

**PROCESS AND OUTCOME EVALUATION OF A SCHOOL-BASED  
HIV/AIDS PREVENTION INTERVENTION IN CAPE TOWN HIGH  
SCHOOLS**

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## **Abstract**

This thesis presents an evaluation of a theory-based HIV prevention intervention designed for grade 8 high school students. The intervention was delivered by teachers over a 6-month period. The objectives of the research were (i) to conduct a systematic review of evaluation studies of international and South African school-based interventions aimed at postponing sexual intercourse and increasing condom use; (ii) to conduct a process evaluation documenting implementation of the intervention; and (iii) to conduct an outcome evaluation to assess the intervention effects on the delay of sexual intercourse and condom use. The study was conducted over a period of 15 months, using a cluster randomised controlled trial design. A multi-stage sampling strategy was employed in selecting the participating schools. Twenty-six schools located in various parts of Cape Town participated in the research, 13 in the experimental group and 13 in the control group. Process evaluation data were collected during and after implementation of the intervention. Interviews, focus group discussions, classroom observations and educator lesson logs were the methodologies employed in the process evaluation. Quantitative outcome evaluation data were collected at baseline 6- and 15-months follow-up, using a self administered questionnaire.

The systematic literature review showed that few evaluation studies of school-based HIV/AIDS and sexuality interventions have been conducted internationally. Only a few of the South African studies have employed rigorous evaluation designs to establish intervention effectiveness. Further, many school-based studies have not paid attention to process evaluation. The process evaluation findings showed that the implementation of the intervention was varied within and across the schools. The factors that aided implementation included the intervention's compliance with the current outcomes-based education approach

used in South African public schools; provision of teacher training; provision of teacher manuals with detailed information and instructions about the lessons and activities; and ongoing support to the teacher during implementation. Proper implementation was hindered by factors such as large class sizes, and teacher resistance to and inexperience in using participatory methods. The outcome evaluation results from a cohort of 3625 students are presented in this thesis. The results showed that the intervention was not effective in delaying sexual intercourse or increasing condom use as there were no differences between the intervention and control groups at 15-month follow-up. Based on the results of the research, recommendations are made for the future development, implementation and evaluation of school-based HIV prevention interventions in South African schools.

Some of the key recommendations at the level of the education system include: pre- and in-service training of teachers specializing in implementing Life Orientation and HIV/AIDS interventions; training should focus not only on increasing teachers' knowledge of HIV/AIDS but also increasing their self efficacy in protecting themselves from HIV, and in implementing the interventions; schools and the Department of Education should formally credit teachers for the skills gained from training on HIV/AIDS education, which should be seen as career development; the resource inequalities existent between schools need to be addressed as this has implications for the (non)delivery of HIV/AIDS interventions; making LO an examination subject at grade 12 is an option that requires some exploration. At the level of interventions, recommendations are made that these be rigorously developed by drawing on local research regarding sexual behaviour of adolescents; school-based interventions should make links with the community so as to reinforce in the home environment what is learnt in school and to reach out of school youth; interventions must be

possible to implement within the practical constraints in schools; teachers and students should be involved in developing the interventions; interventions should be designed so that they render themselves to evaluation. With regard to evaluation, recommendations from this study are: there is need not only to evaluate school-based HIV/AIDS interventions, but also to employ rigorous evaluation designs; studies should employ triangulation of different evaluation research methodologies; evaluation studies should also include a process evaluation component.

