3. CHAPTER 3: *A LUTA CONTINUA*: THE BATTLE AGAINST HIV AND AIDS

"Four hundred thousand South Africans are dying every year of AIDS. This makes the war in Iraq look like a birthday party" – Jeremy Cronin[7]

3.1 Introduction

Jeremy Cronin's quote paints a dire picture of the battle between South Africans and HIV and AIDS. He indicates that battles fought through the physical arsenal are far easier to fight than the battle against an enemy within one's own blood; a battle where the soldier is either not fighting (i.e. not infected), or almost certain to lose. The researcher therefore explores HIV and AIDS using Cronin's analogy of a battle in order to signify the urgency to develop strategies that will yield positive results.

It has been more than three decades since the venom of HIV first stung through the first victim. Since then millions of people have died. On the front line are children, women and men, who on a daily basis battle the virus, with the hope that one day in their lifetime the battle will be won. Hope also resonates in the minds and hearts of thousands of medical practitioners, teachers and researchers who have made it their mandate to battle this unrelenting enemy. With tears of hope, they roar like lionesses defending their cubs; they cry out, "*A luta continua*[8]." In the middle of the battle, the researcher paused and reflected: will these weapons yield desired results?

In this explorative chapter the researcher enters into discourse with researchers in search of a response to the question, why do HIV and AIDS remain elusive? In this discourse a comprehensive look at the cost of having HIV and AIDS in the current generation is provided, together with a glimpse at what the future holds. In this regard the researcher

[7] http://www.brainyquote.com
[8] *A luta continua* (translated "the struggle continues") is a Portuguese rallying cry used by Samora Machel and his followers in Mozambique against colonial presence. The researcher adopted the same phrase to signify a cry against HIV and AIDS presence.

explores the impact of HIV and AIDS on the education system. The researcher then surveys literature to determine the effectiveness of current educational mechanisms used to derail the spread of HIV. Here strategies that are currently used to limit the spread of HIV and AIDS are compared with factors that influence the spread of HIV and AIDS. Thereafter the researcher examines literature on other health-related issues, particularly health education. This is done in order to understand why health education would fail to produce the desired outcomes. Such an understanding could provide lessons for HIV and AIDS education. In the end the researcher argues that some strategies used to battle HIV and AIDS, are probably not effective enough to address the urgent and most effective reasons responsible for the spread of HIV and AIDS, such as behaviour transformation. Given this, a question is asked: can the school Life Sciences curriculum provide an effective solution?

3.2 The educational cost of HIV and AIDS

The impact of HIV and AIDS in society cannot be ignored. However that does not mean it should be watered down either. In this regard the researcher argues that the cost is too high for solutions to yield average or even below average results. For example since the 1980s, the number of people infected with HIV has been increasing drastically. As stated in Chapter 1, about 33 million people from six continents of the world are infected with HIV and AIDS (UNAIDS, 2010; UNAIDS, 2006). By the year 2009 5.6 million South Africans were infected with HIV and about 1400 new infections occurred every day (UNAIDS, 2010). According to Dorrington *et al.* (2006), in South Africa alone the virus was most prevalent (that is, 33%) among women aged between 25 and 29 years. This in turn had caused over 1.5 million children under the age of 18 to become orphans. Furthermore in 2006 alone, it is estimated that there were 950 AIDS related deaths every day (Dorrington *et al.*, 2006). In this regard 71% in deaths of the age group 15 to 49 were AIDS related.

Because of the HIV and AIDS pandemic, since 1990, the life expectancy in South Africa has dropped dramatically from 62 to 46 years. Dorrington *et al.* (2006) report that there is a 56% chance that a South African 15-year old will die before the age of 60. Anderson and Beutel (2007) cite a report that suggests that in 2005 10.3% of the youth aged 15 to 24 in South Africa were HIV positive. With this prevalence in the youth, Bennet *et al.* (2006) believe that

by the year 2020, over 29 million people in the Sub-Saharan region will be infected with HIV and 10 million deaths would have occurred.

Given the high number of HIV infections, it is clear that sectors such as the education sector are the most affected (Bunnell, 2003; Grassly, Desai, Pegurri, Sikazwe, Malambo, Siamatowe & Bundy, 2002). Besides loss of life within schools, reports of psychological distress and socio-economical distresses have been widely reported (Manase, Nkuna, & Ngorima, 2009; Ssewamala, Ismayilova, McKay, Sperber, Bannon & Alicea, 2009; Ssewamala, Alicea, Bannon & Ismayilova, 2008; Cluver, Gardner & Operario, 2007; Lachaud, 2007; Grassly, Desai, Pegurri, Sikazwe, Malambo, Siamatowe, & Bundy, 2003; Bennell, Hyde & Swainson, 2002; Hyde, Ekatan, Kiage & Barasa, 2002; Kadzamira, Swainson, Maluwa Banda & Kamlongera, 2001). Because of the psychological and socio-economical distress both the supply and demand of education are affected (Coombe, 2000). For example Bunnell (2003) reports that in the near future, student intake will be lower starting with primary schools through to tertiary education. Bunnell (2003) suggests that this low student intake is because of high infant and adult mortality as well as increased poverty among HIV and AIDS affected households. Scholars (Bunnell, 2003; UNICEF, 2000) also suggest that within the next two decades, there might be a high mortality rate among teaching staff which will in turn affect the schooling system. Besides deaths, researchers also indicate that the rates of teacher absenteeism due to prolonged and regular illness is expected to increase (Bunnell, 2003; Grassly *et al.*, 2002). In addition reports suggest that HIV and AIDS orphans and other HIV and AIDS affected students are expected to suffer an increased emotional instability (Cluver, Gardner & Operario, 2007).

Due to psychological and socio-economical distresses reports also suggest that students' vulnerability to HIV and AIDS could increase (Bhargava, 2005; Atwine, Cantor-Graae & Bajunirwe, 2005). For instance studies have shown that when in deep financial and emotional distress, some students may rely on unsafe sexual activities and drugs both for financial gain and emotional comfort (Bhargava, 2005).

The above conversation indicates that the impact of HIV and AIDS in society is immense. An apparent question is, given the length of time that HIV has been known to human kind, why has humanity failed to stop HIV and AIDS? In search of an answer to this question, the

researcher explored some educational strategies that are currently used to counteract the spread of HIV and AIDS.

3.3 Educational weaponry against HIV and AIDS

The purpose of this section is to provide a picture of educational strategies that are used to counter the spread of HIV and AIDS, and also to determine the effectiveness of such strategies. Such a look will inform the assessment of HIV and AIDS education in Life Sciences in response to the research questions of the study.

HIV and AIDS education is a complex, multidisciplinary subject. Scholars have partitioned HIV and AIDS education into specific areas with specific goals, in order to improve effectiveness in minimizing the impact of HIV and AIDS. For example HIV and AIDS education can be taught within formal school curricula or outside of formal curriculum. These educational strategies are used to present scholar academic, social efficiency, student-centred and social reconstruction knowledge. In the previous chapter the researcher engaged the complexity of curriculum ideologies in relation to behaviour transformation. Therefore, as implied in Chapter 2, basing HIV and AIDS education for behaviour transformation on any one ideology would require a clear curriculum framework.

Within the scope of HIV and AIDS education, the idea of curricular versus non-curricular strategies presents yet another dimension. Both these strategies have their own complexities, advantages and disadvantages, making it difficult to decide which method is more effective for leading to behaviour transformation than another. The complexities are compounded by the fact that there are numerous factors that affect the spread of HIV, such as behaviour, gender, stigma and discrimination and human rights. Based on the views presented in Chapter 2, the researcher believes that both strategies would be more effective in fostering behaviour transformation if they are able to integrate knowledge into the social context. Curricular strategies would however require a meticulous integration strategy in order to be able to address socialization as well as behaviour transformation. To substantiate these views, the researcher will first discuss curricular-based HIV and AIDS education. Thereafter non-curricula strategies will also be discussed.

3.3.1 Integration of HIV/AIDS knowledge into curricula: current trends

In an attempt to address HIV and AIDS in South Africa, the Department of Health (2000) instituted an HIV and AIDS/STD strategic plan. This plan led to the development of an HIV and AIDS policy which makes HIV and AIDS education a component of the curricula of all secondary schools. The policy also suggests that schools be made places where youth can access friendly and supportive counselling services related to HIV and AIDS. Previous research also supports the implementation of HIV and AIDS education at secondary school level (Anderson & Beutel, 2007; Fawole *et al.*, 1999). Page *et al.* (2006) also support this view as schools have the largest number of adolescents who are sexually active.

While suggesting that students be educated concerning HIV and AIDS, the South African government has not given any clear indication of how this should be done (Page *et al.*, 2006). Some researchers argue that students' preferences and experiences should inform HIV and AIDS curriculum design (Page *et al.*, 2006; Griessel-Roux, Ebersöhn, Smith & Eloff, 2005). This is in line with Anderson and Beutel's (2007) suggestion that HIV and AIDS education might be more effective if tailored to specific groups, which have been found to have different views and experiences with HIV and AIDS.

Although some researchers recommend HIV and AIDS education for secondary schools only, Van Laren (2008) suggests an integrating HIV and AIDS education throughout the functioning of education. Van Laren (2008) also points out that there is a need for interdisciplinary collaboration in teaching about HIV and AIDS. However she cautions that interdisciplinary collaboration will be complicated by curriculum reform. For example adding new content may mean recurriculating as well as redistribution of teachers and resources.

To prevent costly curricular reform, UNESCO (2006) suggests an integration of HIV and AIDS knowledge into an already existing subject, such as Life Sciences. In this regard HIV and AIDS knowledge is added as extra content knowledge into the curriculum. This method is cost-effective in that the same group of teachers of the mother subject are the ones who teach HIV and AIDS content. However the danger here is that HIV and AIDS knowledge could be taught from a particular curriculum ideology which may jeopardize the intended

HIV and AIDS outcomes. For example teaching HIV and AIDS content from a scholar academic ideology could limit behaviour transformation as an outcome. Another problem with integrating HIV and AIDS into an existing curriculum is that there may not be enough time (and other resources) to give information on HIV and AIDS because of the need to address other topics as well. Furthermore some teachers may be hesitant to deal with HIV and AIDS information (and sexuality education) due to cultural and religious beliefs.

