implementation. This project has not researched the legal ramifications or barriers introducing an integration may face in South Africa. A slow rollout with pilot testing is recommended before bringing the curriculum to a wider audience. The statistics and information will need to be regularly updated based on current research. If successfully implemented, this curriculum has the possibility to bring great change in South Africa.

Chapter I – Introduction

Statement of the Problem

From July 2011 to November 2013, I served as a Peace Corps Volunteer teaching English to students in grades 4 to 6 in a primary school in South Africa. The school was in a rural village in the North West Province about 50 miles outside Pretoria. We had no running water, no paved roads, and sporadic electricity. I lived with members of the Tswana tribe, and I learned as much about the culture as possible. One of the first things I noticed was the red and white beaded necklaces many of the people were wearing. I asked my host mom with whom I was living what they meant. She explained that the youngest living child in a family wears one when a parent dies. I then noticed the necklaces everywhere: on the two-year-old learning to walk, the 70-year-old grandmother taking care of her grandkids, my 25-year-old host brother, half of the kids at my school.

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) were, and continue to be, huge problems in both the villages and the larger country of South Africa. I witnessed children getting sick without knowing or understanding why. I lost friends because they were too afraid to seek treatment. Grandparents raised the majority of the children in the villages because parents had passed away from pneumonia or other illnesses when their immune systems had been stripped away by the HIV virus. I taught children about HIV/AIDS in my classroom and in the afterschool programs I led, but those lessons ended when I left South Africa.

HIV is a disease that attacks the immune system and can eventually lead to AIDS. When the HIV virus is in a person's bloodstream, it attacks certain cells of the immune system. These cells, known as *T-helper cells* or *CD4 cells*, help the body fight off

infection (Avert, 2018c; Millen & Irwin, 2003). When the CD4 cells are under attack, the immune system produces antibodies to help fight off the virus and make additional CD4 cells to replace those that were killed (Millen & Irwin, 2003). The HIV virus attaches to the CD4 cells and replicates itself, releasing new HIV into the bloodstream (Avert, 2018c). When a person has progressed to the later phases of HIV, the disease completely destroys the immune system, and any attempt to create new CD4 cells to fight off other bacteria and infections fails (Millen & Irwin, 2003). The immune system then becomes defenseless and stops working (Millen & Irwin, 2003).

HIV and AIDS are often confused as being the same, when, in fact, one—HIV—leads to the other—AIDS. AIDS is a set of symptoms caused by HIV, not a virus itself (Avert, 2018e; Millen & Irwin, 2003). AIDS is the “medical designation for a set of symptoms, opportunistic infections, and laboratory markers indicating that a person is in an advanced stage of HIV infection, with an impaired immune system” (Millen & Irwin, 2003, p. xxv). As a person’s immune system begins to weaken, he or she becomes more prone to infection (Avert, 2018e; Millen & Irwin, 2003). On average, a person with untreated HIV will develop AIDS 10 to 15 years after being infected, although it may take less time depending on the individual’s overall health (Avert, 2018e; Millen & Irwin, 2003). If treatment of an HIV positive person is started early and followed correctly, HIV symptoms and the development of AIDS are preventable (Avert, 2018c).

Treatment of HIV, known as antiretroviral treatment (ART), is extremely important for a person who has tested positive for HIV. ART allows a person to live a healthy life, keep HIV under control, and reduce the chance of passing the disease on to others (Avert, 2018d). Antiretroviral drugs (ARVs) interrupt the lifecycle of the HIV

virus and protect an HIV positive person's immune system (Avert, 2018c). The medication keeps the level of the virus in the body low, allowing the immune system to stay strong (Avert, 2018d). In fact, if treatment is performed properly, the HIV level can become so low that it is undetectable in the blood (Avert, 2018d). This means that there is little to no risk of transmission to others.

HIV is spread and contracted through certain bodily fluids. Exposure to these bodily fluids can occur through unprotected sex with a partner who is HIV positive, sharing needles with a person infected with HIV, receiving infected blood or blood products from a blood transfusion, or by an HIV positive mother breastfeeding an infant (Avert, 2018b; Millen & Irwin, 2003).

HIV cannot survive once it is outside the body (Avert, 2018b). It cannot be spread through casual contact, the air, mosquito bites, toilet seats, saliva, sweat, or urine (Avert, 2018b). Through education, people can learn how to protect themselves against contracting the disease. Safe practices include using a condom when having sex, not sharing needles, taking an HIV treatment if you are an HIV positive expectant mother, verifying blood has tested negative for HIV, and wearing gloves when handling blood or bodily fluids (Avert, 2018b).

While living in South Africa, I noticed a lack of education around HIV and AIDS. HIV/AIDS was a taboo topic that was rarely discussed, generally not taught in schools, and that generated conflicting, untrue myths that people believed to be fact. South Africa has the largest population of HIV positive people in the world. It houses 19% of the world's HIV positive people, 15% of all new infections, and 11% of all AIDS-related deaths (UNAIDS, 2017). Even though South Africa also has the largest population of

people receiving treatment globally (20% of all people globally receiving treatment are South African), HIV/AIDS still has a stigma attached to it. Bringing an HIV/AIDS curriculum into primary school classrooms will greatly benefit the students, known as *learners* in South Africa, by increasing their awareness and knowledge. Increasing awareness and knowledge will lead to a reduction in stigma through discussions at an early age and by ensuring that the learners are being taught correct information.

There was one non-governmental agency (NGO) in the village where I lived. The NGO provided home care to elderly villagers who could no longer take care of themselves. An individual working at the NGO was the only person in the village who chose to publicly disclose his HIV positive status. While there were countless people who were HIV positive living in the village, very few disclosed this information. Mpho,¹ the head of the NGO, disclosed his status, unafraid of the consequences. Although he was considered part of the community, he lost most interpersonal interactions as a result of the disclosure. When I was introduced to him, I shook his hand. He told me it was the first time someone had shaken his hand since he disclosed his status. The lack of education about the disease had caused people to be afraid of “catching” HIV through a simple handshake. I left the NGO with my neighbor, who proceeded to lecture me about making contact with Mpho. My neighbor, a retired school teacher and college graduate, thought I was now at risk of becoming HIV positive.

Unfortunately, Mpho’s story is not unique. Lack of education causes fear among those who do not fully understand HIV/AIDS. Lack of knowledge fuels the stigma surrounding the disease, as children and adults form negative feelings toward HIV

¹ All names have been changed to pseudonyms to protect privacy.

positive people (Dzhugudzha, Mokgatle, & Madiba, 2015). People who are HIV positive experience discrimination including losing jobs and homes, becoming estranged from families and society, and experiencing physical violence (Gilbert & Walker, 2010). In schools, children who are revealed as HIV positive to the other children are also treated differently, leading to separation when playing sports and participating in other group activities (Dzhugudzha et al., 2015).

One of my favorite things to do while I was living in South Africa was to walk around my village. I was able to meet new people and catch up with friends. I would eventually find myself having tea and swapping stories on the porch of one of the villagers. I normally walked to school with my next-door neighbor, Ofentse. Neither of us being fluent in the other's language, we would point to what we saw and each say the name in our native language so the other was able to learn the word. I learned a lot of Setswana (the language most commonly spoken in the area) on these walks, and I taught a lot of informal English lessons. Ofentse wore the red and white beaded necklace. He had lost his mother, and he never knew his father. Ofentse was six years old.

Ofentse, my favorite neighborhood walking buddy, was HIV positive. During my time in the village, I was told his status and he was not. A common village practice was to not tell children they were HIV positive until they questioned why they were required to take daily medications. Because the children who were known to be HIV positive were ostracized, their caretakers would wait as long as possible to tell them. There were negative ramifications to this method. Not being educated about HIV/AIDS, the children experimented in risky behaviors at a young age (Dzhugudzha et al., 2015). Beginning as young as 10 years old, children engaged in risky behaviors that lead to HIV infection

and/or teenage pregnancy. Africa has the highest rate of teenage pregnancy in the world (Yeboah, 2013), with South Africa having a rate of 13.9% (Masilela, 2017). HIV positive children like Oftentse who show no symptoms can unknowingly spread the disease.

HIV has a devastating impact on families and people on a personal level, but the country of South Africa has also been hugely impacted. Over the past 30 years, the effects of HIV/AIDS have destroyed economic and social gains throughout South Africa and other countries (Kauffman & Lindauer, 2003; Millen & Irwin, 2003). Until the beginning of the AIDS crisis, many countries in southern Africa were seeing an increase in life expectancy. AIDS not only set the life expectancy back 20-plus years, but other ramifications including problems with debt repayment, weak currencies, and low education levels occurred because of the high HIV infection rate (Kauffman & Lindauer, 2003; Millen & Irwin, 2003).

With the largest population of HIV positive people, South Africa is the epicenter of the current HIV/AIDS crisis (UNAIDS, 2017). Children need to learn about the disease to start discussions young and begin to reduce the growing HIV infection rate. The classroom should be a place to reduce stigma, eliminate stereotypes, and spread awareness and knowledge. Integrating HIV/AIDS content into the existing, government-issued primary school curriculum is one way to begin the education process. If schools teach children about HIV/AIDS and prevention early, maybe the next generation can grow up without wearing red and white beaded necklaces all of their lives.

Purpose of the Project

The purpose of this project is to create an integrated curriculum to begin educating learners at a young age about HIV/AIDS, in hopes of dispelling the many

myths, stigmas, and incorrect information that surround the disease. HIV/AIDS information will be taught within the government-issued South African grade 4 curriculum so that extra lessons are not required of already burdened teachers. The content will specifically be integrated into mathematics because it is not generally a topic that includes HIV/AIDS lessons. I have found areas within the current, government-issued curriculum to integrate the topic so that HIV/AIDS material is taught all year long, rather than through short, one-off lesson plans covered only once or twice a school year.

The target location for this integrated curriculum is South African grade 4 primary school classrooms. I will be using the government-issued South African curriculum for mathematics. The curriculum is in English, the language of instruction after grade 3. There is no timeframe for this curriculum. Once implemented, there would be no end date, only revisions as needed when updated information about HIV/AIDS is publicly released. There is always a need for this subject in classrooms for learners of all ages. While this project is specifically created for grade 4 classrooms, the lessons are adaptable for older learners or other subjects.

Both the teachers and the learners are active participants and will benefit from this integrated curriculum. The learners will learn about a topic not often addressed in schools or in society. They will also learn accurate numbers, background, statistics, and so forth in order to spread truthful information regarding how the disease spreads and the impact it has on the country. Similarly, teachers will benefit because they will be learning and teaching information that will help all members of the community to be more aware of the realities of the disease's impact. They will also be breaking stigma by talking about a socially forbidden (or taboo) topic. The teachers will already have the lesson plans

written for them, which gives them the benefit of not having to do any additional research to incorporate this material into their current curriculum.

The long-term goal for this project is, through education, to decrease the rate of HIV/AIDS. The learners would gain the knowledge necessary to break stereotypes and stigma, and this would decrease their risky behaviors. Decreased risky behaviors would lead to a decreased rate of new infections. Despite the realities of how long social patterns and stigma take to change, this curriculum would provide some immediate benefits to the communities in which it is taught. By learning about HIV/AIDS in the classroom, the learners will be able to fight stigma, dispel myths, and increase their knowledge of the subject. Once the disease is better understood and stigma is reduced or eliminated, learners and community members known to be HIV positive would no longer have to hide, and more people would feel comfortable being tested and seeking treatment.

Conceptual Frameworks

This field project uses three frameworks. The primary, overarching framework is Freire's theory of critical consciousness. The public health framework created by the National Institute for Health and Clinical Excellence and an HIV/AIDS curriculum integration framework adapted from UNICEF's goal to let every child learn and have access to a quality education both support Freire's work.

Freire's Critical Consciousness

Freire (1972) believed that education is a societal issue and stressed the importance of critical reflection rather than simply accepting information as it is presented. He argued that it is essential to question prior knowledge or understandings of social context before one is able to develop an understanding (Freire, 1972). Critical

consciousness has the power to shift people's self-perception so that they are able to recognize in themselves an ability to change and transform reality (Freire, 1970). Freire (1972) further believed that schools can become places of change for learners when, through education, they begin to understand oppression and know how to behave if faced with such a situation. Teachers have the power to become agents of change in their own classrooms and communities. They are able to question society, and they develop relationships with their learners. Teachers who create classrooms that promote critical consciousness create socially aware learners.