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## **Abbreviations**

<b>HIV</b>	<b>Human Immunodeficiency Virus</b>
<b>AIDS</b>	<b>Acquired Immune Deficiency Syndrome</b>
<b>IM</b>	<b>Intervention Mapping</b>
<b>UN</b>	<b>United Nations</b>
<b>LO:</b>	<b>Life orientation</b>
<b>NGO:</b>	<b>Non-governmental Organisation</b>
<b>WCED</b>	<b>Western Cape Department of education</b>
<b>STD</b>	<b>Sexually transmitted Disease</b>
<b>STI</b>	<b>Sexually transmitted Infection</b>
<b>RCT</b>	<b>Randomised Controlled Trial</b>
<b>PLHA</b>	<b>People Living with HIV or AIDS</b>
<b>UNICEF</b>	<b>The United Nations Children’s Fund</b>
<b>WHO</b>	<b>The World Health Organisation</b>

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## **Chapter 1: Introduction**

### **1.1 Introduction**

This thesis reports a study that aimed to evaluate a theory-based Human Immunodeficiency Virus (HIV) prevention intervention implemented in thirteen high schools in Cape Town. The evaluation consisted of process and outcome evaluations. In this chapter, I will present a brief discussion of the HIV/AIDS problem in South Africa and globally, the objectives of the study, the conceptual framework on which the intervention was based, and a description of the intervention. In the final part of the chapter, I will provide a synopsis of the rest of the thesis.

### **1.2 Background to the study**

In this section, I will provide a brief background of the current South African HIV/AIDS situation by looking at some of the common indicators of HIV prevalence and incidence with a specific focus on adolescents. I will also discuss briefly the current situation as far as HIV prevention is concerned. This background is important in order to understand the ideological, social, economic, political and evidence-base context within which this research was conducted.

#### **1.2.1 The social context of HIV prevention**

According to the United Nations (UN), every day 1800 children under the age of 15 years are infected with HIV globally (Joint UN Programme on HIV/AIDS et al, 2004). The majority of these children are in poorer countries in Africa, Asia and parts of Eastern Europe. The UNAIDS 2006 *Report on the Global AIDS epidemic* estimated that about 43% (more than 800 000) of all children (under15 years) living with HIV

are in Southern Africa (UNAIDS, 2006). Young people aged 15-24 years account for nearly one third of people living with HIV/AIDS (PLHA) globally (UNICEF, 2006).

In South Africa, it was estimated that a total 5.4 million people were living with HIV infection by 2005 (Department of Health, 2005). The 2005 South African national antenatal seroprevalence survey<sup>2</sup> reported a 29.5% (one in three women) HIV/AIDS prevalence among pregnant women aged 15-49 years. In pregnant girls under 20 years, the prevalence was 20.2%, up from 19.5% in 2004. HIV prevalence among teenagers included in the surveys was estimated at 15.9%, a slight but not statistically significant decrease from 16.1% in 2004 (Department of Health, 2005). The Department of Health (2005) estimates that 235,060 children aged 0-14 years are living with HIV. It is important to state at the outset that disaggregated national HIV/AIDS prevalence data on children and adolescents under the age of 18 years are hard to come by as there are no surveillance data for this age group. The antenatal data from pregnant clinic attendees are reported for the age group 15 years and older. The surveys have in the last ten years provided the best available estimates of HIV infection, and the results are used to obtain estimates for the general population. The UNAIDS concludes in their 2006 global report that the South African epidemic is “one of the worst in the world, and shows no evidence of a decline” (UNAIDS, 2006).

In the last few years, population-based and household survey data have also become available. Two national household surveys that included children were conducted by

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<sup>2</sup> These prevalence rates are derived from annual data on blood samples from pregnant women attending antenatal clinics of the public health system. The cross-sectional anonymous surveys have been conducted annually since 1990.

the Human Sciences Research Council in the last 4 years (Shisana et al, 2002, 2005). The 2005 household survey reported a prevalence of 3.3% in children aged 2-14 years. For the age group 15-19 years, the prevalence was 3.2% for boys and 9.4% for girls (Shisana et al, 2005). Another national survey of sexual behaviour among adolescents 15-24 years conducted by the Reproductive Health Research Unit at the University of the Witwatersrand also reported higher HIV prevalence rates among females (7.3%) aged 15-19 years compared to males (2.5%) of the same age group (Pettifor et al, 2004a). According to the burden of disease estimates for 2000, AIDS accounts for 40% of mortality in children under the age of 5 years, and 33% for girls 14 years and younger (Bradshaw et al, 2004). Among boys, the highest cause of mortality in adolescents is homicide or unnatural causes (Matzopoulos et al, 2003). Given an incubation period of about 2-8 years in the current context in which antiretroviral treatment is not accessible to everyone living with HIV, it appears that many of the young people aged 15-24 years are infected during adolescence.