To address some challenges related to the integration of HIV and AIDS knowledge into curricula, Ciccarone, Coffin and Preer (2004) suggest involvement of students in the design of the curriculum. This student-centred approach allows students to specify their needs and challenges in relation to HIV and AIDS. In turn curriculum experts would ensure that the curriculum provides sufficient knowledge and skills that students need in order to limit the spread of HIV. An example of this approach is given by Ciccarone *et al.* (2004) who report that students were asked to provide input related to curricula activities for epidemiology, prevention and risk factor language for a Medical HIV and AIDS curriculum. This process led to an inclusion of content knowledge (which was previously excluded) related to epidemiology and microbiology of sexually transmitted infections, sexuality and sex education, prevention strategies including risk and safe behaviour (Ciccarone *et al.*, 2004). The outcome of this exercise was that HIV and AIDS knowledge among students was increased together with transformed attitudes and life skills related to HIV/STD prevention (Ciccarone *et al.*, 2004). What can be learnt from Ciccarone *et al.*'s (2004) study is the significance of involving students in the review process as this allows for an informed process with regard to the needs of the students.

While supporting the inclusion of students in curriculum design, Kohi, Portillo, Safe, Okonsky, Nilsson and Holzemer (2010) highlight the need for a context specific curriculum. These researchers (Kohi *et al.*, 2010) suggest that the ideal strategy, particular for training-the-trainer, is incorporating a section of community-based care in order to provide a practical, context-specific element to the curriculum. This can be done by including learning activities such as role plays, watching videos of HIV patients and reading research articles (Kohi *et al.*, 2010). According to Kohi *et al.* (2010) students in their project were happy with the curriculum because it provided an in-depth and realistic understanding of HIV and AIDS that is relevant to their own lives (Kohi *et al.*, 2010).

Another element that complicates the integration of HIV and AIDS knowledge into a curriculum is the type of content knowledge that must be included. According to Page *et al.* (2006), there are at least two types of knowledge presented in curriculum-based HIV and AIDS education, namely functional HIV and AIDS knowledge and academic HIV and AIDS knowledge. As stated earlier (Chapter 1), functional HIV and AIDS knowledge is knowledge that is aimed at informing people about means of preventing infection. It is also intended for transformation of students' beliefs, attitudes, values and ultimately behaviours. In South Africa, functional HIV and AIDS knowledge focuses mainly on promoting abstinence, faithfulness to one sexual partner and condomizing, also known as ABC. Academic HIV and AIDS knowledge on the other hand looks to help students understand the science of HIV and AIDS. It teaches for instance the life cycle of HIV, the structure of the virus and the immune system.

Because of the obvious differences in the nature of the two types of HIV and AIDS knowledge, deciding which content should be taught requires a good understanding of the needs of students and the local context. The researcher also believes that factors affecting the spread of HIV and AIDS, such as behaviour, would determine which content should be taught. For example if academic HIV and AIDS knowledge does not affect students' behaviour, then it would be pointless to teach such content with an objective of behaviour transformation. Similarly, if the objective is improving students' understanding of HIV and AIDS, then functional HIV and AIDS knowledge would probably not yield the desired outcomes. (These two dynamics are reported on further in Chapters 6 and 7 as they fall within the scope of the study). To better understand the rationale for both functional and academic HIV and AIDS knowledge, the researcher discusses some strategies that have been used to present HIV and AIDS knowledge.

A background to these two types of knowledge in South Africa is that functional HIV and AIDS knowledge is presented in most HIV and AIDS programmes. While there is no specific divide in the mode of presenting knowledge, functional HIV and AIDS knowledge is often presented through peer education, people living with HIV, socio-economic based intervention, gender and culture specific interventions, voluntary counselling and testing (VCT) as well as mass media interventions (Table 3.1). Academic HIV and AIDS knowledge on the other hand is often presented through school-based HIV and AIDS educational programmes, computer-based interventions and public libraries. In the context of the South

African education, functional HIV and AIDS knowledge forms an integral part of Life Orientation which is taught to all school students. Academic HIV and AIDS knowledge is taught in Life Sciences which is taught only to a selected group of school students.

Table 3.1 A summary of HIV and AIDS intervention programmes

Type	Reference	Target groups
Peer education	- Ali & Dwyer, 2010 - Chimango *et al.*, 2009 - Kaponda *et al.*, 2009 - Mahat *et al*., 2008 - Maticka-Tyndale & Barnett, 2010	Adolescents aged 13 to 15 and youth, age 15 to 24
People living with HIV/AIDS	- Bell *et al.*, 2007 - Brown *et al*., 2001 - Levy, 2009 - Liamputtong *et al.*, 2009 - Ncama, 2005 - Rosen, 2002 - Simon-Meyer & Odallo, 2002	Age 30 to 45
Socio-economic intervention	- Lachaud, 2007 - Manase *et al.*, 2009 - Pronyk *et al*., 2008 - Ssewamala *et al*., 2008 - Ssewamala *et al*., 2009	Orphaned adolescents, aged 13
Gender and culture specific interventions	- Agadjanian, 2005 - Alsallaq *et al*., 2009 - Baeten *et al.*, 2009 - Bonner, 2001 - Brewer *et al*., 2007 - Di Noia & Schinke, 2007 - Doyle *et al*., 2010	Adolescents and adults
Counselling & testing (VCT)	- Angotti *et al*., 2009 - Granich *et al.*, 2009 - Hallett *et al*., 2009 - Kakoko *et al.*, 2006 - Painter, 2001	Door-to-door
Mass media interventions	- Aggleton *et al*., 2005 - Babalola *et al.*, 2009 - Bertrand *et al*., 2006 - Bessinger *et al*., 2004 - Lemieux, *et al.*,2008	
School-based HIV/AIDS educational intervention	- Ansell, 2009 - Francis, 2009 - Kyrychenko *et al.*, 2006 - Mantell *et al.*, 2006 - Maticka-Tyndale *et al.*, 2007 - Page *et al.*, 2006	Age 15 to 16
Computer-delivered	- Di Noia *et al*., 2004	HIV/AIDS experts

sexual risk reduction intervention	- Fisher *et al*., 2002 - Kalichman *et al.*, 2003 - Kiene & Barta., 2006 - Mackenzie *et al.*, 2007	and patients, aged 18 to 54
Public libraries	- Albright & Kawooyab, 2007 - Albright, 2006 - du Plessis, 2008 - Dube, 2005 - Ghosh, 2006	General public

3.3.1.1 Presentation of functional HIV and AIDS knowledge

The peer education approach to HIV and AIDS is often used to address social issues related to HIV and AIDS, including life skills, gender imbalances, human rights violations, stigma and discrimination. Peer education-based programmes are usually based on theories such as social learning theory, behaviour transformation and the social influence ideology (Table 3.1; Maticka-Tyndale & Barnett, 2010; Mahat, Scoloveno, De Leon & Frenkel, 2008). In these interventions, group leaders are selected and trained by researchers or project leaders in relevant areas that will be covered during the intervention (Kaponda, Jere, Chimango, Chimwaza, Crittenden, Kachingwe, McCreary, Norr & Norr, 2009). Once group leaders have enough information, they are left with their peers where they are expected to share knowledge and skills in order to resolve and reconstruct social challenges. The advantage of peer education interventions is that group leaders understand the cultural and social dynamics of their peers which allow for better understanding between the group leader and the peers. Some positive results have been reported with peer education-based interventions. For example Mahat *et al*. (2008) report that those students who participated in their peer education-based intervention showed improved HIV and AIDS knowledge compared with those who participate in traditional programmes. Other researchers also report improved HIV and AIDS knowledge and self-efficacy (Maticka-Tyndale & Barnett, 2010; Kaponda *et al.*, 2009).

Another common strategy for presenting functional HIV and AIDS knowledge is the involvement of people living with HIV who have been previously trained to transfer knowledge (Table 3.1; Levy, 2009; Liamputtong, Haritavorn, & Kiatying-Angsulee, 2009; Ncama, 2005; Simon-Meyer & Odallo, 2002). Roles played by these trained HIV positive respondents vary from one intervention to another. For example in some cases they act as

counsellors for other HIV positive people (Simon-Meyer & Odallo, 2002). In some cases they advocate disclosure and establish support groups amongst themselves in which they can share information and other promotional materials (Simon-Meyer & Odallo, 2002). Furthermore prevention materials such as condoms are distributed through these support groups (Ncama, 2005). Ultimately the objective of presenting knowledge through people living with HIV is to address issues of stigma and discrimination, life skills and human rights.

Given the economic impact of HIV and AIDS, presentation of functional HIV and AIDS knowledge also attends to individuals who have been orphaned due to HIV and AIDS (Table 3.1; Ssewamala *et al*., 2009; 2008). This is because while there are children who are emotionally gifted to deal with trauma (Ebersöhn & Maree, 2006), to some, HIV and AIDS may lead to severe psychological, emotional and financial distress (Ebersöhn, 2007). Consequently, orphans participate in interventions designed to help them develop resilience (Ebersöhn, 2007; Ebersöhn & Maree, 2006) and other coping strategies to help them deal with the trauma of loss and their economic challenges (Manase *et al*., 2009; Pronyk *et al*., 2008). These interventions also provide orphans with skills and knowledge related to careers and education in general. Scholars argue that providing orphans with HIV and AIDS related knowledge alone is not enough, and thus they also prepare youth for life challenges that may not be directly related to HIV and AIDS (Manase *et al*., 2009).

There is also a significant need to address life skills. The main drive for such programmes is that "HIV and AIDS education should engage the whole person, go beyond mere academic and intellectual knowledge" (Griessel-Roux *et al*., 2005: 253). As a result researchers call for the inclusion of life skills programmes that will address HIV and AIDS related issues in a manner that focuses on real-life action behaviour (Kelly, 2002). In response to this need for life skills programmes (Griessel-Roux *et al*., 2005; Hoelson and Van Schalkwyk, 2001), a number of life skills programmes, such as Life Orientation in South Africa, have been developed (James, Reddy, Ruiter, McCauley & Van den Borne, 2006; Motepe, 2006; Visser, Ashton & Vernon, 2006; United Nations, 2003). Some HIV and AIDS life skills programmes in schools have been found to lead to a significant increase in student knowledge about HIV and AIDS (James *et al*., 2006; Magnani *et al*., 2005). However there was a lesser effect on matters related to safe sex practices or on attitudes and self-efficacy (James *et al*., 2006).