Public Health

The public health framework used for this field project was developed out of the National Institute for Health and Clinical Excellence's (NICE) work. The framework relates disease to an individual and the inequalities in health. The core principles of this framework are:

First, that there are determinants of health and disease which include social, economic, physiological, and biomedical factors. Second, these determinants not only impact on individuals to produce individual level pathology, but also produce highly patterned health differences in populations which reflect inequalities in society. Third, the determinants work through discernable causal pathways. Fourth, the causal pathways help to identify ways of preventing and ameliorating disease. Fifth, there are also causal pathways for the promotion of health. Finally, positive and negative causal pathways cross physical, biological, social, economic, political, and psychological discipline boundaries. (Kelly et al., 2009, p. e14)

I adapted this framework to specifically focus on HIV/AIDS in South Africa.

At the core of this framework is the connection between material, social, economic, political, and psychological factors (Kelly et al., 2009). Within the core, the framework is broken up into four areas, called vectors, as a way to categorize the cause of

health (Kelly et al., 2009). Figure 1 depicts the public health framework and the interaction of the four vectors: population, organizational, environmental, and social.

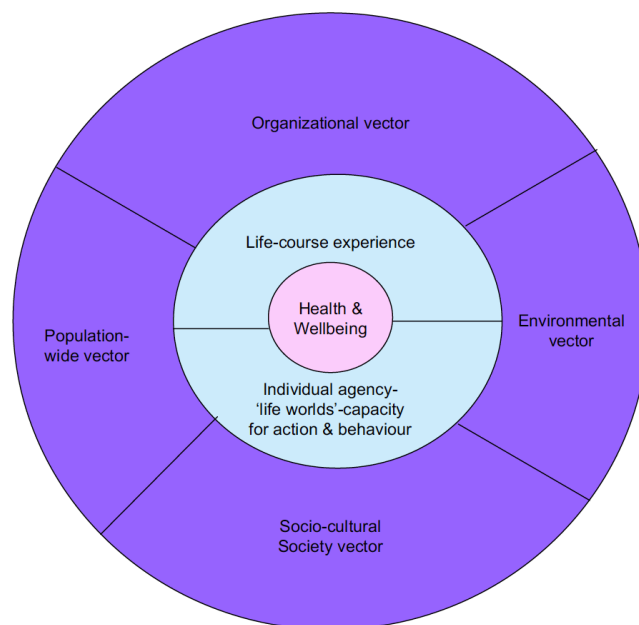


Figure 1. Conceptual framework for public health (Kelly et al., 2009).

The population vector. The first of the four vectors is the population vector. This includes elements that have an impact on the total population (Kelly et al., 2009). Government is a factor of the population vector. Whether a country has democratic freedoms such as free speech, whether it is secure or fragile, and whether or not the government is corrupt directly impact the health of its citizens (Kelly et al., 2009).

In South Africa, for nearly a decade beginning in the late 1990s, messages were coming directly from President Thabo Mbeki denying the existence of AIDS and inaccurately stating its causes (Boseley, 2008; Specter, 2007). He believed the causes were poverty, bad nourishment, and generally poor health (Boseley, 2008). The solution to eliminating AIDS, according to President Mbeki, was to alleviate poverty in Africa. He recommended using herbal remedies to treat AIDS because ARVs were “damaging” or

“toxic” (Specter, 2007). Luckily, the misinformation disseminated by the government to the people about HIV/AIDS ended when President Mbeki was removed from office in 2008 (Boseley, 2008). The new people in power then worked to get as many people treated as possible.

Today, South Africa has the largest antiretroviral treatment (ART) program in the world (Avert, 2018a; UNAIDS, 2016). Funded largely by domestic resources, the goal of the program is to achieve a 90/90/90 target put forth by the World Health Organization (WHO). This means that 90% of adults ages 15–59 would be aware of their HIV status, 90% of those who are HIV positive would be receiving HIV treatment, and 90% of those people would be virally suppressed (Avert, 2018a; UNAIDS, 2016).

The organizational vector. The second vector is organizational. This vector provides a bridge between the population and the environmental vectors in order to produce health outcomes. It describes the healthcare system, the limits to access, and the exclusions from services. Included within the organizational vector are social organizations, such as schools, factories, businesses, clubs, societies, and religious organizations (Kelly et al., 2009). These all have an effect on health. The organizational vector also includes dimensions which can be applied to health services. These include availability, entitlement, flexibility and responsiveness, the relationship between professional and managerial teams, and the behavior of the people.

The environmental vector. The third vector of this framework is environmental. This includes everything from what is in the air a person breathes, to a person’s home or workplace, to the atmosphere as a whole (Kelly et al., 2009). It also includes long-term

climate threats, biological stressors like germs and viruses, and psychological stressors like noise or working conditions (Kelly et al., 2009).

The social vector. The final vector of this public health framework is social. Social is a vector which encompasses all elements that link to social, economic, and cultural occurrences (Kelly et al., 2009). This vector also includes the relationships among social groups within society at large (Kelly et al., 2009). A great deal of what happens with one's health is determined by place and population. Some people are at a higher risk for illness than others simply because of their geographic location. This sector identifies patterns that emerge when combining biology with sociology. Social categories like class, education level, economic status, ethnicity, age, gender, disability, religion, caste, and tribe are factors that affect health and mortality (Kelly et al., 2009).

In South Africa, social issues play a major role in the spread and treatment of HIV/AIDS. For example, stigma is still extremely high due to lack of education in the villages and areas lacking resources (Campbell, Maimane, & Sibiyi, 2005). Those areas also tend to have a higher infection rate than more developed cities, where people are better educated on the topic. A lack of access to medication and medical treatment is also a problem. Although South Africa has a program for all who are HIV positive to acquire ARVs, those who are in remote areas with limited access to healthcare have a more difficult time obtaining their medications and getting regular check-ups.

HIV/AIDS Curriculum Integration

The final framework used in this project integrates HIV/AIDS material into a course curriculum. Integrating HIV/AIDS material is a unique concept. If and when material on HIV/AIDS is taught, most teachers have separate lesson plans that cover the

topic rather than weaving the information into their current course material. Curriculum integration means the teacher uses the course material to teach the topic being integrated. For example, when teaching HIV/AIDS through curriculum integration in a mathematics classroom, a teacher could change word problems to reflect current statistics or numbers relevant to the learners' lives. The teacher could then take the problem one step further and begin a dialogue after the class has finished the assigned word problem. For a history class, a teacher could add dates of significant HIV/AIDS milestones or setbacks to timelines or discuss the beginning of the disease when reviewing major moments in history. In an English class, the teacher could use a book with an HIV/AIDS focus as part of the course material, rather than a book that is unrelated to the topic. Science class could address the biology behind the disease when covering genetics or other health topics. The ways to integrate HIV/AIDS content are nearly endless and are great ways to start difficult conversations.

Education on sex, reproductive health, and HIV/AIDS topics are a human right of all learners (UN Human Rights Council, 2010). This right is not recognized in all schools in South Africa. UNICEF has identified five focus areas that will maximize a learner's quality of education and their potential outcomes (UNICEF, 2003):

- Focus on the learner coming into the school, their health and nutritional status and ability to concentrate and learn;
- Focus on content of curriculum and materials offered through schools;
- Focus on processes employed in the design and delivery of programmes, especially teaching and learning methods, and the social forces which shape them;
- Focus on the environment in which the learning takes place in terms of being healthy, safe and supportive physically and psychosocially within and outside the classroom, in whatever form the classroom may take; and
- Focus on outcomes in terms of learning achievement and also impact on HIV/AIDS risk. (UNICEF, 2003)

Teaching HIV/AIDS education using the five areas outlined by UNICEF to maximize learners' overall education will add to the benefits of the integrated curriculum.

Significance of the Project

The curriculum developed for this field project is designed to benefit educators, learners, and communities. The educators will benefit by not having to create new lessons; rather they will already have HIV/AIDS information included in what they are required to teach on a daily basis. They also will be gaining accurate knowledge, free of stigma and judgment. The learners will greatly benefit from learning accurate, unbiased information about HIV/AIDS from a research-based curriculum, rather than by word of mouth or from those who are uneducated on the subject. They will still be receiving their government-required education, but they will also learn about this topical issue. The community as a whole will benefit as awareness increases and stigma decreases. As awareness and knowledge increase, an overarching and long-term goal is that the rate of new infections will decrease throughout the country. With stigma decreasing, the hope is that more people will feel comfortable getting tested and seeking treatment.

Definition of Terms

The following terms are used frequently throughout this field project. The definitions of these terms reflect a combination of scholarly resources and personal knowledge from my experience living in South Africa. Any definition used from a scholarly resource is cited.

Primary school: the term used for elementary school in South Africa, generally consisting of grade r (kindergarten) through grade 8. Many primary schools in villages are now being combined with middle schools. In the village where I lived, the primary

schools and middle schools from neighboring villages had merged into one in order to stay open. It ranged from grade r to grade 8 and had about 250 learners. This was a common practice for the smaller villages throughout the country.

Learners: the term used for students until they finish grade 12 in South Africa. Learners who go on to a university are then called students. I use the terms learners and students interchangeably when referring to children in primary school throughout this field project; however, I make a distinction when referring to those attending a university.

Grade r: the equivalent of kindergarten in the United States.

Foundation phase: grade r through grade 3.

Intermediate phase: grade 4 through grade 6.

Senior phase: grade 7 through grade 9.

Curriculum and Assessment Policy Statement (CAPS): The curriculum taught in all schools country-wide. The learners are taught in their home language through grade 3, and in grade 4 and above they are supposed to be taught strictly in English. In some villages, many of the teachers are not fluent in English. This means that the learners are taught in a mixture of English and their home language, causing problems when they take their final exams.

Home language: the Oxford Living Dictionary definition is “the language a person speaks at home; one's native language” (Oxford Living Dictionary, 2018). In South Africa this term is problematic. There are 11 official national languages and multiple unofficial languages. Learners are taught in their home language, which is assumed to be their first language, until grade 3. This is not always the case. In the area where I lived, for example, many learners’ first language was Xitsonga or Sepedi. The

primary school taught grade 1 to grade 3 in Setswana. This meant that some learners were learning in their second or third language.

Status: whether a person is HIV positive or HIV negative.

Coloured: a mixed-raced person, generally Black African and White African.

Chapter II – Review of the Literature

Overview

HIV is a virus that attacks the immune system. If not treated properly, HIV will eventually lead to AIDS, causing the immune system to be stripped away and the body to be defenseless. HIV is spread through certain bodily fluids when an individual has unprotected sex with an HIV positive partner, shares HIV infected needles, receives HIV infected blood during a transfusion, or when an HIV positive mother breastfeeds her infant (Avert, 2018b; Millen & Irwin, 2003).

South Africa has the highest rate of HIV infection in the world (UNAIDS, 2017). Although South Africa is at the center of the current HIV/AIDS crisis, accurate information is seldom brought into school classrooms and taught to the learners. The South African people learn false information through word of mouth, causing fear and stigma. This dynamic ostracizes people who identify as HIV positive in their own community or in their own school.

This literature review summarizes research about the many sides of stigma related to HIV/AIDS in South Africa, including teachers' and learners' lack of knowledge and awareness. It also covers the *other* created through stigma and lack of knowledge. Demographic factors such as geographical location, gender inequalities, and education disparities are discussed. Last, this literature review focuses on the benefits of integrating an HIV/AIDS curriculum into South African primary school classrooms to overcome lack of awareness and stigma.

Stigma and HIV/AIDS

Stigma occurs in several forms. Stigma is the “shame or disgrace attached to something regarded as socially unacceptable” (Mandal, 2012, p. 1). Verbal stigma includes “taunts, gossip, blame and rumors” (Mandal, 2012, p. 1). Another form of stigma is institutional stigma which can result in the loss of one’s job, home, educational opportunities, health benefits, and so on, simply because of his or her positive HIV status (Mandal, 2012). A final example of stigma is “targeting and victimizing vulnerable groups such as women and girls, sex workers, men who have sex with men, and injecting drug users. Targets may be subjected to violence and the refusal of health and other services” (Mandal, 2012, p. 1). Myths and lack of proper knowledge are common causes of stigma related to HIV/AIDS. Common myths such as “[p]eople with HIV are a public health risk,” “HIV is a death sentence,” or “[o]nly bad, gay, and sexually promiscuous people get HIV” cause fear and panic within communities, which causes those who are HIV positive to be ostracized (Mandal, 2012, p. 2).