These data have their limitations, but they are reliable and provide the best available estimates of HIV prevalence and AIDS-related mortality. They demonstrate the magnitude of the HIV epidemic in the country. They also suggest different risk patterns. The majority of children under the age of 14 years that are HIV positive are infected through vertical transmission from mother to child during pregnancy, delivery or in early infancy through breastfeeding. Among adolescents however, sexual behaviour is a risk factor as evident in the reported 20.2% prevalence rate among antenatal clinic attendees aged under 20 years in 2005 (Department of Health, 2005). HIV transmission through intravenous drug use on the other hand has received less attention as it is less prevalent among young people in South Africa compared to countries in Europe or Asia. If the tide of HIV is to be turned, effective prevention

interventions and mitigation efforts must continue to be targeted at adolescents before they become sexually active.

The majority of South African adolescents have had sex at least once by the time they are 16 years old, and the majority of those that are sexually active have had more than one partner by the age of 20 years (Eaton et al, 2001; Flisher et al, 1993; 2003; Pettifor et al, 2004a; Reddy et al, 2002). A youth risk behaviour survey conducted in public high schools in all 9 provinces reported that 41.1% of learners had ever had sex, with significantly more males than females reporting ever having had sex (Reddy et al, 2002). A recent study at high schools in Cape Town reported a significant increase in the proportion of school-going adolescents that have experienced intercourse for both boys and girls compared to findings reported in 1990 (Flisher et al, 2003). In a study of young men in rural South Africa, Harrison et al (2005) found that those that experienced sexual debut before the age of 15 were more likely to report risk behaviours at first sexual experience. The national household survey by Shisana et al (2005) found that overall, few children in the 12-14 year age group reported having had sex. The median age at first sex in the national survey by Pettifor et al (2004a) was 17 years, and only 8% of the youth had their first sexual encounter at the age 14 years or younger. Interventions must therefore aim to influence adolescents' sexual behaviours before they become entrenched as early sexual intercourse debut has been shown to be a risk factor for HIV infection (Pettifor et al, 2004b, 2005). Delaying sexual intercourse and/or promoting condom use have been shown to be effective in HIV prevention (Hearst and Chen, 2003; UNAIDS, 2004). In Zambia, success in reducing HIV infection among young girls has been attributed to delaying their first sexual experience (Fylkesnes et al, 2001). Declines in HIV prevalence rates amongst adolescents in parts of Uganda have also recently been

associated with behaviour change (Hallet et al, 2006). However, factors beyond the individual such as interpersonal violence and poverty also have implications for the delay of intercourse or condom use. For example, 10% of girls and 6% of sexually experienced boys in the South African survey by Pettifor et al (2004a) reported that they had ever been forced to have sex.

### **1.2.2 HIV prevention efforts**

HIV prevention in South Africa has been characterised by tensions of opposing positions, such as that between ideology versus science, and questions about the will of the higher political leadership of the country to intervene in the AIDS epidemic. The prevention efforts have been based to a great extent on the Abstain, Be faithful, Condomise (ABC) approach that was promoted on the continent largely by international donor organizations. While the “A” is a risk avoidance model, the “B” and “C” are risk reduction approaches. For higher risk populations such as commercial sex workers, the focus has been on risk-reduction, specifically condom use. This approach is deemed most appropriate to protect populations considered to be at higher risk from infection, and has indeed resulted in some success stories. For example, infection rates in gay populations in the USA were brought down through condom use in the 1980s, although new infections are on the rise again (Joint UN Programme et al, 2004). In Thailand, the “100% condom use campaign” directed at commercial sex workers and brothels reduced the number of new infections in the period 1991 to 2001 as a result of increased condom use and a reduction in the number of men visiting sex workers (Hearst and Chen, 2003; UNAIDS, 2004). The ABC model has thus somewhat been endorsed as the unchallenged paradigm for global HIV prevention, despite the different cultural contexts and epidemiology of the AIDS epidemic in Africa compared to the West, but there is growing debate about its

appropriateness in the sub-Saharan context (Barnett and Parkhurst, 2005; Green, 2003).