3.3.1.2 Presentation of academic HIV and AIDS knowledge

Looking at the presentation of academic HIV and AIDS knowledge, the main objective is to challenge misconceptions and facilitate construction and understanding of scientifically correct knowledge. Perhaps the most common intervention strategies used in this regard are the school-based educational interventions (Table 3.1). Scholars (Mantell *et al.*, 2006) argue that these interventions are easy to carry out because students are reached in large numbers in a localized area and content knowledge can be integrated with school-based curricula. Besides integration of content to curricula, trained HIV and AIDS experts may be invited to schools where they provide students with the necessary information depending on the objectives of the intervention. For example Kyrychenko *et al.* (2006) report that in their study HIV and AIDS experts provided students with information related to the biology of HIV, transmission and prevention. Other researchers also report that HIV and AIDS experts can provide students with information related to the links between HIV infection and drug abuse (Francis, 2010; Mantell *et al.* 2006).

Given the advances in technology over the last few decades, researchers have also ventured into the use of computer-based interventions to present academic HIV and AIDS knowledge (Table 3.1; Mackenzie *et al.*, 2007; Kiene & Barta, 2006; Di Noia *et al.*, 2004). Here computers may provide interactive information where students can access specific content that they may need. The advantage of computer-based interventions is that academic HIV and AIDS knowledge can be integrated with general counselling and actionable knowledge on prevention such as how to use condoms correctly (Mackenzie *et al*., 2007; Fisher *et al.*, 2002). Mackenzie *et al*. (2007) argue that this form of intervention provides students with a broad variety of information which can correct misconceptions and myths and provide practical solutions to HIV and AIDS challenges. While computer-based interventions are thriving, other traditional methods remain highly favoured too. For example researchers (Du Plessis, 2008; Albright & Kawooyab, 2007; Albright, 2006) argue that general public libraries can be effectively used to distribute academic HIV and AIDS knowledge that addresses HIV and AIDS challenges. These researchers argue that while computer-based interventions may be financially costly, libraries are fairly viable and can reach high numbers of people.

Another approach reported by researchers for academic HIV and AIDS knowledge uses students working in groups to learn about HIV and AIDS (Cornelius, Moneyham & LeGrand, 2008). Depending on their sexual activity status, students can discuss problems, myths and misconceptions they have experienced, observed or heard of regarding safe sex practices and HIV and AIDS. Thereafter the teacher provides corrective knowledge that addresses major problems that emerge from the discussion. Cornelius *et al*. (2008) argue that this discussion-based approach allows for openness and to some extent disclosure. The group-based approach also facilitates the establishment of support groups. The challenge however is that the teacher must be well informed on the subject and must have good group-management skills that will enable him or her to address any problems that may arise from the discussion (Cornelius *et al*., 2008).

It emerges from the above discussion that there are various approaches that can be used to integrate HIV and AIDS knowledge into curricula. What is quite clear is that there are different strategies for different forms of knowledge. In some cases however, a single approach can be adapted to present either functional or academic HIV and AIDS knowledge. For example multimedia based interventions (Table 3.1) are often used to teach prevention, treatment and care (Bertrand *et al.*, 2006). Consequently, this strategy is sometimes used for presentation of both the functional and academic HIV and AIDS knowledge, in an integrated manner or separately. Multimedia-based interventions address various topics such as providing (scholar academic) scientific evidence for the existence of HIV and AIDS. Furthermore multimedia-based approaches can provide knowledge related to modes of HIV transmission, means of prevention and behaviour (Anderson & Beutel, 2007; Bertrand *et al.*, 2006; Myhre & Flora, 2000; Kuhn & Steinberg, 1994). Myhre and Flora (2000) reported that in 1994 over 126 countries were using multimedia programmes to fight the spread of HIV. Of these countries 93% were disseminating information using television, 85% radio broadcasting and 67% were promoting the use of condoms. The targets of these multimedia programmes cover all spheres of the population from national to local audiences (Bertrand *et al.*, 2006).

In the above discussion the researcher has provided evidence related to the integration of HIV and AIDS knowledge into curricula. While academic and functional HIV and AIDS knowledge have been successfully presented independent of one another, there is a dearth of knowledge regarding the effect of one method on another. For example it remains to be investigated whether academic HIV and AIDS knowledge correlates with functional HIV and

AIDS knowledge. (The researcher reports on this further in Chapter 6). Moreover there seems to be evidence suggesting that functional HIV and AIDS knowledge can lead to behaviour transformation. However whether this is true for academic HIV and AIDS knowledge also needs to be investigated. Overall, in the current section the researcher argues that HIV and AIDS knowledge can be successfully integrated into an existing curriculum. What is not clear, particularly in the context of the study, is the impact of integrating HIV and AIDS knowledge into a Life Sciences curriculum.

While the literature indicates that integrating HIV and AIDS into formal curricula can yield desirable outcomes, one need not ignore the role played by non-curricular strategies. In fact one wonders whether non-curricular strategies are more effective than curricular strategies. Furthermore there is a need to investigate whether collaboration between curricular and non-curricular strategies is possible. With that in mind, below is a review of non-curricular strategies for HIV and AIDS education.

3.3.2 Non-curriculum strategies for HIV/AIDS education in South Africa

The overarching foci of non-curricular HIV and AIDS education are sexuality education and sexual health as well as HIV and AIDS education (Figure 3.1). Relevant programmes in this regard are aimed at *i)* preventing new HIV infections, *ii)* preventing HIV transmission from mothers living with HIV to their infants, and *iii)* providing care and support to people living with HIV, including the use of antiretroviral drugs. Non-curricular HIV and AIDS programmes include sexuality education, HIV and AIDS education, partner negotiation training, community organizing, case-management, outreach, self-help groups, consciousness raising, organizational networking, leadership training as well as individual and group-based problem-solving (Beeker *et al.*, 1998).

A number of materials have been developed to address sexuality education and sexual health in the context of HIV and AIDS in South Africa. For example work has been done to promote sexual behavioural change in order to decrease HIV prevalence. In this regard Karnell *et al.* (2006) developed an intervention that was aimed at reducing sexual risk behaviour influenced by alcohol abuse. The effect of HIV and AIDS education on risk behaviour has also been

investigated widely by researchers such as Exner, Harrison, Hoffman, Smit, Mantell, Nzama and Stein (2006).

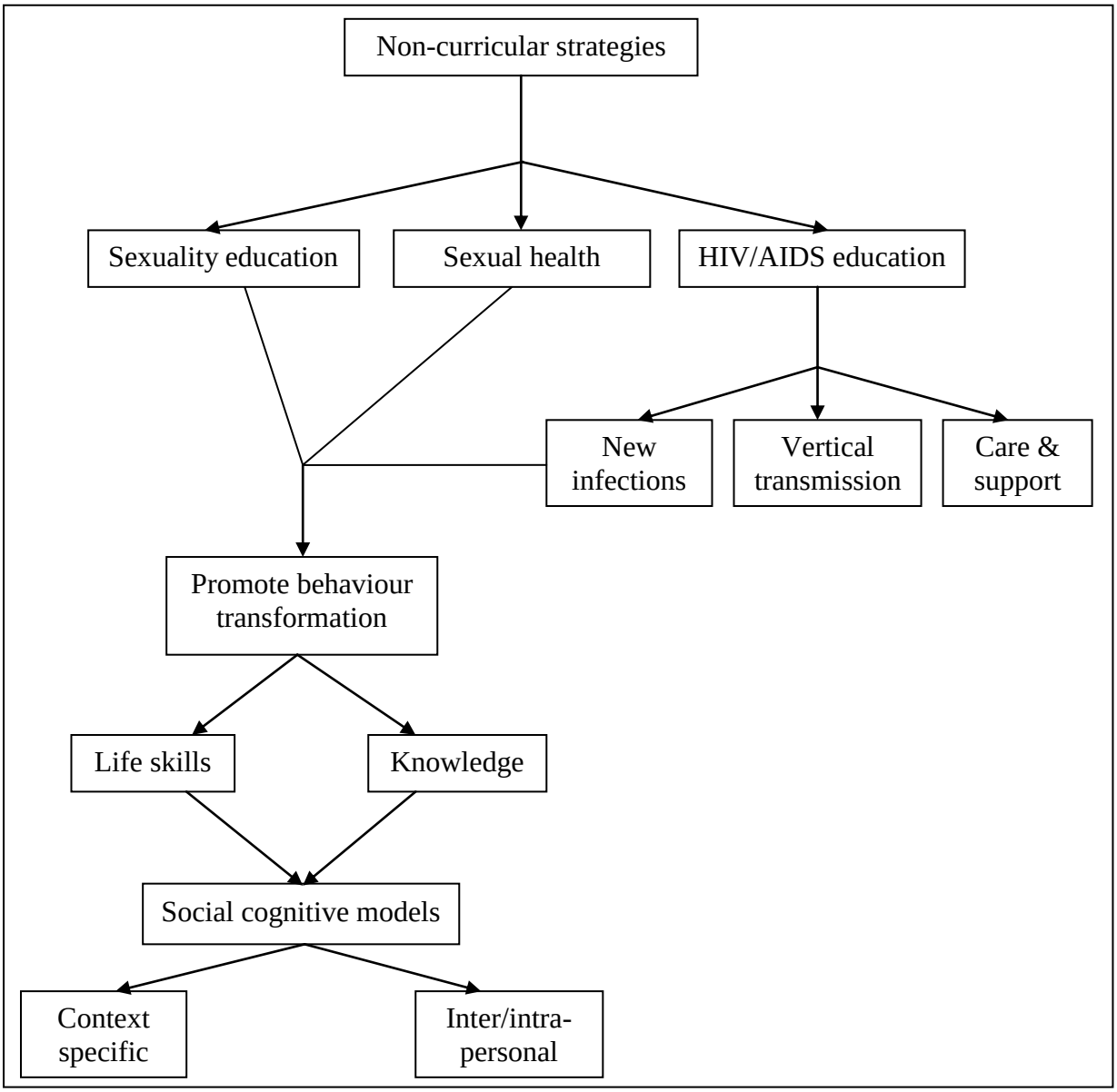

Figure 3.1 An outline of non-curricula strategies of HIV and AIDS education

Other sexuality-related areas that have been addressed through HIV and AIDS education include knowledge of sexuality and reproductive health (Harrison *et al.*, 2010; Paul-Ebhohimhen *et al.*, 2008; Gallant & Maticka-Tyndale, 2004). Other researchers have also investigated HIV and AIDS education with respect to life skills and resilience (Ebersöhn, 2008; Ebersöhn, 2006; Hallman *et al.*, 2007) role models (Exner *et al.*, 2007) as well as sexuality-related violence (Jewkes *et al.*, 2008; Jewkes *et al.*, 2006).