HIV carries more stigma than any other medical condition in the world (Simbayi, Strebel, Cloete, Henda, & Mqeketo, 2007). Stigma affects people’s decisions, behaviors, and actions. People who are HIV positive frequently are blamed for their status, with others believing they could have avoided their situation had they made wiser choices (Gilbert, 2016). Niehaus believes that the root source of the stigma surrounding HIV/AIDS is death. He wrote that those who are HIV positive and have AIDS “are literally seen as ‘corpses that live’ (*setopo sa gopela*) or as persons who are ‘dead before dying’” (Niehaus, 2007, p. 848). Other researchers have similar theories, for example describing AIDS as a “waiting room for death” (Viljoen, 2005, p. 70). HIV is easily

concealed by those affected, but if the disease progresses to AIDS, the symptoms displayed are considered “repulsive, ugly and disruptive to social interaction” (Gilbert, 2016, p. 8). The general lack of understanding surrounding HIV causes people to feel threatened by the disease (Gilbert, 2016; Niehaus, 2007). In 1998, GuGu Dlamini, a 36-year-old South African woman, was beaten to death after speaking at an AIDS education meeting where she revealed that she was HIV positive (Heneke, 2009). Ms. Dlamini’s killers said that she had “shamed their community” (Niehaus, 2007, p. 846). Stories such as Ms. Dlamini’s are not unique and cause people who are HIV positive to feel even more ostracized and less likely to reveal their status to others.

HIV-related stigma can discourage people from participating in HIV testing, treatment, and overall disease prevention (Kalichman & Simbayi, 2003). HIV testing is necessary to identify and slow the spread of the disease and to reduce high-risk sexual practices in both youths and adults (Kalichman & Simbayi, 2003). The South African National HIV Prevalence, Incidence and Behaviour Survey, 2012 found that less than 40% of males and less than 55% of females who were at least 15-years-old knew their HIV status (Shisana, Rehle, Simbayi, et al., 2014) even though a government-sponsored program providing ART to HIV-infected people had been available in South Africa since April 2004 (Boulle et al., 2008).

Several researchers have examined the connection between HIV/AIDS and stigma. In a random study of 2,500 residents of Carltonville, South Africa, not one person accepted a free, anonymous HIV test when offered (Ashforth, 2002; Niehaus, 2007). Kalichman and Simbayi (2003) found that among participants in their study, only 44% had ever been tested to see whether they were HIV positive, 53% had never been tested,

and 3% refused to say whether they had been tested. Of those participants who were tested, 38% never learned their results (Kalichman & Simbayi, 2003). In a third study by Pawinski and Lalloo, 92% of 726 HIV positive patients had not revealed their status to anyone (Niehaus, 2007; Pawinski & Lalloo, 2001). While these three studies each had a different focus, the HIV positive participants in all studies felt the same stigma around HIV/AIDS. They were aware that revealing their HIV positive status would have a negative effect on their lives.

Research shows that stigma reduces people's willingness to participate in informational meetings and counseling which can reduce and prevent risky behaviors (Kalichman & Simbayi, 2003). South Africa and international aid programs have invested substantial time and resources into voluntary counseling and testing for HIV/AIDS (Kalichman & Simbayi, 2003). More than 450 counseling centers have been created, with more than 800 trained counselors around the country (Kalichman & Simbayi, 2003; Shinsasa & Simbayi, 2002). These centers have been shown to reduce high-risk sexual behaviors, and decrease HIV transmission rates (Kalichman & Simbayi, 2003). The centers are also a good resource to help direct people who are HIV positive to places where they are able to obtain ART, also increasingly more common throughout South Africa (Kalichman & Simbayi, 2003). Even with all of these resources, only a small fraction of HIV positive or persons at risk of HIV use the voluntary counseling and testing (Kalichman & Simbayi, 2003). One reason why more people do not use these services (only one in five who know about volunteer counseling and testing have been tested for HIV) is because of the "negative perceptions of testing services" (Kalichman &

Simbayi, 2003, p. 442). This also includes stigma about HIV/AIDS, fear of reaction of others, and community influence (Kalichman & Simbayi, 2003).

Research shows that stigma causes people who are HIV positive to have a lower quality of life due to their lack of testing and treatment, and, when patients are diagnosed as positive, feelings of isolation (Gilbert & Walker, 2010; Kalichman & Simbayi, 2003). This may manifest as self-discrimination, where people feel “dirty, guilty, and ashamed” about their HIV positive status, which correlates with depression and substance use (Simbayi et al., 2007, p. 6). In a study by Simbayi et al. (2007), more than 40% of participants who were HIV positive had experienced some sort of discrimination, and one in five HIV positive participants had lost a place to stay or a job. Internalized stigma contributed highly to feelings of isolation and poor quality of life (Kalichman & Simbayi, 2003; Simbayi et al., 2007).

HIV stigma also decreases the likelihood that mothers who are HIV positive will take action to prevent disease transmission to their children. Doherty et al. conducted interviews of 40 women from a larger pool of 650 HIV positive mothers. The study found that women were uncertain how to handle their HIV positive diagnosis and also care for their child (Doherty, Chopra, Nkonki, Jackson, & Greiner, 2006). The fear of disclosing their status was so great that women opted to risk passing the HIV infection to their children through breastfeeding rather than obtaining formula. (Doherty et al., 2006). Women reported that they did not disclose their status because of the fear of stigma, abandonment, and discrimination they would face (Doherty et al., 2006; Modiba, 2015). Stigma makes it difficult for women to tell any person who may have an impact on their feeding choice (e.g., husbands, mothers, mothers-in-law, other family members).

(Modiba, 2015). Women interviewed in a study by Modiba said they were forced to justify why they had to use formula, and a positive HIV status was a difficult explanation (Modiba, 2015). Interviews showed that a lack of education caused pressure from their partner and families to continue to breastfeed despite the fact that it would be unsafe for the baby (Modiba, 2015).

While HIV/AIDS carries more stigma than other medical conditions, education is shown to be a useful tool that can help reduce and relieve the fear of community members (Chao, Gow, Akintola, & Pauly, 2010). Stigma associated with HIV/AIDS often stems from lack of knowledge and awareness. Stigma causes people to avoid being tested, to not use available resources, and to avoid using disease prevention techniques. The stigma causes those with HIV/AIDS to feel ostracized and leads to an overall lower quality of life physically, emotionally, and socially.

Lack of Knowledge and Awareness Associated with Stigma

Researchers have found that the more education a population has, the lower the percentage of people living HIV positive. In fact, research shows that merely being present in school is associated with lower infection rates (Hargreaves et al., 2008). According to the South African National HIV Prevalence, Incidence and Behaviour Survey, 2012, between 2008 and 2012, basic knowledge of HIV prevention has decreased (Shisana, Rehle, Simbayi, et al., 2014). Not having a general understanding and knowledge about HIV, the population is unable to reject myths they may hear (Shisana, Rehle, Simbayi, et al., 2014). One way to overcome these obstacles is to teach accurate information to the people. Unfortunately, barriers exist which make it difficult to bring the HIV/AIDS topic into the classroom.

Teachers and the Classroom

Stigma not only affects how HIV/AIDS is discussed within communities, but it also affects how HIV/AIDS is talked about and taught in a classroom environment. Many teachers have not been properly educated on the subject. They may have been taught inaccurate information, or they may never have been taught about HIV/AIDS at all (Ahmed, Flisher, Mathews, Mukoma, & Jansen, 2009).

Teachers and learners have their own personal beliefs, religious or otherwise, about what sex is, and what a relationship should be. Because one type of HIV transmission is through sexual contact, these beliefs affect how teachers bring the topic of HIV/AIDS education into their classrooms. Chao, Gow, Aniktola, and Pauly (2007) surveyed 100 educators currently being trained on HIV/AIDS from KwaZulu-Natal. Participants were interviewed about their attitudes towards people who were HIV positive. The authors concluded that the stigma was significantly lower after the teachers had completed their training and gained knowledge about the disease. The relation between stigma and HIV/AIDS was directly related to the improvement in teachers' general and more specific knowledge of the subject. These included topics such as disease transmission (Chao et al., 2007).

Preparing teachers with content knowledge and critical consciousness is key for success when teaching sexuality and HIV/AIDS education. Many teachers feel uncomfortable with these topics because their personal beliefs contradict what they are being asked to teach:

We as adults do not believe in having sex before marriage at all, especially because of the religion but also because we don't believe it's a good thing . . . Now we must teach something to them that we don't believe in . . . I think that's also a problem. (Ahmed et al., 2009, p. 51)

Teachers also may feel uncomfortable because of the stigma surrounding HIV/AIDS or their personal lack of knowledge and training on the subject. Some teachers may feel they are well educated but are still uncomfortable because of the school or community in which they live.

Peltzer and Promtussananon (2003) conducted a study to assess the comfort level of secondary school teachers teaching sexuality and HIV/AIDS. They interviewed 15 educators from high schools within the Western Cape in South Africa. Their study yielded mixed results. The teachers were conflicted about teaching the subject. Although many knew the subject matter, they felt teaching it went against what they personally believed. Although the majority of the teachers felt that schools should introduce the topic of HIV/AIDS and have sex education as part of the curriculum, many felt that teaching abstinence was most important. Teaching safe sex practices countered what they believed. Others felt that teaching about HIV/AIDS was a burden to already overloaded educators who were not trained in the subject. To teach about HIV/AIDS, a teacher must bring a critical stance to create social change. As Freire (1970) wrote in his theory of critical consciousness, learners will realize through curriculum—in this case, one on HIV/AIDS—that social realities shape their lives and they have the power to change them.

Learners

Having HIV-related knowledge reduces HIV infections and transmission (Madiba & Mokgatle, 2015). Learners gain their education about HIV/AIDS through various sources, some of which are not credible. Madiba and Mokgatle (2015) found that even when learners had knowledge about HIV/AIDS, there were still gaps and

misunderstanding affecting their overall attitude towards the disease and those who are HIV positive. The stigma and negative attitudes towards HIV positive people hinder the fight for HIV prevention. Madiba and Mokgatle found that

[a]lthough the overall learners' knowledge about HIV was high for some items, it was of concern that their knowledge on HIV/AIDS treatment was very low. Two thirds (62.3%) believed that there is a vaccine against HIV, and 23.3% believed that there is a cure for AIDS. (2015, p. 141)

Other learners thought that the HIV infection could be spread through casual contact, and they were unaware of mother-to-child transmission (Madiba & Mokgatle, 2015). The education level and age affected attitudes towards HIV positive learners; those who were older being more open to friendships and relationships than the younger learners (Madiba & Mokgatle, 2015). The older learners also scored higher on their overall HIV knowledge than those who were younger (Madiba & Mokgatle, 2015). Madiba and Mokgatle's research aligns with research conducted by Dzhugudzha, Mokgatle, and Madiba (2015). In a study that included younger children, primary school learners also had knowledge of HIV/AIDS, with some misunderstandings and holes regarding prevention (Dzhugudzha et al., 2015). Not understanding HIV/AIDS contributes to the stigma and negative opinions of those who are HIV positive (Dzhugudzha et al., 2015), effectively turning the HIV positive person into the *other*.

Othering and HIV/AIDS

Stigma also occurs in the form of *othering*. The concept of the *other* is generally defined as groups of people who "have been traditionally marginalized in society, i.e., that are other than the norm" (Kumashiro, 2000, p. 26). Kumashiro discusses the influences on how the *other* is treated. Internally, the *other* has "ways of thinking, feeling, and valuing that justify, prompt, and get played out (and even reinforced) in the

harmful treatment” (Kumashiro, 2000, p. 27). He goes on to write, “sometimes, these dispositions—both conscious and unconscious ones—are about whom the other is and/or should be” (Kumashiro, 2000, p. 27). Although Kumashiro describes students of color, students from under- or unemployed families, females, males who are not “masculine,” and queer students as the *other* (Kumashiro, 2000), when expanded, the concept can apply to people who are HIV positive being viewed and treated as *others* (Petros, Airhihenbuwa, Simbayi, Ramlagan, & Brown, 2006). People living with HIV or AIDS are marginalized in their communities, and they do not fit the norm or are seen as deviants based on assumptions about how HIV is transmitted.

Othering someone creates a binary with a literal “us” versus “them” mentality (Borrero, Yeh, Cruz, & Suda, 2012; Kumashiro, 2000). *Othering* creates power structures with detrimental effects for the *others*, exploiting power imbalances where one person or social group gains at the expense of another person or social group (Borrero et al., 2012; Nelkin & Gilman, 1988; Petros et al., 2006). When *othering* a person based on HIV/AIDS status, people use blame based on race, culture, homophobia, or xenophobia, creating an “illusion of control” (Nelkin & Gilman, 1988; Petros et al., 2006, p. 68).

Denial is a major reason why people hide their HIV status. South Africans blame one another for being the source of or spreading HIV around the country. White South Africans blame Black South Africans for bringing HIV into the country and vice versa. Blaming another racial group creates a false sense of security through denial and the belief that one’s own racial group is invincible to HIV (Nelkin & Gilman, 1988; Petros et al., 2006). Petros et al. (2006) found that while there are some data that suggests Black

South Africans are at a higher risk of being infected than White South Africans, digging deeper shows that socioeconomic status is the root cause of the higher vulnerability.