Uganda and Senegal are often cited as success stories of the ABC model in Africa. In the rest of SSA, prevention programmes have not had as much success as HIV seroprevalence rates in general populations have continued to rise. Some arguments suggest that the success in Uganda was due to the initial homegrown responses to HIV prevention that emphasized strongly on delay of sexual debut, abstinence, and reduction in number of sex partners, also called “zero grazing”, as opposed to the donor organisations-driven ABC campaigns (Hearst and Chen, 2003; Green, 2003). This homegrown approach was also rooted within the ABC model but with greater focus on ‘abstain’ and ‘be faithful’. However, the success in Uganda is also attributed to leadership from the highest levels of government, an enabling environment, and a multisectoral approach. This approach included numerous community- and faith-based organizations and delivered different messages to different groups of people according to their needs and responses to the messages (Hearst and Chen, 2003; Green, 2003; Mohiddin and Johnston, 2006; Parkhurst, 2002). Thus, communities became largely agents of their change as opposed to objects of change as is often the case in many externally designed interventions. The debate about Uganda’s success is more complicated and bigger than discussed here. However, the important point for the present discussion is that the Ugandan approach broadened the response to HIV beyond the individual behaviour change factors characteristic of the ABC model, to address factors in the social and political environment with involvement of multiple role-players.

Part of the debate regarding the ABC model to HIV prevention regards its simplistic approach to the complexity of sexual behaviour. Eaton et al (2003) suggest that the factors that influence behaviour fall into three interacting categories: (i) personal factors; (ii) the proximal environment (including interpersonal factors, and the immediate living environment); and (iii) the broader social context that includes structural factors like poverty and cultural factors. One of the main shortcomings with the ABC model is that interventions using this approach fail to adequately address the proximal environment and the broader social context within which behaviour is formed. For example, in their review of unsafe sexual behaviour amongst young people in South Africa, Eaton et al (2003) reported that personal, proximal and distal factors interact closely to encourage HIV risk behaviour. In many SSA countries, poverty has been found to be one of the factors that contribute to HIV transmission and AIDS mortality (Nyindo, 2005). Children growing up in poverty are more likely to adopt HIV risk behaviours, and poor people have less capacity to cope with HIV morbidity. This in turn deepens further the poverty of the poor through factors such as loss of income and livelihood. The ABC strategies have an important role in HIV prevention, because sexual behaviour has to change in order to prevent infection. However, in isolation, ABC cannot address these complex relationships between individual behaviour and the broader social context.

In South Africa, school-based and other interventions aimed at young people are to a large extent designed within the ABC model. The interventions have placed emphasis either on abstinence or condoms, or integrating all three strategies. Emphasis on abstinence only is a highly contested approach that is viewed by 'liberal' HIV activists as a judgmental approach to HIV prevention. On the other hand, there is no evidence that the 'be faithful' message has been effective amongst adolescents. In