Other researchers however have studied health and HIV and AIDS education specifically to address HIV and AIDS. In this regard interventions on knowledge of and attitudes toward HIV and AIDS have been administered widely (Gallant & Maticka-Tyndale, 2004; Paul-Ebhohimhen *et al.*, 2004). HIV and AIDS education also targets prevention strategies (Francis, 2010; Kirby *et al.*, 2007), social influences on infection (Rao Gupta, Parkhurst, Ogden, Aggleton & Mahal, 2008), and life skills for living with HIV (Harrison *et al.*, 2010; Jewkes *et al.*, 2008). Self-efficacy has also emerged as the target for most HIV and AIDS interventions (Harrison *et al.*, 2010).

A number of lessons have been learnt from non-curricular HIV and AIDS education with regard to designing, implementing and evaluating interventions. For example researchers recommend an adoption of strategies of first listening to the concerns, problems and needs of the community at large before designing and implementing any HIV and AIDS education intervention (Harrison *et al.*, 2010). To this effect a number of HIV and AIDS education programmes that effectively promote behaviour transformation are context and culture-specific (Francis, 2010). There are also reports that recommend afterschool activities as well as youth programmes for HIV and AIDS education (Harrison *et al.*, 2010; Exner *et al.*, 2007). Scholars also recommend that non-curricular HIV and AIDS education be facilitated by school teachers and peer educators instead of outsiders (Smith, Palen, Caldwell, Flisher, Graham, Mathews, Wegner & Vergnani, 2008; Visser, 2007). The idea here is that teachers and peer educators have a better understanding of social norms related to sexuality and HIV and AIDS. Other researchers also recommend that HIV and AIDS education be designed to address intrapersonal and interpersonal challenges that students have (Harrison *et al.*, 2010). Visser (2007) provides evidence to suggest that with respect to conceptual frameworks, reports suggest that programmes that use social cognitive models and address socio-cultural issues are more effective in leading to behaviour transformation.

One major concern with non-curricular strategies (Figure 3.1) is the shallow and unregulated integration of scientific knowledge with social life. As indicated earlier peer educators are often used to provide information on HIV and AIDS. However it is not clear to what extent they understand the science of HIV and AIDS and how this affects their ability to effectively disseminate information on HIV and AIDS. To this end Exner *et al.* (2007) and Mathews (2007) recommend a stronger curricular-based integration of scientific knowledge with socio-cultural knowledge.

In the above subsections (3.3.1 and 3.3.2), the researcher has indicated that there are various educational weapons used to fight the battle against HIV and AIDS. As shown these can include curricular or non-curricular strategies that present functional or academic HIV and AIDS knowledge. The ultimate question of this chapter however is how effective is this educational weaponry in the fight against HIV and AIDS? As stated earlier this question is vital to the study because based on the response, Life Sciences' quest will be determined. In this regard the study's findings (presented later) will be used to redefine and refocus attempts to minimise the spread of HIV and AIDS as discussed in the current chapter. Therefore in the following subsection the researcher will discuss the effectiveness of current HIV and AIDS education in reducing the spread of HIV.

3.3.3 Effectiveness of HIV/AIDS education to reduce the spread of HIV

One of the important issues in teaching students about HIV and AIDS is knowing what works and what does not. However the effectiveness of HIV and AIDS knowledge to reduce the spread of HIV in many HIV and AIDS awareness programmes is a question that many researchers are still debating due to different methodologies and contexts (Anderson & Beutel, 2007; Bertrand *et al.*, 2006; Page *et al.*, 2006). The debate is a result of a number of factors that are inconsistent throughout the programmes including the context, target groups, demographics, research methodologies and expertise of those presenting the work.

There have been numerous other educational programmes in KwaZulu-Natal (where the current study was located) that aimed at influencing the behaviour of their participants. These programmes include HIV/AIDS Prevention Study (HAPS) (Karnell *et al.*, 2006), Mpondombili Project (Exner *et al.*, 2006) and Adolescent Livelihoods (Hallman *et al.*, 2007). These studies targeted youth aged 12 to 24 by exposing them to HIV and AIDS-related content knowledge over periods of time that ranged from two months to two years. Using post-intervention tests, it was established that students' attitudes towards condoms, their self efficacy for sex refusal and voluntary use of condoms increased.

An example of a study that showed that academic HIV and AIDS knowledge can affect behaviour was done by Page *et al*. (2006). In this study the researchers presented a module to

Grade 11 Life Sciences students at a government, ex-model C and private school in eight weeks. The impact of the module was tested using pre-, post and retention tests which were made up of open and closed questions. Page and her colleagues found that their intervention improved students' understanding of academic and functional HIV and AIDS knowledge, and also impacted positively on students' lives and sexual behaviour by improving self efficacy regarding prevention of HIV infection.

Maticka-Tyndale *et al*. (2007) also reported on the effectiveness of an educational programme presented to primary school learners over an 18 month period. This programme was presented in 40 experimental schools (there were 40 control schools as well) with the intention of improving students' knowledge of HIV and AIDS as well as self efficacy related to condom-use and abstinence. The programme was presented by teachers as part of the curriculum. Post-intervention results showed an increase in the understanding of HIV and AIDS content knowledge. Furthermore, participating students reported improved communication with their parents and teachers about HIV and AIDS as well as sexuality. Delayed sexual intercourse debut and sexual intercourse activity were also reported.

According to Keselman, Kaufman, Kramer and Patel (2007) there are five factors that determine the effectiveness of HIV and AIDS knowledge in the lives of students. Firstly students need to have conceptual understanding of HIV and AIDS in order to identify misconception and myths about HIV and AIDS. Keselman *et al*. (2007) suggests that coupled with conceptual understanding, students need to have necessary reasoning and problem-solving skills required to apply knowledge. Secondly students need to have reasoning and argumentation skills. These skills allow students to engage their peers, parents and other members of society in discussing their personal feelings about sexuality, gender issues, stigma and discrimination. Argumentation skills also mean students would be able to express themselves in an understandable manner when discussing issues related to HIV and AIDS. Thirdly students need metacognitive competency. Metacognitive competency is the ability to reflect on information provided by multiple sources in order to differentiate between misconceptions and truth. Fourthly it is reported that an understanding of the nature of science fosters an interest in the construction and application of scientific knowledge. As a result epistemological commitment is listed as another factor that determines the effectiveness of HIV and AIDS knowledge. Fifthly it is suggested that general education affects the effectiveness of functional HIV and AIDS knowledge. In this regard it is reported

that educated people have better access to information and are able to cognitively process such information. This includes access to information about HIV and AIDS. Educated people also have access to health facilities such as medication and prevention resources. Education also provides an incentive for people in life by providing better opportunities for a better life.

In 2010, Maticka-Tyndale and Barnett reported on their evaluation of various HIV and AIDS programmes that focused on both behaviour transformation and academic HIV and AIDS knowledge. These researchers report that in all cases, there are reports of desired positive outcomes, undesired negative outcomes or neutral outcomes.

Askew *et al*. (2004), Bhuiya *et al*. (2004), Diop *et al*. (2004), Mathur *et al*. (2004) and Frontiers in Reproductive Health (2001) report desired positive outcomes from academic HIV and AIDS knowledge which led to improved functional HIV and AIDS knowledge of HIV transmission, acquisition and prevention of HIV infection. Furthermore positive results are reported with respect to the use of condoms as a result of the exposure to functional HIV and AIDS knowledge (Askew *et al*., 2004; Diop *et al*., 2004). Other researchers also report positive changes in social attitudes, norms and values as a result of exposure to functional HIV and AIDS knowledge. An example of this phenomenon is reported by Hughes-d'Aeth (2002) who observed that some communities abandoned the re-use of razor blades in traditional scarring. Similarly initiation rites are reported to have been modified by certain communities to eliminate the encouragement of sexual risk behaviours (Bagamoyo College of Arts, Tanzania Theatre Centre, Mabala & Allen, 2002).

One of the areas that have been reported to be difficult to change (positively) through academic HIV and AIDS knowledge is risk behaviour such as unprotected sexual activity. For example Esu-Williams, Schenk, Motsepe, Geibel and Zulu (2004) and Mathur *et al*. (2004) reported undesirable results due to exposing students to functional HIV and AIDS knowledge that attempted to change behaviours. In this instance Esu-Williams *et al*. (2004) provided students with information related to caring for people living with HIV as well as the use of condoms. Their findings however showed that teaching students about condoms does not always lead to the use of condoms. Instead it may increase students' desire to experiment sexually.

Scholars also suggest that in some cases there is a gender split with regard to the effectiveness of HIV and AIDS knowledge. For example Nastasi, Schensul, Amarasiri de Silva, Varjas, Silva and Ratnayake (1998) reported girls having a greater positive change in knowledge compared with boys as a result of being taught functional HIV and AIDS knowledge that aimed to improve sexual negotiation skills. Maticka-Tyndale and Barnett (2010) also report that males are often susceptible to negative or non-significant results due to exposure to HIV and AIDS knowledge. Other researchers (for example Diop *et al*., 2004) however report positive changes (that is reduced risky sexual behaviour) and others report negative or non-significant changes for males exposed to HIV and AIDS knowledge (for example Esu-Williams *et al*., 2004; Mathur *et al*., 2004).