Petros and colleagues' (2006) interview of a young, urban, White South African male living in the Free State highlights racial *othering*:

I had a case where people that I know had a servant who went for a[n] [insurance] policy and then she [found she] had the disease ... But the reaction is, she makes food, what about the food? She touches children, she touches the clothes, the beds ... it's frightening. Now ... I can't imagine associating with such a person. Doesn't matter what they say. Even if you touch him or her you're not going to get it. For me it's a ... no one really knows how this disease works. (Petros et al., 2006, p. 71)

Racial *othering*, mixed with fear and lack of education, further separates social groups in South Africa as people continue to blame one another for HIV/AIDS transmission (Petros et al., 2006).

Demographic Factors

Data shows that demographic factors influence HIV/AIDS infection rates within South Africa. These data include geographic location, gender, education, culture, income/poverty level, sexual orientation, marital status, and so forth (Bärnighausen, Hosegood, Timaeus, & Newell, 2007; Gilbert & Walker, 2002; Shisana, Rehle, Simbayi, et al., 2014). For the purpose of this thesis, demographic factors will include geographic location (i.e., rural and urban populations) and racial dimensions of each population, gender inequalities, and education disparities among rural and urban populations.

Geographical Location

Before and during apartheid, South African society was divided into racial groups that marginalized and violated the human rights of Black South Africans. This caused families to break down and men to frequently live in single men's hostels away from

their families for their economic survival, creating environments for them to have multiple sexual partners and easily contract and spread sexually transmitted diseases (Lurie, 2000; Petros et al., 2006). Even though apartheid ended in 1994, racial groups are still segregated across the country. The South African National HIV Prevalence, Incidence and Behaviour Survey, 2012, categorizes areas of the country into four types: urban formal, urban informal, rural informal, and rural formal. By far, the highest population of HIV positive people live in informal urban areas, which are under-resourced, and often lacking in basic human necessities. They have limited or no access to proper housing, water, sanitation, and preventative healthcare, and the majority of the people live in poverty. This plays a major factor in the HIV infection transmission rate (Shisana, Rehle, Simbayi, et al., 2014). The majority of the Black South Africans live in the areas of the country in need of resources where HIV rates are the highest.

Similar to the surveys conducted by Shisana et al. (2014), Wabiri and Taffa (2013) conducted a survey of 14,384 adults aged 15 years and older to evaluate the connection between socioeconomic status and HIV infection rates. Wabiri and Taffa were specifically looking at participants' personal ownership (home and location), and class (low/poorest, middle, upper/not so poor). They found that HIV was highest among the poor. They also concluded that HIV incidence was highest among women and among Black South Africans. Of the participants designated poor, only 20.5% had "good access to HIV/AIDS information," compared with 79.5% of those designated upper class (Wabiri & Taffa, 2013, p. 6).

Where a person lives has a great impact on how information about HIV prevention and risk perception is received. South Africa has started to move away from

its traditional messages spread through posters, billboards, statistics, newspapers, magazine articles, leaflets, and advertisements on taxis or buses, as these rated low in effectiveness (Shisana, Rehle, Simbayi, et al., 2014). Nyawasha and Chipunza (2015) have done research proving the efficacy that radio broadcasts have disseminating messages on HIV/AIDS; however, the most popular way to spread information is through television. When using the parameters described by Wabiri and Taffa (2013), 76.7% of the upper class watch television almost daily, while only 49.2% of the poor watch television almost daily. Television is not the most valuable or useful tool to communicate with people who live in under-resourced, poor, informal rural areas with the highest concentration of HIV.

Gender Inequalities

Women are a marginalized population within South Africa. The majority of the people in power are men, and the majority of the prominent cultures consider women inferior. Women are also considered a “high risk” group for spreading and contracting HIV (Aulette-Root, Aulette, & Boonzaier, 2013; Millen & Irwin, 2003). Identifying women as a *high-risk* population (expanded upon below), creates a stigma for all women. Instead of teaching that risky behaviors may lead to HIV, women have now become stigmatized and identified as one of the causes for spreading the disease (Aulette-Root et al., 2013). This stigma then leads to misunderstandings and violence.

Women suffer a high level of violence and a lack of control within their relationships and in their daily lives within South Africa (Aulette-Root et al., 2013; Kauffman & Lindauer, 2003). Fear of stigma or domestic violence by husbands discourages women from participating in counseling and testing (Millen & Irwin, 2003).

Although women may be faithful and monogamous to one partner, this does not mean their partner practices the same habits (Aulette-Root et al., 2013). Studies found that men are not considered masculine if they only have one partner (Aulette-Root et al., 2013). This means that men may have multiple partners of which a woman is unaware.

Women are prone to rape, sexual violence, and coercive or controlling behavior from their male partners (Aulette-Root et al., 2013; Westcott, 2017). Studies have shown that between 40% and 50% of South African women have experienced intimate partner violence (Westcott, 2017). Reasons for this violence vary from women disclosing their HIV positive status, to asking their partner to wear a condom, to wearing a condom themselves. Men refusing to use a condom is big problem affecting women (Aulette-Root et al., 2013; Westcott, 2017). It is ultimately up to the male whether or not he chooses to use a condom (Aulette-Root et al., 2013). With males having multiple partners, the females have no protection. A study by Westcott (2017) with women from the South African organization *Safe and Sound* found that three-quarters of the women did not use a condom the last time they had sex because they feared their partner's reaction if they brought up the topic. Because of this lack of power, women are unable to protect themselves from HIV, and, if infected, they are unable to get the treatment they need.

South Africa's constitution includes some of the most gender-sensitive language in the world (Kauffman & Lindauer, 2003). Even though the constitution calls for equality, a major contributing factor to the HIV/AIDS epidemic is the gender inequality impacting women and girls due to unequal cultural, social, and economic status (Avert, 2018f; Bazilli, Bond, McPhedran, & Sherret, 2006). Gender inequality puts women in positions of less power and leaves them in greater poverty globally (Aulette-Root et al.,

2013). HIV/AIDS is wiping out populations and increasing poverty among people, particularly women (Bazilli et al., 2006). Women and girls account for almost 60% of all HIV positive people living in sub-Saharan Africa, and they are twice as likely as males to become infected with the disease (Avert, 2018f; Bazilli et al., 2006). The majority of the economic burden resulting from HIV/AIDS falls on women. Women are forced to shoulder additional responsibilities when they have HIV positive family members living in the same household. Women, regardless of age, are expected to care for the sick or dying people who live with them, they have additional costs for healthcare and miscellaneous expenses, and they may even take care of orphans when family members pass away (Bazilli et al., 2006).

Gender inequality and economic hardships cause women and girls to sometimes take desperate measures to survive. According to UNICEF, three out of four girls having new HIV infections are between the ages of 15 and 19 years (Westcott, 2017). Girls who are around this age (usually between 15 and 24), sometimes wind up in relationships with *sugar daddies* (or *blessers*) (Brouard & Crewe, 2012; Westcott, 2017). *Sugar daddies* are men who give their partners gifts, money, or trips and take care of their families in exchange for sex (Brouard & Crewe, 2012; Westcott, 2017). *Sugar daddies* often feel entitled to treat the young woman poorly, they refuse to wear condoms, the women are treated violently, and both partners often contract HIV (Brouard & Crewe, 2012; Westcott, 2017). South Africa and many other countries are attempting to implement programs to take care of poor or rural families to make *sugar daddies* a less appealing option to help relieve poverty for families (Westcott, 2017).

Education Disparities

The level and quality of basic education varies widely across South Africa, largely along racial lines (Salisbury, 2016). After apartheid ended, Black South Africans were left with schools with few to no resources and unqualified teachers (Ahmed et al., 2009). Teachers taught through rote learning, and the racial differences were not fully addressed (Ahmed et al., 2009). Although the government has changed and apartheid is over, the schools have not changed. Black South Africans still attend schools with few resources and underqualified teachers (Ahmed et al., 2009). White South Africans gain 40% more education per year than Black South Africans (Salisbury, 2016). This difference is a major problem in the South African school system.

Just as general education varies around the country, so does education about HIV/AIDS. The South African National HIV Prevalence, Incidence and Behaviour Survey, 2012 found that survey participants had very low levels of accurate knowledge in regards to sexual transmission and prevention and lacked awareness to reject myths about HIV transmission (2014). Those who had the least knowledge on the subject were Black South Africans, people living in urban informal areas, and people 50 years or older (Shisana, Rehle, Simbayi, et al., 2014). Although these populations may have the least knowledge of the subject, the overall population of South Africa's basic understanding of HIV transmission and prevention also has declined over the past few years (Shisana, Rehle, Simbayi, et al., 2014). This decline in understanding and knowledge has adverse effects on preventing further spreading of the disease.

Not understanding the disease also was associated with a false sense of security. When those who believed they were not at risk were tested, a high percentage turned out

to be HIV positive (12.3% of females, and 9.2% of males) (Shisana, Rehle, Simbayi, et al., 2014). Not being fully educated and believing one is at a lower or at no risk of becoming HIV positive creates a false sense of security (Shisana, Rehle, Simbayi, et al., 2014).

Integration of HIV/AIDS into Course Curricula

Studies have shown that children ages 19 years and younger have the lowest rate of HIV. Shisana and Simbayi (2002) estimate that the HIV infection rate is 15.5% for adults ages 25 and older, 9.3% for 15–24-year-olds, and 5.6% for 2–14-year-olds. Boys and girls have average HIV infection rates of 4.5% and 6.5%, respectively, which are lower than the South African national average (Shinsasa & Simbayi, 2002). The South African National HIV Prevalence, Incidence and Behaviour Survey, 2012 found similar results. HIV infection rates more than tripled among individuals between ages 15–19 and ages 20–24 (2014). Although both of these studies found some young children were already HIV positive, the rate that HIV increases among children as they age and leave secondary school is staggering. This presents the perfect opportunity to teach the children about HIV/AIDS while they are young and still in school so they can continue to be HIV negative. If children are taught about HIV/AIDS at a young age, they will better understand prevention techniques and how the disease is transmitted, and they will dismiss dangerous myths so they can grow up to live HIV-free lives.

Stigma, lack of proper training, and disagreement based on personal values often leave health education, including HIV/AIDS prevention and awareness, out of current South African curricula. According to Peltzer and Promtussananon, “[a] comprehensive approach towards health education from an early age will go a long way to facilitate the

dissemination of sexual health messages” (2003, p. 52). They stress the importance of schools being places where health can be promoted; however, they also understand the sensitive nature of the topic (Peltzer & Promtussananon, 2003). Proper training is required of educators for them to feel comfortable, confident, and knowledgeable when working with learners (Peltzer & Promtussananon, 2003). Fonner et al. (2014) expand on Peltzer and Promtussananon’s ideas indicating that school-based education is critical for HIV prevention among youths (2014). They wrote,

school-based education alone cannot be relied on to prevent HIV infections among young people since not all young people attend school and since school funds and resources are often already strained. Instead, school-based sex education should be part of more holistic HIV prevention intervention aiming to engage young people in learning about and shaping their sexual and reproductive future. (Fonner et al., 2014, pp. 16-17)

Education about sex, reproductive health, and related topics is a human right; therefore, current South African curricula should be including this topic in all classrooms (UN Human Rights Council, 2010). Engaging in these topics increases knowledge and awareness of the risks and impacts of HIV/AIDS (Armooh, Tugli, & Anyanwu, 2015). Teaching these subjects in a classroom setting is one way to both educate and bring about social change in South Africa (Freire, 1972).

Summary

Even with the counseling and treatment programs South Africa has established to help combat HIV/AIDS, the HIV infection rate continues to climb. A great deal of the problem is a lack of education stemming from the stigma surrounding the disease. The education inequities between the social classes make it difficult for all students to have access to the same standard of education across the country. Integrating HIV/AIDS material into current South African curricula is one way to balance the education

inequities. All teachers across the country are required to use the same national curriculum; therefore, all students will be taught the same, accurate information. By teaching HIV/AIDS in this way, not only will learners break down social stigma and deepen their knowledge of the subject, but the educational inequities between the classes will lessen as all students across the country are taught the same material.

Chapter III – The Project and Its Development

Description of the Project

Grade 4 is a pivotal time in the South African school system. The learners move from the foundation phase (grades 1–3) into the intermediate phase (grades 4–6), and it is the first year when they are taught solely in English. It is also an important time for the learners' developmental stage of life. Many children begin to engage in risky behaviors beginning as young as 10-years-old (Dzhugudzha et al., 2015).