reality, there are few programme impact indicators that have measured A or B. With the 'condomise' approach, there is also little evidence that condoms alone have resulted in reduced rates of HIV infection in the general African populations. On the contrary, levels of HIV infection have continued to rise even in countries such as South Africa that have high condom availability (UNAIDS, 2004). Condom availability of course does not necessarily result in condom use, but it is an important prerequisite. In South Africa for example, policy does not allow schools to distribute condoms, but free condoms are widely available in the public sector (Shisana et al, 2005). Yet, HIV prevalence rate has increased annually for the last 10 years as evidenced in the antenatal surveillance data and population estimates. Some studies have reported that condom and contraceptive use amongst young people is influenced by factors such as attitude of service providers, confidentiality of clinic staff, societal attitudes about premarital sex and support structures for youth within the community and educational institutions (Karim et al, 1992; Abdool Karim et al, 1992; MacPhail and Campbell, 2001; Makiwane, 1998; Peltzer, 1999; Petersen et al, 2001; Reddy et al, 2000; Richter, 1996; Wood et al, 1997). An HIV prevention approach that focuses only on increasing condom use would therefore be less effective if these contextual factors that hinder access to condoms are not addressed. A comprehensive approach to HIV prevention would probably be more effective as neither one of the ABC strategies on its own can sufficiently address HIV prevention. However, even an approach that encompasses all three of the ABC strategies may not succeed if the other factors at broader socio-political level are not addressed.

Given this context, it is crucial to evaluate interventions so that HIV prevention is not driven by ideology and political interests but rather by evidence of feasibility and effectiveness. School continues to be an attractive setting for HIV prevention

interventions. It provides the opportunity to reach large numbers of adolescents and to influence group norms. School-based interventions have also been shown to be relatively low cost (World Bank, 2003). However, while greater attention is being paid to implementing HIV prevention in South African schools, only a few of the interventions have been evaluated. Where evaluations have been conducted, the study designs were weak, making it difficult to ascertain the effective intervention characteristics and to link the results to the interventions. I will return to this discussion in greater detail in Chapter 2, which is a review of evaluation studies conducted in South Africa and elsewhere.

As summed up by Mukoma and Flisher (in press), *“there is an urgent need for evaluated AIDS prevention programmes in South African schools. ... The evaluations should be of sufficient methodological sophistication to enable confident conclusions about whether the programmes have achieved their desired objectives both immediately after the programme and thereafter”*. The research presented in this thesis responded to this need by evaluating a school-based HIV prevention intervention. I describe the development and content of the intervention below, and later the conceptual model on which it was based.

### **1.3 The SATZ Intervention**

The SATZ intervention was developed and implemented as part of a broader project called the SATZ Project (See Aarø et al, 2005). The SATZ project aimed at implementing and evaluating HIV/AIDS prevention interventions for adolescents in South Africa and Tanzania. Local teams at each of the project sites designed interventions specific to the needs of their settings. Here I describe only the intervention conducted in Cape Town, which aimed at delaying sexual debut or

postponing subsequent sexual intercourse; and increasing condom use among the sexually active adolescents.

### **1.3.1 Intervention development**

The SATZ intervention was a theory-based-teacher-delivered HIV/AIDS intervention for grade 8 learners<sup>3</sup> at public (state) high schools in Cape Town. The average age of grade 8 learners in Cape Town is 14 years. Research shows that most adolescents in South Africa are not yet sexually active at 14 years of age. A national survey by Simbayi et al (2004) found the median age of sexual debut to be 16.5 years. Thus the intervention aimed to reach the majority of the students before they became sexually active.