Overall it appears that HIV and AIDS education can generally lead to a reduction in the spread of HIV, if presented in the correct format and with the suitable content. While there are several factors that determine the effectiveness of HIV and AIDS education, the researcher argues that from a constructivist perspective, there ought to be prerequisite knowledge that is available in order for HIV and AIDS knowledge to be effective. Keselman, Kaufman and Patel (2004) also argue that there is a certain minimum prerequisite knowledge of biology required for effective information evaluation and decision-making. In line with Keselman *et al.*,'s (2004) argument the researcher believes that for students to fully appreciate the risks of contracting HIV and AIDS, they need to first understand, from a scientific perspective, what HIV and AIDS are. Consequently, it may not be plausible to simply provide students with functional HIV and AIDS knowledge that they are not able to understand due to lack of academic HIV and AIDS knowledge. Similarly, if students only have academic HIV and AIDS knowledge, they may not be able to effectively apply this knowledge in their lives. Consequently, one would expect students who have both academic and functional HIV and AIDS knowledge (for example Life Sciences students) to report better and safer behavioural preferences compared with students who have only one type of knowledge (for example non-Life Sciences). (The researcher discusses this idea further in Chapter 7).

Based on the above discussion, the researcher believes that with suitable educational weaponry the battle of HIV and AIDS can be won. However the researcher cautions that before these educational weapons are utilized, one needs to have a good understanding of what the actual enemy is. As argued earlier academic HIV and AIDS knowledge can be used

only to attend to a specific area, which cannot be done using functional HIV and AIDS knowledge. In other words the context plays a significant role in the fight against the spread of HIV. With this the researcher believes that factors that affect the spread of HIV need to be well defined, so that any means to limit HIV are targeted in the right direction. Consequently in the following section, the researcher discusses factors that affect the spread of HIV in the context of South African youth.

3.4 The enemy redefined: factors affecting the spread of HIV

In 1987 Jonathan Mann, founding Director of the World Health Organization's former Global Programme on AIDS suggested that there are three stages of the HIV and AIDS development, which he termed "epidemics" (Parker & Aggleton, 2003). The first stage is the *epidemic of HIV infection* (Parker & Aggleton, 2003; Stein, 2003). During this stage HIV enters communities silently through various means such as unprotected sex. Members of society do not see HIV enter their communities and therefore it can enter epidemically over a long period of time. Factors that lead to the epidemic of HIV infection include risk-related behavioural practices related to sexuality and injection drug users, biological factors (for example transmission from mother to child at birth), health factors (for example exposure to infected blood or bodily fluids), and social factors (for example human rights violation, ill-informed values, norms, attitudes and beliefs such as gender imbalances) (Dimmock *et al.*, 2007; Parker & Aggleton, 2003). The epidemic of HIV infection is followed by the *epidemic of AIDS* (Stein, 2003). During this epidemic, the effects of HIV are visible. Infected people become ill from various opportunistic infections and some die. Factors leading to the epidemic of AIDS include poverty, unavailability of treatment and a cure for AIDS and multiple infections (Parker & Aggleton, 2003). During the epidemic of AIDS, the *epidemic of social, cultural and economic response* emerges (Dimmock *et al.*, 2007; Parker & Aggleton, 2003; Stein, 2003). The epidemic of social, cultural and economic response is characterized by HIV and AIDS awareness programmes, the information explosion, stigmatization and discrimination of those infected, research and production of treatment drugs, research on curability of AIDS and factors leading to HIV infection and AIDS (Dimmock *et al.*, 2007; Parker & Aggleton, 2003; Stein, 2003).

Research has shown that responses to the epidemic of AIDS as defined by Jonathan Mann are influenced greatly by culture (including social values, norms, attitudes and beliefs) (Parker & Aggleton, 2003; Stein, 2003). Culture also influences the understanding of HIV and AIDS among communities and also determines the response mechanisms adopted (Stein, 2003). Luginaah, Yiridoe and Taabazuing (2005: 1691) argue that culture serves as a "lens through which HIV prevention can be understood." This is because elements of culture such as values and beliefs influence sexual behavioural practices of societies. In this way it is believed that patterns of the spread of HIV are culture-specific, so that certain African cultures, which for instance promote polygamy, may be affecting the manner with which HIV is spreading (Luginaah *et al.*, 2005; Tobias, 2001). Therefore in order for HIV and AIDS education to be effective, these cultural factors need to be understood and addressed to through proper HIV and AIDS education. However the challenge, particularly in South Africa, is that there is a high diversity and intermingling of cultures. Consequently it would require more effort to formulate culture-specific response mechanisms. Among students cultural elements that are school-based such as social values, norms, attitudes and beliefs have been found to affect behaviour (Kentli, 2009; Johnson, Rozmus & Edmisson, 1999). For example research shows that in some cases, high self-esteem and self-efficacy is associated with abstinence and the use of condoms (Johnson *et al.*, 1999). Values of exciting life and pleasure are associated with increased risk behaviour whereas value for health is associated with reduced risk behaviour (Johnson *et al.*, 1999).

The common strategy to address the three epidemics of HIV and AIDS is provision of relevant knowledge and development of life skills, which can be used to reconstruct social norms (see Section 3.3). Much work in HIV and AIDS education has been done to teach people about how HIV is transmitted, prevention of HIV infection, treatment of AIDS, acceptance and resilience towards being infected or affected by HIV and AIDS and changing attitudes, norms and beliefs about those infected. In the following sections the researcher will discuss some prominent factors related to an HIV and AIDS epidemic, namely behaviour, stigma and discrimination, sexuality education, as well as human rights. These are selected because researchers have found that they play a significant role in the spread of HIV and AIDS and can be transformed through curriculum-based education. (The researcher also investigated the effect of Life Sciences on behaviour (see Chapter 6 and 7). Further research is needed with respect to the other factors).

3.4.1 Risk behaviour

One question that resonated in the mind of the researcher at the beginning of the study is; if unprotected sex may lead to HIV infection (that is, the most common way through which HIV is contracted), why do people engage in it? Steinberg (2008) and Donovan and Ross (2000) respond by arguing that people engage in sex (even if it is unsafe) simply because sex is pleasurable. Therefore the objective of HIV and AIDS education should be balancing the natural demand of pleasure and the negative consequences of such pleasure. Consequently most HIV and AIDS education and awareness programmes focus on transforming risky behavioural practices, particularly sexual behaviours (Kirby *et al.*, 2007). Of particular interest is delaying the age of first sexual experience, frequency of sex, number of sexual partners and use of protection during sexual intercourse by those targeted (Kirby *et al*., 2007).

With regard to age of first sexual experience, researchers have found that an early sexual debut increases chances of contracting HIV because chances of having many sexual partners are higher (Francis, 2010; Kirby *et al*., 2007). Furthermore researchers believe that at a younger age, people are vulnerable to psychological and sexual manipulation as well as abuse (Kirby *et al*., 2007). As a result HIV and AIDS education attempts to transform behaviours so that youths postpone their sexual debut. Concerning frequency of sex, researchers tend to measure how often young people engage in sexual activity over a given period of time (Francis, 2010; Kirby *et al*., 2007). The argument here is that frequent sexual intercourse may increase chances of contracting HIV. This may be because such activity will increase chances of not using protection (for example condoms) and having multiple or many successive sexual partners. Furthermore if one is already infected, risks of multiple infections are increased leading to accelerated development of AIDS (Kirby *et al*., 2007). The number of sexual partners is another behavioural pattern of concern (Donovan & Ross, 2000). Research has shown that multiple sexual partners increase the probability of HIV infection (Francis, 2010; Kirby *et al*., 2007; Donovan & Ross, 2000). Therefore young people are encouraged to minimize the number of sexual partners. Related to the number of sexual partners is the use of protection, namely condoms. At best condoms are the most accessible prevention tool available. As a result young people are encouraged to use protection whenever they engage in sexual activities.

Clearly, there is weaponry that is being used to fight the battle of HIV and AIDS by targeting unsafe behaviour. In line with Donovan and Ross (2000) the researcher however believes that this weaponry will not yield desirable results. One of the reasons cited by Donovan and Ross (2000) for this is that HIV and AIDS education aimed at changing behaviour is often based on an individualistic approach. However in reality, young people's behaviours are not individualistic but collective and social. Furthermore researchers argue that ideologies that focus on alerting students about risky sexual behaviour are not effective because they clash directly with human nature such as the natural desire for sex (Steinberg, 2008; Donovan & Ross, 2000).

Francis (2010) argues that desirable results will be achieved by shifting the focus of HIV and AIDS education. For instance it is suggested that HIV and AIDS education should focus on alerting students about risk situations that can be controlled by those involved (Donovan & Ross, 2000). In other words, the focus of HIV and AIDS education in relation to behaviour should firstly address those factors that lead to risk, such as alcohol and drug abuse, which have been shown to increase the risk of HIV infection (Bailey, Camlin & Ennett, 1998). Furthermore HIV and AIDS education should "account for the processes that occur in the heat of the moment" (Donovan & Ross, 2000: 1900).

3.4.2 Gender

Scholars have indicated that gender identity plays a significant role in the spread of HIV, particularly in Africa (Rembeck & Gunnarsson, 2009; Jewkes, Levin & Penn-Kekana, 2003; Campbell & MacPhail, 2002; Campbell, 2000; Simbayi, Andipatin, Potgieter, Msomi, Ratele, Shefer, Strebel & Wilson, 2000; Wood, 2000; Varga, 1997). The role of gender in the spread of HIV is related to social norms, stigma and discrimination as well as human rights violations. Furthermore the feminine gender is often the victim of sexual violation which leads to HIV infection.

Campbell and MacPhail (2002) report that in most communities in South Africa, the dominant social norms place males in a dominant position where they are enthused to take a dominant role in sexual activities. This norm places women in a position where they play a passive role dominated by fruitless resistance to male's sexual advances. Furthermore sexual

activities where women are submissive are often characterized by emotional pressure against them (Campbell & MacPhail, 2002). Consequently women are not able to enquire about the HIV status of their partners and/or negotiate safe sex and thus are vulnerable to HIV infection.