For this project, I created 12 lesson plans integrating HIV/AIDS content into the current South African grade 4 mathematics curriculum. I chose mathematics because it is a required subject for all grade 4 learners, and mathematics lessons do not generally include HIV/AIDS content. Each lesson plan includes an accompanying worksheet (and master answer key) which both tests the learner's background knowledge about HIV/AIDS and reviews the mathematical concept(s) being taught at that time. The HIV/AIDS topics vary widely and include information about how the disease is transmitted, HIV infected pregnant mothers, and treatment options. Several of the worksheets also include true or false questions about common myths regarding HIV/AIDS to both improve the learner's knowledge and to clear up misconceptions. Although the lesson plans have a specific order, the HIV/AIDS concepts do not build on one another. It is still recommended, however, that learners be present for all 12 lessons to gain a well-rounded education about HIV/AIDS. A full curriculum of 12 lessons will allow the learners to have a better understanding of the disease and its impact in South Africa. The order of the lesson plans is based upon the order set by the South African

grade 4 mathematics curriculum. The focus of all HIV/AIDS statistics and information is specific to South Africa.

The lesson plans are designed to be spread out over the course of the school year. South Africa's school year comprises four terms, and I created three lesson plans for each term. Each lesson plan consists of the same primary components. The first is mathematical skill building, and the second is raising consciousness in HIV/AIDS material.

Mathematical Skill Building

The teacher will first review the mathematical concept in which the HIV/AIDS content is being integrated. For example, in the symmetry lesson taught in term 2, the teacher would have already spent an hour teaching the learners what symmetry is, giving examples, and explaining symmetry of geometrical objects. During the integrated lesson, the teacher will review what was previously taught, but the learners will already have their foundation in the mathematical concepts. After the brief review, the teacher will model examples of the mathematical concept on the board.

The worksheets completed by the learners will further develop their mathematical skills, as discussed below.

Raising Consciousness in HIV/AIDS Material

After the teacher has reviewed the mathematical concepts and has given examples, it is time for the class members to complete the worksheet individually. Worksheets contain a combination of mathematical and HIV/AIDS questions. The data used on the worksheets is recent data about HIV/AIDS in South Africa. Below is an example of the *Symmetry and the Red Ribbon* worksheet. The worksheet begins with the

mathematical concept symmetry using the red ribbon (Figure 2), and the second half of the worksheet asks true or false questions about HIV/AIDS (Figure 3).



1. Draw the line of symmetry .	2. Complete the drawing to make the ribbon symmetrical .
	
3. What does the red ribbon symbolize?	

Figure 2. Sample of the *Symmetry and the Red Ribbon* worksheet – Mathematical concept

For the questions below, circle whether the phrase is True or False
4. True/False: HIV and AIDS are the same thing.
5. True/False: There are medications to help treat HIV.
6. True/False: A person can catch HIV by shaking someone's hand or giving them a hug.

Figure 3. Sample of the *Symmetry and the Red Ribbon* worksheet – HIV/AIDS content

The remainder of the class will be spent doing a wrap-up. The teacher will review the answers from the worksheet and then lead a discussion about the HIV/AIDS concepts introduced. If the worksheet includes true or false questions, the teacher will expand upon

each question, giving background explanations as to why the answer is either true or false. Realizing that this is a sensitive topic, the teacher must be careful to not create prejudices about those who are HIV positive or further stigmatize the disease. For lessons highlighting different HIV infection rates among economic, gender, or racial lines, additional time is allocated for the wrap-up portion of the lesson to facilitate a deeper discussion.

Development of the Project

I created an integrated curriculum for primary school children in South Africa. I focused on grade 4 mathematics of the government-issued curriculum (CAPS). My time teaching and living in South Africa as a Peace Corps Volunteer gave me a window into village life and the school system. I saw fear hold villagers back from getting tested for HIV, and I heard incorrect information about HIV/AIDS taught when questions were asked. To combat what I was seeing and hearing, I began bringing HIV concepts into my own lessons. I integrated the topic into my remedial English course through creative writing; I brought the topic up for discussion with learners when giving informal lessons after school and during afterschool programs; I worked with another volunteer to put on a camp using soccer to teach about HIV/AIDS. However, although these methods proved beneficial, they only touched the few learners with whom I was working.

Upon returning to the United States, I continued to think about a more permanent solution where learners would continue to get the information they need about the reality of HIV/AIDS. I realized that the learners need to be taught about multiple aspects of the disease, and that lessons would need to be spread out over the course of the school year. I decided to develop this integrated curriculum so that learners would learn factual

information about HIV/AIDS from a reliable source. Integrating it into the current curriculum would allow the teachers to not have to make time for additional lessons or do any research themselves.

The first step in creating the curriculum was to gain access to the government-issued South African curriculum. After a quick Google search, I was able to find all the materials I needed on the South African Department of Education webpage.² After I decided which grade I wanted my curriculum to focus on, I downloaded the lesson plans for grade 4. I then chose which subject I would be integrating the HIV/AIDS content into, and I landed on grade 4 mathematics.

I read through the curriculum to find areas which discussions of HIV/AIDS made sense and could be integrated with the existing material. It was important to me that the topic would be discussed multiple times throughout the year, and that material on HIV/AIDS complements, rather than detracts from, the government-issued curriculum. I chose three places in each of the four terms to integrate the content.

After identifying which places of the government-issued curriculum were able to be adapted, adjusted, or added to, I developed the HIV/AIDS material around the topic I chose. The specific material I chose to integrate was based on common misconceptions about HIV/AIDS, statistics focusing on South Africa that all people should know, and a basic understanding of the disease. While each math lesson follows the same structure, they each teach a different aspect of HIV/AIDS. The integrated curriculum's focus is to

² [https://www.education.gov.za/Curriculum/CurriculumAssessmentPolicyStatements\(CAPS\)/CAPSFoundation.aspx](https://www.education.gov.za/Curriculum/CurriculumAssessmentPolicyStatements(CAPS)/CAPSFoundation.aspx)

add to the richness of the topics being taught. The curriculum should help the teachers teach mathematics while also breaking stigma and increasing awareness and knowledge.

For this field project, I have developed the lesson plans, but I did not implement them in classrooms. The ultimate goal is for this curriculum to be implemented into South African grade 4 classrooms. If this curriculum was to be fully integrated, final steps would be to contact a school that has teachers who would be willing to learn and teach a new curriculum about a subject matter that is sensitive to discuss, especially with younger children. The hope would be one school would grow to multiple schools, and eventually this curriculum would be used around the country.

The Project

See Appendix A for the full project, including lesson plans, worksheets, and the master answer key.

Chapter IV – Conclusions and Recommendations

Conclusions

This project started with a red and white beaded necklace; a necklace that symbolized a parent's death. Serving as a Peace Corps Volunteer and realizing how many children had lost one or both of their parents because of pneumonia or just the common cold, I realized there was a larger problem. While pneumonia or a cold may have been what took the parents' lives, the lack of an immune system was the root cause. Their lack of immune system was due to HIV progressing into AIDS. This, however, was not discussed. HIV/AIDS was a taboo topic.

Stigma surrounding HIV/AIDS continues to be a huge problem in South Africa, which has the largest population of HIV positive people in the world (UNAIDS, 2017). Those who are discovered to be HIV positive are often ostracized from their communities. Stigma prevents people from getting tested or seeking treatment. Lack of education about the disease causes people to believe myths such as they will "catch" HIV by simply shaking the hand of an HIV positive person. This miseducation about HIV/AIDS allows the stigma to continue with the proliferation of inaccurate information about the disease.

The purpose and overall desired outcome for these integrated lesson plans is to increase awareness and decrease stigma. Bringing HIV/AIDS material into the classroom ensures that the learners are being taught accurate information from a reliable source. Furthermore, starting at a young age gives the learners the knowledge before they become sexually active in order to prevent risky behaviors which causes them to be at a higher risk for contracting or spreading the disease. The classroom is the perfect place to

reduce stigma by eliminating stereotypes and increasing awareness and knowledge.

Education in the current school system through an integrated curriculum is one promising tool to combat the HIV/AIDS crisis South Africa currently faces.

Recommendations

The lesson plans that I have created are a way to combat stigma that HIV positive people face on a daily basis. The lesson plans are also a way to increase awareness about the disease as a whole. I understand the difficulty such a taboo topic faces within a classroom. Teachers may disagree with teaching it to a young audience, or they may disagree with teaching about HIV/AIDS in a classroom at all.

Before implementing this curriculum, legal considerations must be taken into account. This project has not looked into legal ramifications for integration into the South African CAPS curriculum. Further research would be required by talking to the local school district and city or community council before beginning the pilot testing phase.

Conducting a pilot test in a small number of schools before this integrated curriculum is widely disseminated is an important part of this curriculum being successful. The pilot schools that are chosen should have teachers who volunteer to teach the content and who are comfortable leading discussions that may become uncomfortable. The schools and teachers would need to understand and consider that they may receive mixed reactions from the learners' guardians who may or may not want their children to talk about this topic in a school environment.

In a country that is in the process of recovering from apartheid, people continue to carry their prejudices and biases around with them. I recommend not only doing training on this new, integrated curriculum for teachers who will bring the material into their

classrooms, but also conducting sensitivity training. The teachers require an in-depth training about HIV/AIDS and should be given any additional resources they may need to help them better understand the disease. The teachers should be exposed to the topics being introduced, and they should be given strategies for leading discussions with their learners. It would also be useful to give them talking points should a guardian have issues with the lessons. Because this would be the first time this training is taking place, feedback would be necessary so that future teachers could receive the best training possible.

Once the pilot testing is complete, surveys and discussions would be needed to gauge the effectiveness of the lessons. Both the teachers and learners should be active participants in the surveys and discussions. The teachers should discuss what worked well, did not work, and what could be improved. The teachers would be the best people to judge whether lessons need to be adjusted so that learners have more or less time to focus on specific content areas. The teachers would also report how well-prepared they felt to teach the material, and if they felt they needed any additional resources or training. A learners' survey and discussion would center around whether the learners found the information helpful. The lessons should not be too basic, nor should they be too advanced. The goal is for the learners to learn something new, but it should not be overwhelming. The lessons would then be updated based on the feedback received from the teachers and learners to make a more useful integrated curriculum. While this phase is essential, the survey and discussion questions need to be created locally in the context of the school and community.

After the pilot phase is complete, the curriculum would then be slowly rolled out around the country. Again, teachers should volunteer to teach the integrated curriculum in their classrooms. I recommend the teachers see the curriculum, understand the risks, and understand how to teach the material before agreeing to bring it into their classrooms. These teachers should also be trained on the material, go through sensitivity training, and be given tools for leading discussions of difficult topics.

Finally, this curriculum should be updated on a regular basis. HIV/AIDS statistics are continually changing. While South Africa has the highest rate of infection now, this may not be the case in five years. In order to keep the content relevant and for the learners to get the most out of their education, they need to have the most up-to-date information.

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Appendix A

The Project

- Addition, Subtraction, and HIV Transmission
- Numeric Patterns
- Analysing Data
- Ordering
- Length and Health
- Symmetry and the Red Ribbon
- Common Fractions and HIV
- Representing Data
- Analysing Graphs
- Comparing Sources of Information
- Addition, Subtraction, and HIV Positive Mothers
- Probability, Income Level, and HIV
- Worksheet Master Answer Key
- Worksheet and Master Answer Key References

Whole Numbers: Addition and Subtraction and HIV Transmission

Term: 1

South African curriculum content area: numbers, operations and relationships

South African curriculum topic: 1.1 whole numbers – addition and subtraction

Lesson title: Addition, Subtraction, and HIV Transmission

Grade level: 4th grade

Total teaching time for term 1: 8 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review addition and subtraction.
- Learners will learn about HIV transmission.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Add
- Subtract
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review addition and subtraction.³

Teacher Modeling (10 Minutes)

- The teacher will do one or two addition or subtraction problems on the board.
- The teacher will explain the worksheet.

Learner time (20 minutes)

- Learners will be given a worksheet with addition and subtraction problems taken from a table on the worksheet.
- Once finished with the addition and subtraction problems, learners will answer questions about HIV transmission.
- Learners will answer the questions using their knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The learners will write the answers showing their work on the board.
- The table has current HIV data. The teacher will explain what the numbers mean.
- The teacher will review the questions about HIV transmission and expand into discussion as time permits.

Discussion suggestions

- Explain that the data are real from 2012. The numbers that they added/subtracted are new infection rates.

³ The learners will have been taught how to add and subtract in previous lessons.

- Expand on transmission methods.
 - HIV is transmitted through certain body fluids.
 - Infected needles can be from drugs, tattoos, piercings, etc.
- Discuss ways people can protect themselves against HIV.