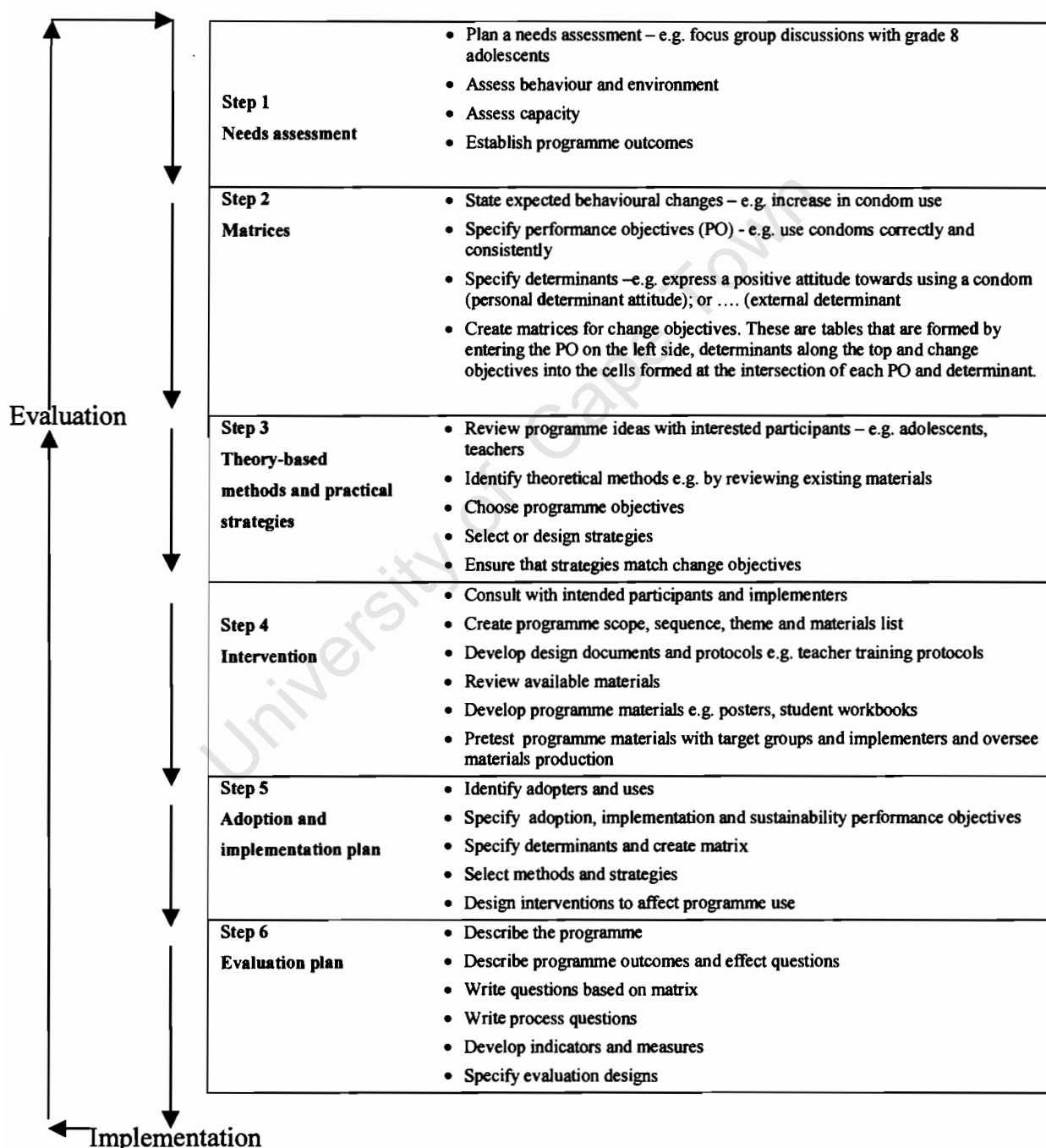
The development of the intervention was based on the Intervention Mapping (IM) approach, a framework for health promotion programme design on the basis of (1) needs assessments and capacity analysis, (2) theory about behavior and behavior change, (3) collaborative planning (Bartholomew et al, 1998, 2001; Schaalma et al, 2004). Intervention Mapping has been used in several studies to develop school-based HIV/sexuality programmes (Schaalma et al, 1994, 1996; Wight and Abraham, 2000). The approach consists of the six fundamental steps represented in Figure 1.4 below (Bartholomew et al, 2006). As shown in the diagram, each step of IM comprises specific tasks that inform the subsequent steps. This is an iterative and cumulative process during which intervention developers move back and forth between the steps as they gather more information about each step. Some examples from the application of the IM process in developing the SATZ intervention are used in the diagram. The strengths of IM lie in its systematic approach to intervention

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<sup>3</sup> The terms 'learner' and 'student' are used interchangeably in this thesis. The former is the most commonly used term in South Africa. 'Educator' is also the more commonly used term for 'teacher'.

development, its theoretical grounding and involvement of various stakeholders including the users of the intervention in both its development and evaluation.