Another product of gender-related social norms is that females are often condemned when involved in premarital sex (Jewkes *et al.*, 2003). This condemnation stems from the view that women are seen as repositories of physical and moral sexual uncleanness (Simbayi *et al.*, 2000). For example in some communities, women are viewed as unclean during their menstruation. In other contexts, female virgins are regarded as sexually and morally clean (Francis, 2010). Consequently if a women attempts to use a condom during sex, she is seen as admitting to being unclean. This may also mean she is promiscuous and therefore is carrying sexually transmitted diseases. Some men (living with HIV) believe that having sex with a virgin (who is seen as clean) eradicates HIV (Francis, 2010).

Another gender-related factor to the spread of HIV is that of social worth. Campbell (2000) reports that in some communities social worth depends on one's ability to have and keep a partner. For example in some societies single women (adult unmarried, widowed and divorced) have a lower social status than married women or women with partners (Simbayi *et al.*, 2000). As a result women are pressurised to have male (sexual) partners for the sake of having a respected social status. However in males, social worth is dependent on having multiple partners (Campbell, 2000). Therefore, women are forced by social norms to share partners, which increase their risk of contracting HIV.

Economic needs also play a significant role in gender-related HIV infections. For example Jewkes, *et al.* (2003) report that besides prostitution, some women sleep with men in exchange for money and gifts. For example it is reported that in some cases, after a night of sex, women are left with money for cosmetics (Jewkes, *et al.*, 2003). Some schoolgirls are reported to sleep with teachers in exchange for grades and pocket money (Jewkes, *et al.*, 2003). Young women have also been reported of having sex with older richer men in exchange for a luxurious life. Jewkes, *et al.* (2003: 126) argue that this older-man-younger-woman sexual relationship may explain the "gender differences in age-specific HIV prevalence in South Africa."

3.4.3 Stigma and discrimination

According to Goffman (1963) stigma is an attribute given to a person living with HIV that significantly discredits the person. Parker and Aggleton (2003) define stigma as a negative feeling towards a person living with HIV associated with a belief that such a person deserves AIDS, avoidance and ostracism. Stein (2003) suggests that there are two types of stigma, namely instrumental stigma and symbolic stigma. Instrumental stigma is stigma based on the fear of being infected with HIV and dying from AIDS. Instrumental stigma therefore may decrease due to the availability of AIDS treatment because it means AIDS is no longer terminal but chronic. Symbolic stigma is value-based because it emerges when people associate HIV infection with sexual activity, particularly promiscuity and homosexuality. In this instance people tend to distinguish between innocent victims and voluntary victims (Parker & Aggleton, 2003; Stein, 2003). Discrimination on the other hand refers to unfair treatment of people living with HIV as a result of being stigmatized (Parker & Aggleton, 2003). Discriminating people believe that there is social inequality between themselves and those infected with HIV. They believe that they have a superior position in society.

Stigma and discrimination have been reported to cause a number of negative responses to HIV and AIDS. For example Brown *et al.* (2001) report that some people avoid testing for HIV, disclosing their status and accessing health care because of stigmatization of people living with HIV. It is also reported that some people avoid participating in HIV and AIDS education programmes for fear of being stigmatized (Makoae, Greeff, Phetlhu, Uys, Naidoo, Kohi, Dlamini, Chirwa & Holzemer, 2008; Brown *et al.*, 2001). Scholars however indicate that there are coping strategies that people living with HIV use in response to stigma and discrimination. Ebersöhn and Maree (2006) argue that some people develop buoyancy that allows them to be resilient against hardships caused by HIV and AIDS. For example some people adopt a problem-focused proactive coping style in which they avoid being discredited through hiding their status (Makoae *et al.*, 2008). Some people also control HIV and AIDS information within their close associates. Furthermore people living with HIV may use information to redefine values, beliefs and power imbalances within their close associates in order to limit the effect of stigma and discrimination (Makoae *et al.*, 2008).

Scholars indicate that stigma and discrimination are due to misconceptions concerning the transmission of HIV as well as the risk of infection for everybody (Parker & Aggleton, 2003; Stein, 2003). Scholars believe that correction of misconceptions, transformation of attitudes and beliefs can help eradicate stigma and discrimination (Stein, 2003). Furthermore researchers believe that increased resilience, tolerance, apathy, altruism and understanding human rights can facilitate acceptance and decrease anxiety and fear and consequently stigmatization and discrimination (Parker & Aggleton, 2003).

Access to academic and functional HIV and AIDS knowledge has been cited as a useful tool for coping with stigma and discrimination as well as reducing stigmatization and discrimination. Brown *et al.* (2001) suggest that scholar academic knowledge can be used as didactic statements, in combination with psychological counselling or in combination with coping skills acquisition. Scholar academic knowledge as didactic statements can be delivered through various forms including presentation in classrooms. Reports suggest that factual description of HIV, transmission mechanisms and methods to reduce infection risk decreases stigmatization and discrimination (Brown *et al.*, 2001; Hue & Kauffman 1998; Mwambu 1998). Functional HIV and AIDS knowledge also results in tolerance and positive attitudes toward HIV and AIDS. In cases in which functional HIV and AIDS knowledge is presented together with psychological counselling, it provides praise and social support to persons displaying positive attitudes and safe behaviours (Brown *et al.*, 2001; Hue & Kauffman 1998; Mwambu 1998). Scholar academic knowledge together with psychological counselling has been found to improve chances of testing for HIV as well as reduction of post-HIV test stress (Brown *et al.*, 2001). Furthermore evidence of status disclosure has been reported (Brown *et al.*, 2001). Presentation of knowledge with coping skills acquisition has also been reported to be effective in changing attitudes (Brown *et al.*, 2001).

Nevertheless the researcher maintains that access to knowledge alone may not translate to eradication of misconceptions, stigma and discrimination. This is because people retain the right to accept or disregard information. Furthermore stigma and discrimination are often a result of social norms and values, which means HIV and AIDS education has to penetrate through social structures in order to eliminate stigma and discrimination. This however cannot be easy given that social norms and values are localized and context-specific. In South Africa, a country where education is the same for different cultural and ethnic groups, the task of HIV and AIDS education is even more complicated.

3.4.4 Sexuality education

According to Francis (2010) sexuality education is the main component of HIV and AIDS education because it is believed that most HIV infections among the youth are through unprotected sexual intercourse. Sexuality education can be defined as a "lifelong process of acquiring information and forming attitudes, beliefs, and values concerning identity, relationships, and intimacy. It encompasses sexual development, reproductive health, interpersonal relationships, affection, intimacy, body image, and gender roles. Sexuality education addresses the biological, socio-cultural, psychological, and spiritual dimensions of sexuality" (Rosen, Murray & Moreland, 2004: 4). The definition of sexuality education signifies that in sexuality education there is an element of acquiring information and an element of using such information to formulate identity. Furthermore it indicates that sexuality education is multidisciplinary in that it encompasses sociological, psychological and biological attributes. The researcher believes that sexuality education can play a significant role in the fight against HIV and AIDS.

There are a number of reasons why sexuality education is a significant component of HIV and AIDS education. In South Africa sexuality education is seen as an educational response to HIV and AIDS. Rosen *et al.* (2004) suggest that sexuality education in the context of HIV and AIDS may be aimed at reducing sexual activity, postponing the age of sexual intercourse debut, reducing number of sexual partners and lowering the rate of unwanted teenage pregnancies. Furthermore Francis (2010) suggests that media images make a significant contribution to developing a personal identity for most young people. Some of these identities may promote behaviours that increase the risk of HIV infection. As a consequence students need to be taught about their sexuality in a manner that promotes reconstruction of behavioural practices. Francis (2010) argues that positive sexuality education can also promote sexual openness to minimize shaming and blaming with regard to sexual feelings. The argument here is that open discussion on sexuality may lead to an adoption of safe behavioural practices. Furthermore it is argued that youths must be viewed as sexual subjects and sexual agents instead of sexual victims only (Rosen *et al.*, 2004). In this manner it would be acknowledged that students know about sex, even though some may lack practical and social knowledge. As a result it could be avoided to present sexuality only in a negative way

which often highlights diseases, abuse and HIV and AIDS. Francis (2010) suggests that sexuality education has to consider portraying sexuality as desirable highlighting mental, emotional and social dimensions of sexuality. It is also suggested that researchers need to acknowledge that the needs of boys and girls for sexuality education differ depending on culture and social norms (Francis, 2010; Rosen *et al.*, 2004). Therefore sexuality education has to be context specific and address the immediate needs of the audience.

Schools have been identified as conducive places where sexuality education related to HIV and AIDS should be taught (Francis, 2010). This is because the majority of young people attend school and interact with other young people who are at a similar developmental stage. Furthermore some young people debut for sexual intercourse during their schooldays. Consequently if sexuality education is aimed at reconstructing behavioural norms such as unsafe sex, schools ought to be used as a vehicle for sexuality education. Nevertheless a number of concerns have been raised regarding teaching sexuality education in schools. For instance in South Africa sexuality education is taught in Life Orientation. However some Life Orientation teachers do not have pedagogical content knowledge to teach sexuality education (Francis, 2010). In fact some teachers and schools are not able to comfortably and openly discuss sexuality with students because it could promote sexual activities (Francis, 2010; Rosen *et al.*, 2004). In some cases teachers fear that discussing sexuality with students may be interpreted as interfering with culture and norms. Homes are therefore an alternative place where sexuality education can be taught. However the challenge of home-based sexuality education is that some parents are not comfortable discussing sexuality with their children. Again this is because of social norms (Francis, 2010; Rosen *et al.*, 2004). In the meantime students remain in a position where they are curious and experimental about their sexuality but may lack practical knowledge regarding this (Rosen *et al.*, 2004). As a consequence through their desire to know and experiment, a number of them engage in unprotected sexual activities at a young age which increases their risk of infection.