Addition, Subtraction, and HIV Transmission

New HIV infections in 2012 by age

Age groups (years)	Sex	HIV incidence %	Estimated number of new infections
2+	Total	1.07 (0.87–1.27)	469,000 (381,000–557,000)
	Male	0.71 (0.57–0.85)	151,000 (121,000–181,000)
	Female	1.46 (1.18–1.84)	318,000 (257,000–401,000)
2–14	Total	0.25 (0.21–0.29)	29,000 (24,000–34,000)
	Male	No incident cases found	
	Female	0.49 (0.39–0.59)	29,000 (23,000–35,000)
15–24	Total	1.49 (1.21–1.88)	139,000 (113,000–175,000)
	Male	0.55 (0.45–0.65)	26,000 (21,000–31,000)
	Female	2.54 (2.04–3.04)	113,000 (91,000–135,000)
25+	Total	1.41 (1.15–1.67)	300,000 (245,000–355,000)
	Male	1.29 (0.91–1.67)	125,000 (88,000–162,000)
	Female	1.62 (1.30–1.94)	175,000 (140,000–210,000)
15–49	Total	1.72 (1.38–2.06)	396,000 (318,000–474,000)
	Male	1.21 (0.97–1.45)	145,000 (116,000–174,000)
	Female	2.28 (1.84–2.74)	251,000 (203,000–302,000)

**Numbers are rounded off to the nearest thousand.*

Calculate the following. Show your work.

1. $139 + 300$

3. $29 + 300$

2. $469 - 396$

4. $300 - 139$

5. What is HIV?

6. Circle the ways HIV can be transmitted

Mosquito bites

Reusing infected needles

Unprotected sex

Kissing

Hugging

Breast milk

Sharing food or drinks

Being friends with someone who is HIV positive

Numeric Patterns

Term: 1

South African curriculum content area: patterns, functions and algebra

South African curriculum topic: 2.1 numeric patterns

Lesson title: Numeric Patterns

Grade level: 4th grade

Total teaching time for term 1: 4 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review and complete a flow diagram.
- Learners will learn about the statistics of HIV rates for boys vs. girls and Black South Africans vs. White South Africans.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Flow diagram
- Input/rule/output
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review how to complete flow diagrams.⁴

Teacher Modeling (10 Minutes)

- The teacher will complete a simple flow diagram on the board.

Learner time (20 minutes)

- Learners will be given a worksheet with one incomplete flow diagrams and short answer questions about HIV.
- Learners complete the flow diagram and answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- Learners will write the answers on the board.
- The teacher will explain the answers to the short answer questions and begin a discussion as time permits.

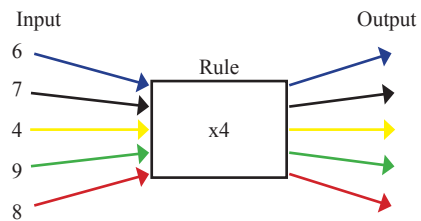
Discussion notes

- The teacher should be careful when discussing the answers so that new prejudices do not form.
- Discussion should center around why the women/girls are a high-risk group.

⁴ The learners should have already learned how to complete flow diagrams. Learners should know multiplication and division.

Numeric Patterns

1. Finish the flow diagram.



Girls between the age of 15 and 24 are four times more likely to be HIV positive than boys the same age.

2. Why are girls more likely to be HIV positive than boys?

3. What is a high-risk population?

4. Other than girls, what are examples of high-risk populations?

Analysing data

Term: 1

South African curriculum content area: data handling

South African curriculum topic: 5.3 Analysing, interpreting and reporting data

Lesson title: Analysing data

Grade level: 4th grade

Total teaching time for term 1: 10 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will be able to better read a bar chart.
- Learners will learn the facts about common myths surrounding HIV/AIDS.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Bar chart
- HIV/AIDS

Lesson/Review (10 minutes)

- The teacher will review how to read a bar chart based on previous lessons.⁵

Teacher Modeling (10 Minutes)

- The teacher will read data from a simple bar chart.

Learner time (15 minutes)

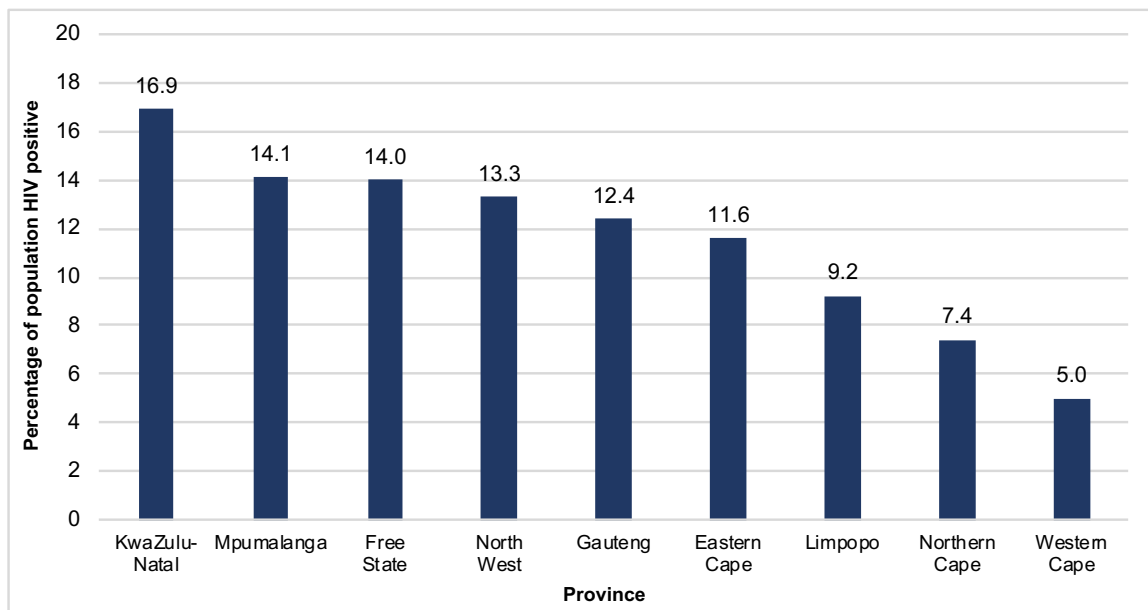
- Learners will be given a worksheet with one bar chart. They will answer questions based on the data in the chart.
- The learners will also answer the true or false questions at the bottom of the worksheet.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will review the true or false questions.

⁵ The learners should know how to read a bar chart from their previous lesson.

Analysing Data



1. Which province has a 13.3 HIV infection percentage? _____
2. What is the HIV positive population percentage in Mpumalanga? _____
3. Which province has the lowest population of HIV positive people? _____
4. Which province has the highest population of HIV positive people? _____
5. What is the HIV positive population percentage in Limpopo? _____
6. Which province has a 7.4 HIV infection percentage? _____

For the questions below, circle whether the phrase is **True** or **False**

7. **True/False:** Getting tested for HIV gives you HIV.
8. **True/False:** If you test positive for HIV, you will die from AIDS.
9. **True/False:** HIV will progress into AIDS if not treated.

Ordering

Term: 2

South African curriculum content area: numbers, operations and relationships

South African curriculum topic: 1.1 whole numbers – counting, ordering, comparing, representing and place value of digits

Lesson title: Ordering

Grade level: 4th grade

Total teaching time for term 2: 1 hour

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review addition and subtraction.
- Learners will recognize subtraction in simple word problems.
- Learners will learn about HIV positive expectant mothers.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Add
- Subtract
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review number ordering.⁶

Teacher Modeling (10 Minutes)

- The teacher will show an example of putting numbers in order on the board.
- The teacher will explain the worksheet.

Learner time (20 minutes)

- Learners will be given a worksheet requiring them to put numbers in order.
- The learners will then answer a few true or false questions about common HIV/AIDS myths.
- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will facilitate a discussion based on the answers from the worksheet.

Discussion notes

- The teacher should be careful when discussing so that prejudices do not form.
- Black Africans and females are high-risk populations. The teacher should discuss the meaning, and why their infection rate is higher.
 - High-risk population: those more prone to becoming HIV positive.

⁶ The learners will have already covered this information in term 1.

Whole Numbers: Ordering

HIV rates for youth ages 15–24

Variable	%
Sex	
Male	2.9
Female	11.4
Race	
Black African	8.4
White	0.3
Coloured	1.1
Indian/Asian	0.8

1. Put the race HIV infection percentages in order from smallest to largest.

2. Put the race HIV infection percentages in order from largest to smallest.

3. Which race has the lowest rate of HIV infection?

4. Which race has the highest rate of HIV infection?

For the questions below, circle whether the phrase is **True** or **False**

5. **True/False**: HIV and AIDS are caused by the same virus.

6. **True/False**: You can catch HIV from a toilet seat.

7. **True/False**: Females are considered a high-risk population.

Length and the Red Cross

Term: 2

South African curriculum content area: measurement South African curriculum topic:

4.1 length

Lesson title: Length and Health

Grade level: 4th grade

Total teaching time for term: 7 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will have a better understanding of measurement.
- Learners will be able to recognize the red cross as a symbol for health.
- Learners will better understand HIV treatment through question and discussion.

Materials and preparation

- 1 worksheet per learner – if no access to color printer, use worksheet with an outline of cross and have learners color the cross red
- Pen or pencil
- Ruler
- Red crayon, marker, or colored pencil (optional but preferred if no access to color printer)

Key Terms

- Antiretroviral drugs (or ARV)
- HIV/AIDS

Lesson/Review (10 minutes)

- The teacher will begin by reviewing the concept of measurement.⁷
- The teacher will review the different units of length used in the previous class which are necessary to complete the worksheet.
- The teacher will show the learners a ruler and remind the learners of the difference between millimeters, centimeters, and inches.

Teacher Modeling (5 Minutes)

- The teacher will measure an object and show the different lengths in millimeters, centimeters, and inches.
- The teacher will show the learners the worksheet and ask if they know what the red cross symbolizes.
- The teacher will explain what “symbolize” means (if necessary).

Learner time (25 minutes)

- Learners will be given a worksheet with a red cross drawn on it. They must find the measurements of different parts of the cross.
- There are questions about health and treatment after the measurement portion has been completed.

⁷ Learners will have already been taught about measurement in their previous lesson.

- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (20 minutes)

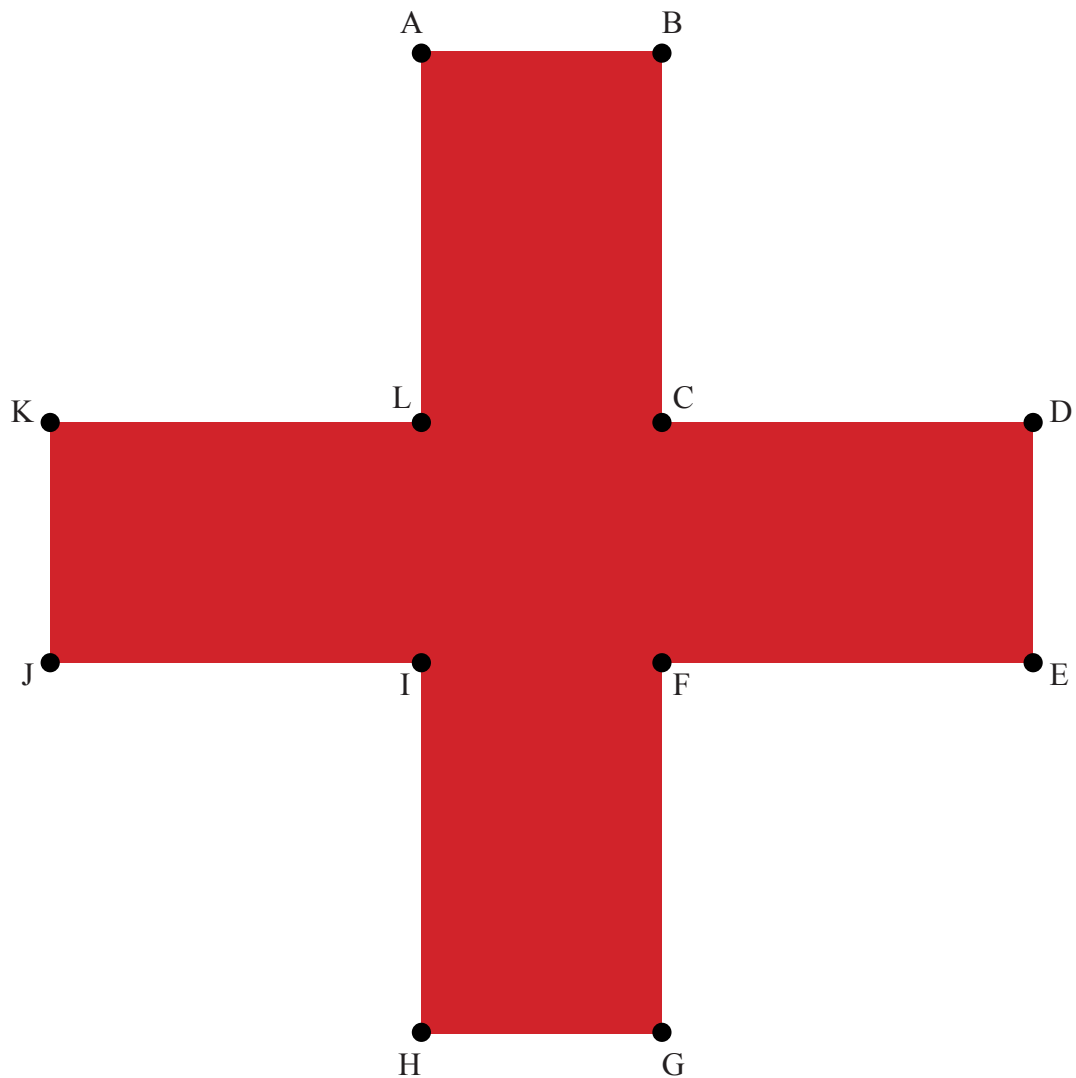
- The teacher will review the answers from the worksheet.
- The teacher will expand on the health questions and begin discussion as time permits.

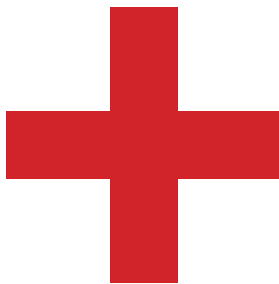
Discussion question suggestions/notes

- Why should a person know their HIV status?
- Why should a person continue to take their HIV medication, even if they are feeling better?
 - The teacher should explain that the medication suppresses the virus and the person will feel better. ARVs must be taken continuously.
- What kinds of services do the South African government offer?

Length and the Red Cross

1. What is the distance from point **A** to point **B** in millimeters? _____
2. What is the distance from point **J** to point **E** in centimeters? _____
3. What is the distance from point **D** to point **E** in centimeters? _____
4. What is the distance from point **L** to point **D** in millimeters? _____





5. What does the red cross symbolize?

6. What is the name of the medication to treat HIV?

For the questions below, circle whether the phrase is **True** or **False**

7. **True/False:** A person should know their HIV status.
8. **True/False:** You should only take medication for HIV if you are not feeling well.
9. **True/False:** The government offers services to help counsel and treat HIV positive patients.

Symmetry and the Red Ribbon

Term: 2

South African curriculum content area: shape and space

South African curriculum topic: 3.3 symmetry

Lesson title: Symmetry and the Red Ribbon

Grade level: 4th grade

Total teaching time for term: 2 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will have a better understanding of symmetry.
- Learners will recognize symmetry in their daily lives.
- Learners will understand the meaning behind the red ribbon.
- Learners will better understand HIV through discussion surrounding common myths and facts.

Materials and preparation

- 1 worksheet per learner – if no access to color printer, use worksheet with an outline of the ribbon and have learners color the ribbon red
- Pen or pencil
- Red crayon, marker, or colored pencil (optional but preferred if no access to color printer)
- Ruler (optional)

Key Terms

- Symmetry
- Symbolize
- HIV/AIDS

Lesson/Review (10 minutes)

- The teacher will begin by reviewing the concept of symmetry.⁸
- The teacher will review shapes used in the previous lesson.
- The teacher will show that symmetry can be applied to objects around the classroom.

Teacher Modeling (5 Minutes)

- The teacher will show the learners the worksheet with the red ribbon on it. They ask the learners if they know what the red ribbon means.
- They explain that they will find the symmetry in the ribbon and answer the questions on the worksheet.
- They will explain what symbolize means (if necessary).

Learner time (25 minutes)

- Learners will be given a worksheet with a red ribbon drawn on it. They must find the line of symmetry and then draw the other half of one themselves.

⁸ Learners will have already been taught symmetry in their previous lesson.

- There are also questions about the red ribbon, myths, and facts on the worksheet.
- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (20 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will expand on the true or false questions and begin discussion as time permits.

Symmetry and the Red Ribbon

1. Draw the line of **symmetry**.



2. Complete the drawing to make the ribbon **symmetrical**.



3. What does the red ribbon symbolize?

For the questions below, circle whether the phrase is **True** or **False**

4. **True/False:** HIV and AIDS are the same thing.

5. **True/False:** There are medications to help treat HIV.

6. **True/False:** A person can catch HIV by shaking someone's hand or giving them a hug.

Common Fractions and HIV

Term: 3

South African curriculum content area: numbers, operations and relationships

South African curriculum topic: 1.2 common fractions

Lesson title: Common Fractions and HIV

Grade level: 4th grade

Total teaching time for term 3: 5 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review how to add common fractions.
- Learners will learn about the different rates of HIV infection.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Add
- Fraction
- Numerator
- Denominator
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review common fractions.⁹

Teacher Modeling (10 Minutes)

- The teacher will do a few examples adding common fractions on the board.
- The teacher will explain the worksheet.

Learner time (20 minutes)

- Learners will be given a worksheet with common fraction addition problems.
- Once finished with the addition problems, learners will answer a series of true or false questions about common HIV/AIDS myths.
- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The learners will write the answers to the common fraction problems on the board.
- The teacher will review the true or false questions and expand into discussion as time permits.

⁹ The learners will have already been taught how to add fractions in previous lessons.

Common Fractions and HIV

Calculate the following.

Sexual transmission is responsible for 80 percent of HIV infections worldwide.

1. $6/10 + 3/10$

Transfusion of contaminated blood products are responsible for 5 to 10 percent of HIV infections worldwide.

2. $2/8 + 5/8$

Infants breastfed by an HIV positive mother are twice as likely to become HIV positive themselves.

3. $5/12 + 3/12$

For the questions below, circle whether the phrase is **True** or **False**

4. **True/False:** Safe sex should always be practiced to help prevent the spread of HIV.

5. **True/False:** Needles should be reused to help save money.

6. **True/False:** Gloves should be worn when there is a possibility of coming in contact with blood.

Representing Data

Term: 3

South African curriculum content area: data handling

South African curriculum topic: 5.2 representing data

Lesson title: Representing Data

Grade level: 4th grade

Total teaching time for term 1: 7 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will be able to draw a bar chart.
- Learners will understand HIV data.
- Learners will learn the facts about common myths surrounding HIV/AIDS.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Bar chart
- Axis
- HIV/AIDS

Lesson/Review (10 minutes)

- The teacher will review how to draw a bar chart.¹⁰

Teacher Modeling (10 Minutes)

- The teacher will draw a simple bar chart for the class on the board.

Learner time (20 minutes)

- Learners will be given a worksheet with a table of data. They will draw a bar chart based on the data.
- The learners will answer the true or false questions at the bottom of the worksheet.

Wrap-up (20 minutes)

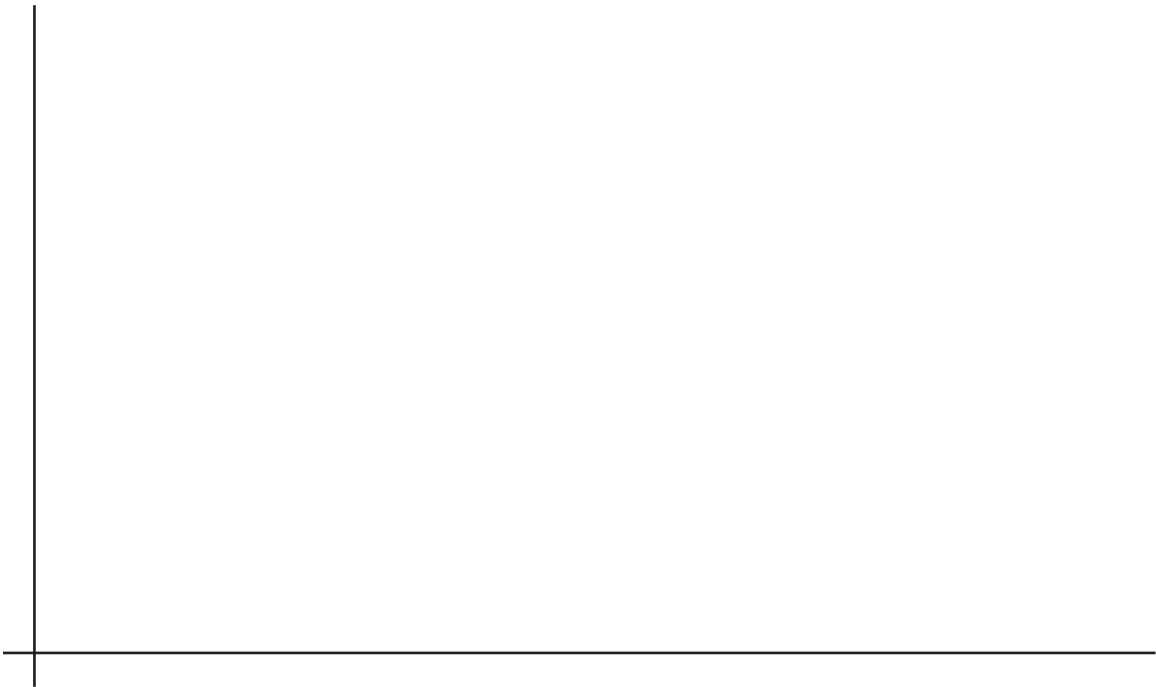
- The teacher will review the answers from the worksheet.
- The teacher will review the true or false questions and begin discussion as time permits.

¹⁰ The learners will have already learned how to draw bar charts in previous lessons.

Representing Data

1. Draw a **bar chart** with the data below.

Locality type	%
Urban formal	10.1
Urban informal	19.9
Rural informal	13.4
Rural formal	10.4
Total	12.2



For the questions below, circle whether the phrase is **True** or **False**.

2. **True/False:** HIV can be cured.
3. **True/False:** If both partners have HIV, it is okay to have unprotected sex with one another.
4. **True/False:** An HIV positive person can live a normal life.

Analysing Graphs

Term: 3

South African curriculum content area: data handling

South African curriculum topic: 5.3 Analysing, interpreting and reporting data

Lesson title: Analysing Graphs: Then and Now

Grade level: 4th grade

Total teaching time for term 1: 7 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will be able to compare bar charts.
- Learners will better understand HIV data.
- Learners will learn the facts about common myths surrounding HIV/AIDS.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Bar chart
- HIV/AIDS

Lesson/Review (10 minutes)

- The teacher will explain the parts of one bar chart.¹¹

Teacher Modeling (10 Minutes)

- The teacher will compare two charts to show the similarities and differences.

Learner time (20 minutes)

- Learners will be given a worksheet with two charts. They will answer questions based on comparison of the two charts.
- The learners will answer the true or false questions at the bottom of the worksheet.

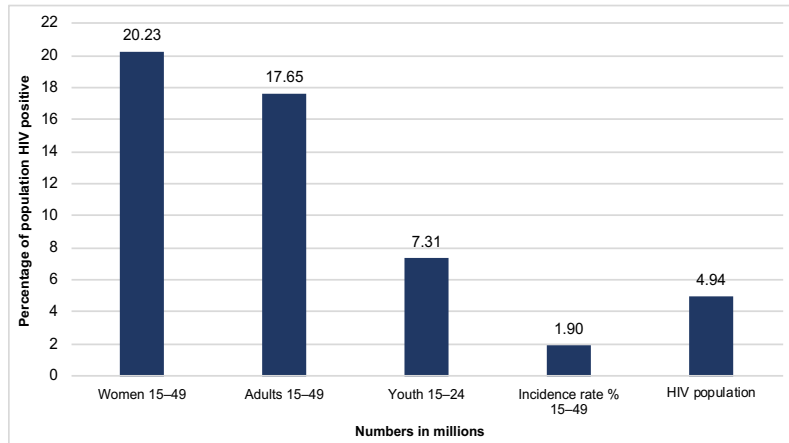
Wrap-up (20 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will review the true or false questions and begin discussion as time permits.

¹¹ The learners will already know how to read a chart and identify differences from previous lessons.

Analysing Data

Data collected in 2012

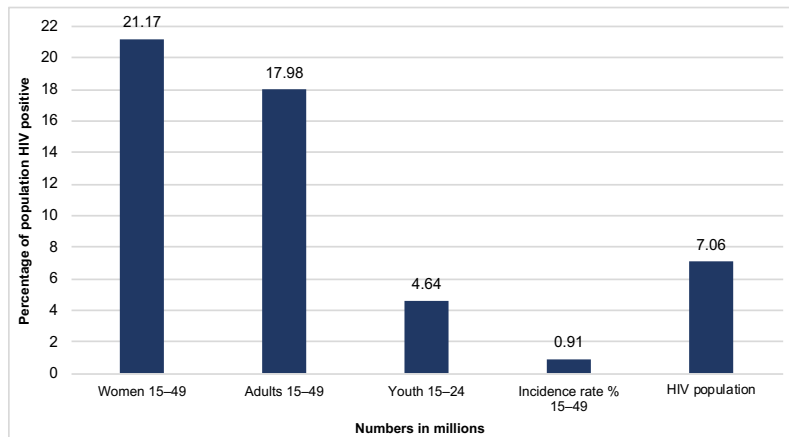


1. Has the HIV infection rate for youth aged 15–24 gone up or down since 2012?

2. Was the HIV infection rate for women aged 15–49 higher or lower in 2012?

3. Which population had the lowest infection rate in 2017?

Data collected in 2017



4. What was the total HIV population infection rate in 2017?

For the questions below, circle whether the phrase is **True** or **False**

5. **True/False:** South Africa has the highest HIV rate in the world.