Another significant component of HIV and AIDS education is which content knowledge should form part of sexuality education. The traditional view is that sexuality education should contain a great deal of biology knowledge in the form of scholar academic content focusing on growth and development, physiology and anatomy as well as reproduction (Francis, 2010). In other cases where a behaviour transformation view is upheld, content knowledge often contains negative views on sexuality, such as sexually transmitted diseases

and teenage pregnancy. However researchers have argued against this traditional approach. Allen (2005: 390) states that there is a need to "reconceptualise youth by sexual health programs as positive, active sexual subjects, which in turn will require a shift in classroom practice." Allen (2005: 402) further argues that "to be effective, sexuality education must meet the needs and interests of young people as conceptualised by them." The argument here is that students need to be taught the logistics of sexuality, desire and pleasure as well as risks. Furthermore students need to be taught practical social knowledge that can be translated into behaviour. Students also need to acquire practical negotiation and argumentation skills that are needed to negotiate their sexual behavioural preferences.

As stated earlier, Life Sciences may contain the academic HIV and AIDS knowledge related to sexuality and Life Orientation, functional HIV and AIDS knowledge. The researcher however believes that if Life Sciences intends to play a significant role in addressing behavioural change related to HIV and AIDS, it would have to adopt a more social approach in which students are able to relate scholar academic knowledge with real life. The researcher also believes that Life Sciences should be able to provide students with relevant knowledge that students can use when confronted with real-life challenges. Another issue that complicates the aim of HIV and AIDS education however are human rights.

3.4.5 Human rights

Louw (2004: 4) argues that "in the context of HIV and AIDS, an environment in which human rights are respected ensures that vulnerability to HIV and AIDS is reduced, those infected with and affected by HIV and AIDS live a life of dignity without discrimination and the personal and social impact of HIV infection is alleviated." As a result the researcher believes that any effective HIV and AIDS education should be grounded in the realization of human rights. One such right is that every human being has the right to "the enjoyment of the highest attainable standard of physical and mental health" (Viljoen & Precious, 2007: 4). Governments therefore have an obligation to ensure that people living with HIV are treated with dignity and respect. This includes protecting those who are not infected by providing them with sufficient information regarding risk of infection and prevention.

However some human rights have been demonstrated to complicate the issue of HIV and AIDS. HIV and AIDS education is guided by international treaties that are aimed to promote health and reduce the spread of HIV. Some of these international treaties include "the Universal Declaration of Human Rights of 1948, the International Covenant on Civil and Political Rights of 1976, and the International Covenant on Economic, Social and Cultural Rights of 1976" (Luginaah *et al*., 2005: 1691). According to these treaties, HIV testing and disclosing the results are promoted. However this view (of testing for HIV and disclosing) contradicts other international laws related to privacy and confidentiality. For example governments cannot make it mandatory for people to be tested for HIV because such a law would violate International Covenant on Civil and Political Rights which stipulates that a person should not be "subjected to arbitrary or unlawful interference with his privacy" (Luginaah *et al*., 2005: 1691). Furthermore individuals can only be tested for HIV or disclose their status if they have given consent. As a result while HIV and AIDS education may promote the idea of HIV testing, it remains the students' right to decide whether to be tested or not.

Another human rights-related aspect of HIV and AIDS education that is contentious is the provision of condoms in schools. A number of researchers (and lately the South African government) have advocated this idea to provide students with a practical means to minimize the risk of infection (Viljoen & Precious, 2007; Luginaah *et al*., 2005). However whether condoms are made available in schools remains at the discretion of the school, and would therefore depend on social norms, beliefs and values (Department of Education, 1999). However other researchers argue against this discretionary approach because it has the potential to limit students' right to free access to health resources (Kisoon, Caesar & Jithoo, 2002). Instead researchers argue that the distribution of condoms in schools should be based on the rights-based approach thereby allowing all students to access condoms in schools if they so wish.

Overall the researcher believes that human rights related issues may complicate HIV and AIDS education. Above all however most people and governments agree that HIV and AIDS education should lead to the eradication of HIV and AIDS, unsafe behaviour that puts others at risk of HIV infection, stigmatization and discrimination and must promote gender equality as well as open sexuality education.

Figure 3.2 summarizes the discussion presented in Sections 3.3 to 3.4. Section 3.3.1 to 3.3.3 showed that educational strategies for HIV and AIDS education are usually either curriculum-based or non-curriculum based. Both these teach functional HIV and AIDS knowledge while curriculum strategies are best suited to teach academic HIV and AIDS knowledge. The researcher also explored the issue of effectiveness of educational strategies, and literature in that regard showed that there are reports of positive desired outcomes and negative undesired outcomes. From Section 3.4.1 to Section 3.4.5, it emerged that in order for HIV and AIDS education to be effective, risk behaviour, gender imbalances, stigma and discrimination, sexuality as well as human rights should be addressed.

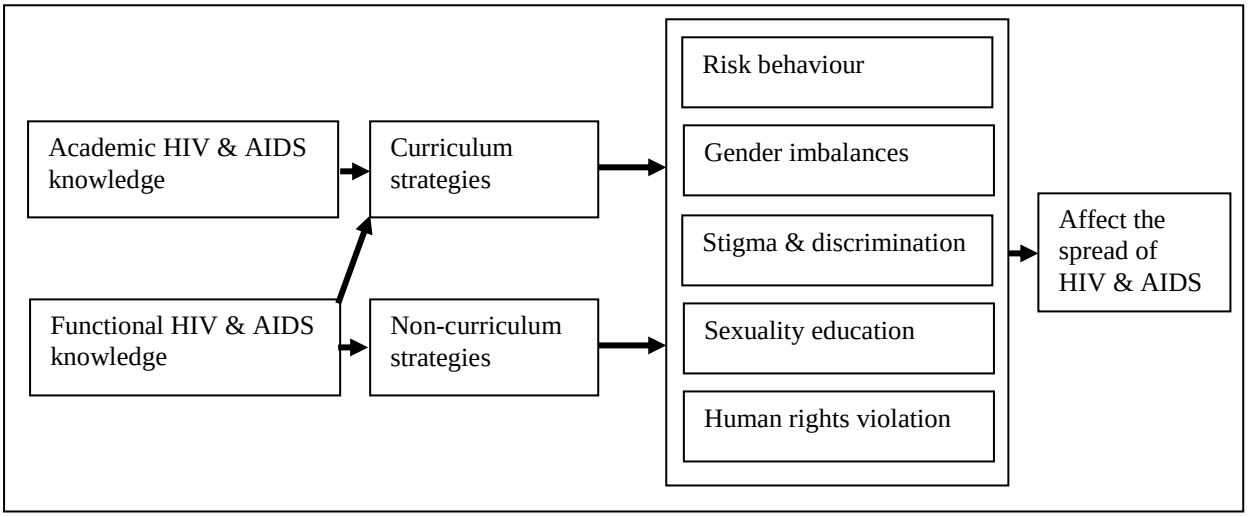

Figure 3.2 An illustration of how HIV and AIDS education addresses factors that lead to the spread of HIV and AIDS

From the above discussion the researcher argues therefore that failure of curriculum strategies may be due to their inability to address social challenges that students have. This may be because curricula in which HIV and AIDS knowledge is integrated are not oriented for social reconstruction. As shown in Chapter 2 some curricula are not oriented for student empowerment with respect to social issues such as behaviour transformation. Furthermore if knowledge provided in the curriculum is not actionable (as is the case with academic HIV and AIDS knowledge), then the probability of achieving social reconstruction (e.g. behaviour transformation) will be lowered. This will be worsened if academic and functional HIV and AIDS knowledge are not linked together to enhance one another. The current study intended therefore to inform HIV and AIDS education by exploring the relationship between a curriculum-based approach (Life Sciences) and behaviour transformation. Furthermore the

researcher explored the relationship between academic HIV and AIDS knowledge and functional HIV and AIDS knowledge. (Results of this exercise are presented in Chapters 5 to 7).

While HIV and AIDS education can be viewed as an independent field, the researcher believes that it is imperative that other related health education areas be explored in order to provide insight into HIV and AIDS education. As stated by Van Laren (2008), HIV and AIDS education requires a multidisciplinary approach. The researcher therefore believes that other health education programmes could help re-define HIV and AIDS education. In the following section the researcher explored health education with a view to determine what can be learnt from it in order to inform HIV and AIDS education.

3.5 Why does health education fail? Lessons for HIV and AIDS education

In Section 3.4, the researcher identified five factors that are perpetuating the spread of HIV and AIDS. The researcher also argued that HIV and AIDS education needs to address these in order to yield positive results. However the researcher acknowledges that there are other factors that may hamper the effectiveness of HIV and AIDS education. These factors however do not directly lead to the spread of HIV and AIDS as discussed below. The approach taken in this regard is that HIV and AIDS education is not an independent field, but forms part of health education. Consequently those factors that affect health education will also affect HIV and AIDS education. These factors are discussed below. As stated above, these factors do not directly inform the current study but are essential for noting.

3.5.1 Attitude towards health education

In South Africa a subject, Life Orientation, was introduced with the aim of teaching about health among other things. The subject also teaches knowledge on HIV and AIDS, sexuality and life skills. While Life Orientation is a well accepted concept in South Africa, there are some challenges that have been identified. For example Van Deventer (2009), Rooth (2005) and Van Deventer (2004) report that there are wide spread negative perceptions of non-

examinable subjects such as Guidance, Religious Studies and Life Orientation. In this regard students and teachers are reported to dislike these subjects and not to take these subjects seriously. The reasons for this problem are not clear.

However other researchers point out that Life Orientation follows a top-down approach and therefore students' needs and expectations are not attended to. For example Theron and Dalzell (2006) list a number of skills that are not covered in Life Orientation but are reported to be demanded by students. In relation to health education, it is reported that students would like to develop "skills that teach you to stand up for your rights, skills that teach you how to avoid contracting HIV and AIDS, skills that teach you how to cope when you or someone close to you has HIV and AIDS as well as skills that teach you to establish reliable social support networks to help you cope with problems" (Theron & Dalzell, 2006: 402). Furthermore it is reported that students indicate that they need knowledge regarding HIV and AIDS infection, prevention and support (Mash & Wolfe, 2005).

Scholars also caution that Life Orientation and health education should be designed in such a way that they address the needs of both males and females. Theron and Dalzell (2006) indicate here that boys and girls have different health, emotional, physical and social needs. To this effect Dines, Cornish and Weston (1996) argue that health education and life orientation programmes tend to fail to address the needs of boys simply because they are delivered by females who do not have firsthand experience of the needs of boys. For example boys differ from girls in that they do not usually share their health problems as girls do (Dines *et al.*, 1996).

However Life Orientation and other health education programmes do not address the above concerns, such as the unique needs of student groups. As a result students and teachers tend to have a negative attitude towards Life Orientation and health education in general.

3.5.2 Designing health education programmes

Another challenge for health education is with regard to designing programmes. In this instance reports indicate that health educators often treat theory dismissively (DeBarr, 2004). These educators construct and use various concepts in their practices without acknowledging

that these have their basis in theory. Glanz, Lewis and Rimer (1997) however state that if practitioners had acknowledged the conceptual framework that frames their practice, they would have been more efficient in introducing concepts, constructs and relationships of behaviour. To this end DeBarr (2004: 74) suggests that "dynamic and quality practice and research apply state-of-the-art theory and technology in the design, implementation, and evaluation of health education programs." Based on these submissions, in studying health education therefore, one cannot dismiss the role of theory.

According to Glanz *et al.*, (1997), a useful theory in health education is one that has internal consistency, parsimony, plausibility, pragmatism and ecological validity. DeBarr (2004: 75) suggests that useful theories can be used to explain a wide range of human behaviours including "obesity, drug use, sexual behaviours, violence, vaccinations, condom use, alcohol abuse, racial, ethnic and gender disparities, use of complementary and alternative medicine, tobacco use, sugar restriction, nutrition education, smoking, chronic illness management, hormone replacement therapy, soft drink consumption, environmental policy, family planning, and screening for colorectal cancer." Theories can also be adapted to explain those health-related behaviours which do not have a direct theory for explanation. The challenge for health education however is the wide variety of theories that all aim to explain particular health behaviour.

One theory-based strategy for health education is using theory as a framework to design and implement health education interventions that are in line with international law and practice. For instance a number of researchers believe that health behaviour of an individual is significantly influenced by other people's views on health behaviour. To this end House (1981) and Caplan (1974) define health behaviours in terms of social support and coping theories of behaviour. Similarly, Page *et al.* (2006) and Berk (2000) use Bronfenbrenner's social ecological model to understand individuals' health behaviours. The social ecological model basically states that there is a system of relationships that influence a person. Bronfenbrenner states that the first level of influence is the microsystem, which is made up of the "biological disposition and intrapersonal factors of the individual, close friends and family" (Page *et al.*, 2006: 106). Thereafter is the mesosystem, which comprises neighbours and school friends. Extension of the mesosystem gives rise to the exosystem which is the extended family and family friends. Finally there is the macrosystem, which is basically the influence of the government, community traditions and cultural customs. Overall

Bronfenbrenner's point is that one's health behaviour is not necessarily individualistic, but depends on a number of interpersonal relationships (Berk, 2000). Therefore health education must be tailored to address each of the systems that affect health behaviour.

While health education that focuses on social systems could be effective in promoting health, other researchers have chosen to focus more on intrapersonal factors, with a belief that these have a greater influence on health and health behaviour (Becker, 1974). To this end researchers have developed a Health Belief Model, which states that individual health behaviour depends on perceived threat, susceptibility and severity, perceived benefits and barriers for action, cues to action and self-efficacy (Harrison, Mullen & Green, 1992; Becker, 1974). According to this model, in order for a person to seek medical assistance and transform their health behaviour, they must first believe that their health is in jeopardy. This belief in susceptibility means a person believes that he can have the disease even though he may not have the symptoms. In addition the model states that people's health behaviour depends on their perception of the seriousness of the condition as based on their feeling of pain and discomfort, both psychologically and physically. Furthermore health behaviour is influenced by one's conviction that benefits of the recommended or anticipated health behaviour outweigh those of their current behaviour. Health behaviour is also influenced by a precipitating force that makes the person feel the need to take action.

Some however may argue that health behaviour is more dependent on intentions, attitudes, outcome expectancy, subjective norms, normative beliefs, perceived behavioural control as well as actual behavioural control. To understand behaviour in the light of these factors Ajzen (1991) and Ajzen & Fishbein (1980) developed a theory of reasoned action/planned behaviour. The theories of planned behaviour and reasoned action argue that health behaviour is informed by attitudes, subjective norms and perceived behavioural control. These factors then influence intention which in turn informs behaviour. The main idea behind Ajzen's (1991) and Ajzen & Fishbein's (1980) theories is that health behaviour is individualistic but depends on social norms. Therefore health education should address both intraspecific and interspecific determinants.

Luszczynska and Schwarzer (2005) as well as Bandura (1986) however believe that health behaviour depends almost solely on an individual's sense of control. Self-efficacy means when people feel that they can do something to solve their health challenges "they become

more inclined to do so and feel more committed to the decision" (Luszczynska & Schwarzer, 2005: 128). In this regard a low self-efficacy is associated with a "giving up" mentality where individuals display hopelessness, anxiety and depression. Self-efficacy is often associated with outcomes expectancy (DeBarr, 2004). Alfred Bandura's social cognitive theory describes the relationship between health behaviour, self-efficacy and expected outcomes (DeBarr, 2004; Bandura, 1986). Overall Bandura's work suggests that health education must attempt to transform self-efficacy and expected outcomes in order to be effective.

3.5.3 Evaluating the effectiveness

Health education may also be limited by the fact that there are no standard criteria for measuring effectiveness. Instead researchers tend to use strategies favourable to their working paradigm. One prominent strategy is using statistical approaches. The argument here is that quantitative strategies offer a standard and objective procedure rather than a qualitative often "vague criterion for including studies in the review and haphazard strategies for locating relevant literature and where reviewers rely on potentially misleading methods of analysis" (Kok *et al.*, 1997: 22). An example of a statistical approach to evaluate the effectiveness of health education is the use of an index, called the effect size which indicates the change in the dependent variable as a result of a health education intervention with respect to the means and standard deviations (Kok *et al.*, 1997). The effect size approach has been used successfully by a number of researchers evaluating the effectiveness of health interventions addressing diabetes, alcohol abuse as well as tobacco and drug abuse (Kok *et al.*, 1997; Padgett, Mumford, Hynes and Carter, 1988).

Lloyd-Williams (2003) however remains adamant that the effectiveness of health education must be measured qualitatively. For example Lloyd-Williams (2003) argues that there is a need to evaluate the quality of health education programmes. Lloyd-Williams' (2003) view suggests that it is not adequate to evaluate the outcomes of a health education intervention without first evaluating the intervention itself. To this end researchers attest that the administration procedure, such as how leaflets are displayed, needs to be evaluated as this may have implications for the overall health education (Mullan, Fry & Tudor-Smith, 1999).

Reports also indicate that some researchers prefer to evaluate both the intervention as well as the learning outcomes. For example Schwandt, Geiß, Ritter, Üblacker, Parhofer, Otto, Laubach, Donner, Haas and Richter (1999) report evaluating the effect of health education by examining blood-cholesterol levels of children. Here there is evidence of researchers using clinical data to determine the effectiveness of health education.

Meanwhile Oakley, Fullerton, Holland, Arnold, France-Dawson, Kelley, and McGrellis (1995) provide a different view regarding the evaluation of the effectiveness of health education. According to Oakley *et al.* (1995), the problem with evaluating health education interventions is that researchers tend to focus on describing and evaluating the process of implementing the intervention instead of focusing on the impact on related health outcomes. Furthermore Oakley *et al.* (1995) argue that effective interventions are those that are designed according to scientific evidence of effective strategies. Furthermore effective interventions follow a student-centred approach regarding selection of content and pedagogy. Oakley *et al.* (1995) also indicate that there is a need for researchers to use relevant theory to design and implement interventions that will change students' health behavioural patterns. The argument here is that health is related to behaviour whereas knowledge may not be (DiCenso, Guyatt, Willan & Griffith, 2002). Some interventions may also have short-term effects while others may have long-term effects, and these need to be considered in the design and implementation of interventions.

While the idea of using evidence to evaluate health education is generally accepted, researchers argue that "the current search for evidence of effective health promotion is unlikely to succeed and may result in drawing false conclusions about health promotion practice to the long-term detriment of public health" (Speller, Learmonth & Harrison, 1997: 361). Speller *et al.*'s views are based on the fact that there is no consensus about the nature of health education and health education programmes. Furthermore there is lack of agreement over what evidence to use to assess effectiveness and the methodology for reviewing health education programmes is not standardized. Consequently what may be an effective health education programme for one scholar may be ineffective for another. In an attempt to resolve Speller *et al.*'s (1997) concerns, other researchers have relied on theory to design, implement and evaluate health education. However there are complications associated with this ideology too.

3.6 Implications for the study

At the beginning of this chapter the researcher asked: why does HIV and AIDS prevention through education remain elusive? As implied earlier, this question was vital because by identifying factors that are responsible for the continuing spread of HIV, the researcher would have a point of reference, against which Life Sciences would be evaluated. Evaluating Life Sciences would in turn inform future curriculum development in the context of HIV and AIDS education.

The main outcome of the above discussion is that HIV and AIDS education could be projected in a way to address particular areas which are known to affect the spread of HIV and AIDS. For example appropriate academic HIV and AIDS knowledge integrated into a scientific curriculum could be used to address stigma and discrimination. However the programme alone will not yield results. To this there is a need to ensure that the effect of external factors such as those discussed in Section 3.5 is limited. In relation to curriculum-based HIV and AIDS programme, literature shows that there is a need to align HIV and AIDS education with a suitable curriculum. This means the mother subject must have a curriculum theory, rationale, ideology, and content knowledge that is in line with the intended outcomes of HIV and AIDS education.

For the scope of the study, the researcher decided to focus on behaviour, which is one factor that was shown to affect the spread of HIV and AIDS. In terms of knowledge the researcher explored both academic and functional HIV and AIDS knowledge. Overall the researcher interrogated the relationship between Life Sciences curriculum and behaviour transformation in the context of HIV and AIDS. Here the researcher wanted to inform curriculum-based HIV and AIDS education, by determining whether the strategy used in Life Sciences leads to behaviour transformation or not. The methodology used in this regard is discussed in the following chapter.