6. **True/False:** You know if you have HIV, even without being tested.

7. **True/False:** Only men can be HIV positive.

Comparing Sources of Information

Term: 4

South African curriculum content area: numbers, operations and relationships

South African curriculum topic: 1.1 whole numbers – counting, ordering, comparing, representing and place value of digits

Lesson title: Whole Numbers: Comparing Sources of Information

Grade level: 4th grade

Total teaching time for term 2: 1 hour

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review how to compare data.
- Learners will learn about the most beneficial sources to teach HIV to the South African population.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Compare
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review comparing numbers.¹²

Teacher Modeling (10 Minutes)

- The teacher will show an example table with numbers for comparison.
- The teacher will explain the worksheet.

Learner time (20 minutes)

- Learners will be given a worksheet with a table of data.
- Learners will answer questions comparing the data in the table.
- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will facilitate a discussion about the what the number order means.

Discussion notes/discussion questions

- What are the limitations of these methods of communication?
 - Not everyone in the country has access to television or electricity.
- What are the limitations of this survey?
 - The survey is not broken down by race or location. Although the results show that television is most effective, it is likely that the numbers would vary if the results were shown by demographic factors.
- What is the most effective method of HIV/AIDS education for you?

¹² The learners will have already covered this information in previous lessons.

Comparing Sources of Information

Source of information	Age group (years)			
	12–14	15–24	25–49	50+
Television programmes	66.7	50.6	51.7	45.7
Radio programmes	32.7	30.8	34.3	34.7
Newspaper/magazine articles	13.2	16.8	15.7	12.4
Leaflets/booklets/posters	12.0	8.4	7.0	4.7
Billboards	5.5	5.8	6.2	4.9
Signs on taxis/buses/trains	2.7	2.8	3.1	2.7
Plays or drama	10.2	5.6	2.1	1.1
Knowing or talking to someone with HIV and AIDS	4.4	13.4	18.2	16.6
Caring for a person with HIV and AIDS	0.8	3.0	4.5	4.3
Knowing someone who has died of AIDS	5.5	14.8	20.5	18.7
AIDS statistics	7.6	11.2	12.6	10.6
Talking to a health worker/nurse/doctor	7.5	13.2	15.6	14.6
Having an HIV test	0.8	5.0	8.3	5.5
Talking to a friend or family member	0.3	16.5	16.0	13.0
Nothing	15.2	4.0	3.3	4.5

1. For which age group are television programmes most effective in spreading HIV awareness?

2. Are AIDS statistics more effective for 12–14-year-olds, or 25–49-year-olds?

3. What is the most effective way to spread awareness about HIV for the 50+ age group?

4. Aside from doing nothing, what is the most ineffective way to spread awareness for the 15–24-year-old age group?

5. For which age group are signs on taxis/buses/trains most effective in spreading HIV awareness?

Addition, Subtraction, and HIV Positive Mothers

Term: 4

South African curriculum content area: numbers, operations and relationships

South African curriculum topic: 1.1 whole numbers – addition and subtraction

Lesson title: Addition, Subtraction, and HIV Positive Mothers

Grade level: 4th grade

Total teaching time for term 1: 3 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will review addition and subtraction.
- Learners will recognize subtraction in simple word problems.
- Learners will learn about HIV positive expectant mothers.

Materials and preparation

- 1 worksheet per learner
- Pen or pencil

Key Terms

- Add
- Subtract
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review addition and subtraction.¹³

Teacher Modeling (10 Minutes)

- The teacher will do one or two addition or subtraction problems breaking apart the numbers on the board.
- The teacher will explain the worksheet.

Learner time (20 minutes)

- Learners will be given a worksheet with addition and subtraction problems. They must answer the questions breaking down the numbers as previously taught.
- The worksheet also includes a word problem, followed by a series of true or false questions about HIV positive expectant mothers. They must answer the word problem and complete the true or false questions.
- Learners will answer the questions using their prior knowledge about HIV/AIDS.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The learners will write the answers showing their work on the board.
- The number of HIV positive mothers is a real statistic in South Africa. The teacher will discuss what the number means.

¹³ The learners should know how to add, subtract, and break apart numbers (i.e., $300 + 40 + 1 = 341$).

- The teacher will review the true or false questions and expand on what it means that babies are more likely to be safe if the mother is treated properly during pregnancy, why HIV positive mothers should not breastfeed after pregnancy, and treatment of HIV positive pregnant women.

Addition, Subtraction, and HIV Positive Mothers

Calculate the following. Show your work.

1. $2\,343 + 1\,124$

3. $3\,581 + 1\,418$

2. $4\,657 - 1\,523$

4. $6\,954 - 1\,813$

5. There are 100 pregnant girls aged 15 to 24. Of the pregnant girls, 19 of them are HIV positive. How many pregnant girls are not HIV positive?

For the questions below, circle whether the phrase is **True** or **False**.

6. **True/False**: If a pregnant woman is HIV positive, her baby will be HIV positive.
7. **True/False**: A woman should breastfeed if she is HIV positive.
8. **True/False**: There is no treatment for an HIV positive mother.

Probability, Income Level, and HIV

Term: 4

South African curriculum content area: data handling

South African curriculum topic: 5.1 Probability

Lesson title: Probability, Income Level, and HIV

Grade level: 4th grade

Total teaching time for term 1: 2 hours

Total teaching time for this lesson: 1 hour

Learning objectives

- Learners will better understand probability.
- Learners will recognize the differences in HIV rates and income levels.

Materials and preparation

- 1 coin
- 1 worksheet per learner
- Pen or pencil

Key Terms

- Probability
- HIV/AIDS

Lesson/Review (5 minutes)

- The teacher will review probability based on previous lessons.¹⁴

Teacher Modeling (10 Minutes)

- The teacher will give examples of probability.

Learner time (20 minutes)

- Learners will be given a worksheet with probability questions to answer.
- The learners will also answer questions related to HIV statistics of differences in income levels.

Wrap-up (25 minutes)

- The teacher will review the answers from the worksheet.
- The teacher will review income-related questions.

¹⁴ The learners will understand probability from their previous lesson.

Probability, Income Level, and HIV

Directions

Flip the coin 20 times.

Tally whether the coin lands on heads or tails.

Heads	Tails

1. What is the probability the coin will land on heads? _____
2. What is the probability the coin will land on tails? _____

Percentage of people HIV positive

Variable	Total	Males	Females
	%	%	%
Household economic situation			
Not enough money for basic things like food and clothes	14.7	11.8	17.5
Money for food and clothes, but short of many other things	12.6	10.3	14.6
Have most of the important things, but few luxury goods	5.8	4.8	6.8
Money for extra things such as holidays and luxury goods	2.2	1.6	2.8

3. Is there a higher probability a male will be HIV positive if he has **not enough money for basic things like food and clothes** or if he has **most of the important things, but few luxury goods**?
4. Is there a higher probability a female will be HIV positive if she has **money for extra things such as holidays and luxury goods** or **money for food and clothes, but short of many other things**?

Worksheet Master Answer Key

Addition, Subtraction, and HIV Transmission Worksheet

1. $139 + 300 = 439$
2. $469 - 396 = 73$
3. $29 + 300 = 329$
4. $300 - 139 = 161$
5. What is HIV?
 - Human immunodeficiency virus
 - A disease that attacks the immune system
 - If untreated, leads to AIDS
6. Circle the ways HIV can be transmitted
 - Unprotected sex
 - Reusing infected needles
 - Breast milk

Numeric Patterns Worksheet Answer Key

1. Finish the flow diagram
 - $6 \times 4 = 24$
 - $7 \times 4 = 28$
 - $4 \times 4 = 16$
 - $9 \times 4 = 36$
 - $8 \times 4 = 32$
2. Why are girls more likely to be HIV positive than boys?
 - Girls/women are a high-risk population.
 - They suffer a high level of violence and little control in relationships (Aulette-Root et al., 2013; Kauffman & Lindauer, 2003).
 - Fear of stigma prevents care, counseling, and testing for HIV (Millen & Irwin, 2003).
 - Women are prone to rape, sexual violence, or controlling behavior (Aulette-Root et al., 2013; Westcott, 2017).
3. What is a high-risk population?

Groups of people more prone to become HIV infected than others.
4. Other than girls, what are examples of high-risk populations?
 - Men who have sex with men
 - Youth
 - Minorities
 - Rural populations
 - People living below the poverty level

Analysing Data Worksheet Answer Key

1. North West Province
2. 14.1
3. Western Cape
4. KwaZulu-Natal
5. 9.2
6. Northern Cape
7. False
8. False
9. True

Ordering Worksheet Answer Key

1. White (0.3), Indian/Asian (0.8), Coloured (1.1), Black African (8.4)
2. Black African (8.4), Coloured (1.1), Indian/Asian (0.8), White (0.3)
3. White (0.3)
4. Black African (8.4)
5. True
6. False
7. True

Length and Health Worksheet Answer Key

1. 31.75 millimeters
2. 15.25 centimeters
3. 3.175 centimeters
4. 82.5 millimeters
5. Medical treatment
6. Antiretroviral drugs (or ARV)
7. True
8. False
9. True

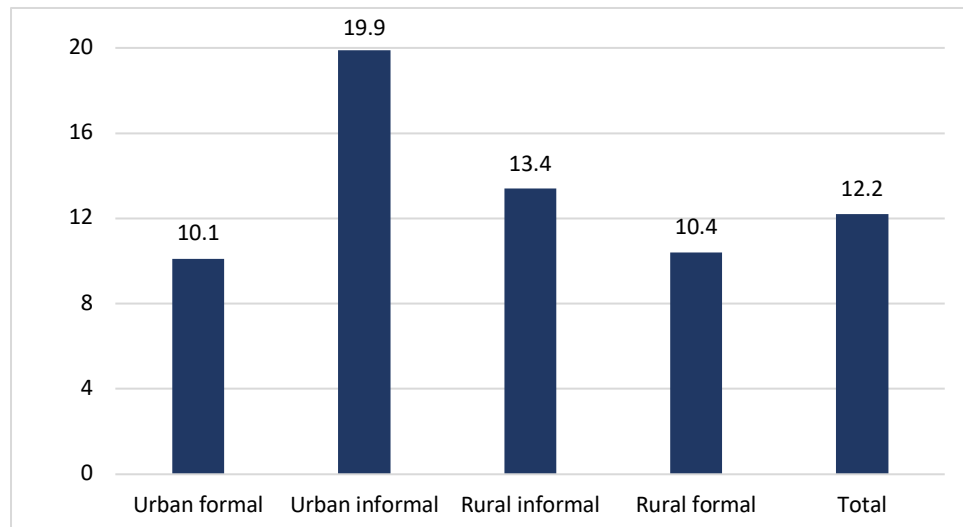
Symmetry and the Red Ribbon Worksheet Answer Key

1. See worksheet
2. See worksheet
3. The red ribbon is a symbol of awareness and support for people living with HIV (National AIDS Trust, 2016).
4. False
5. True
6. False

Common Fractions and HIV Worksheet Answer Key

1. $9/10$
2. $7/8$
3. $8/12 = 2/3$
4. True
5. False
6. True

Representing Data Worksheet Answer Key



- 1.
2. False
3. False
4. True

Analysing Graphs Worksheet Answer Key

1. Down
2. Lower
3. Women 15–49
4. 7.06%
5. True
6. False
7. False

Comparing Sources of Information Worksheet Answer Key

1. 12–14-year-olds
2. 25–49-year-olds
3. Television programmes

4. Nothing/Signs on taxis/buses/trains
5. 25–49-year-olds

Addition, Subtraction, and HIV Positive Mothers Worksheet Answer Key

1. 3 467
2. 4 999
3. 3 134
4. 5 141
5. 81
6. False
7. False
8. False

Probability, Income Level, and HIV Worksheet Answer Key

1. Answers will vary
2. 1 out of 2
3. 1 out of 2
4. not enough money for basic things like food and clothes
5. money for food and clothes, but short of many other things

Worksheet and Master Answer Key References

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