**Figure 1.1 Steps of intervention mapping (adapted from Bartholomew et al, 2006)**



### **1.3.1.1 Application of the IM protocol to the SATZ intervention**

In the first step of intervention development, understanding the determinants of postponement of sexual intercourse and condom use amongst adolescents, and the current state of HIV and sexuality education at schools in Cape Town was viewed to be a prerequisite for an effective intervention. This information was obtained through a situation analysis involving a review of relevant literature and primary data collected using interviews with principals and educators, and focus group discussions with learners. Findings of the situation analysis showed that there is need for HIV interventions at Cape Town high schools, for well trained teachers to deliver the interventions, and for support networks for the teachers. The situation analysis was conducted at schools that were not in the sampling frame for the present study, but typical of the schools in Cape Town, representing the existing demographic and socio-economic diversity.

Using the results from the situation analysis, a matrix of programme objectives was developed. With the constructs of the theoretical model as a guideline, the matrix stated in very specific terms the targeted risk behaviours and the determinants thereof, which included knowledge, attitudes, self-efficacy, social or peer influence, behavioural intentions, behaviour, skills and barriers. The matrix also identified the learning objectives and performance objectives that were a prerequisite for each behaviour of interest to occur.

As the intention was not to reinvent the wheel in developing the programme, existing materials aimed at adolescents in South Africa were systematically reviewed to see how they fitted into each of the objectives of interest. If the material (activities and lessons) met the theoretical and practical criteria identified, these were incorporated

into the development of the programme. Where relevant existing material could not be found, these were developed based on findings from the situation analysis, available literature and drawing from teachers and other experts in the field of HIV/AIDS education. Theory-based methods that were likely to be effective in changing behaviour or correlates of behavior were identified (Schaalma et al, 2004). These methods were then translated into educational delivery strategies. In particular, student centered participatory strategies that have been identified as one of the characteristics for effective programmes were preferred (Kirby, 2001).

An important principle of the IM process is bridging the gap between programme development and evaluation on the one hand, and planning of diffusion and adoption of the programme on the other (Orlandi et al, 1990; Schaalma et al, 1994). As the SATZ team comprised of researchers, collaborative partnerships were created with life orientation (LO) teachers, curriculum developers, representatives from the Western Cape Education Department (WCED), representatives from non-governmental organisations (NGO) and students. These stakeholders participated in the development of the curriculum either as expert panels or in an advisory capacity. This brought a wealth of experience to the intervention development from people who were very familiar with the education system, experts in curriculum development, as well as teachers and students who have the day-to-day practical experience of implementing and receiving HIV/AIDS interventions in a classroom setting. For example, the teachers and curriculum developer brought into the design their knowledge of curriculum transformations in the education sector, and the Outcomes-Based Education (OBE) philosophy currently used in South African schools (Department of Education, 2002). OBE is a learner-centered approach that focuses on activity-based education, learner participation, free discussions, and the

encouragement of critical thinking (Department of Education, 2002). This approach was therefore in line with requirements for sexuality education, for which participatory rather than didactic methods are recommended (Paulussen et al, 1994; Kirby et al, 1994). As evident in the discussion above, the application of the IM process was not neatly linear but iterative as the steps informed and refined each other. For example the review of existing materials presented in step 4 in Figure 1.1 occurred almost simultaneously with the needs assessment in step 1, while the evaluation design (step 6) was decided upon during the project conceptualization before the intervention had been developed. The decision was made early in the project to use teachers as implementers. One of the strengths of the SATZ intervention lied in the rigorous application of the IM protocol in its design, development and evaluation. The result of these procedures was the SATZ intervention as described in greater detail in the sections below.

### **1.3.2 The intervention**

The result of the IM process described above was a learner workbook and a teacher manual in English, consisting of 16 lessons which are presented in Table 1.1. A sample lesson from the learner workbook and teacher manual are presented in appendices K and L. As shown in appendix L, each SATZ lesson was linked to the critical and specific outcomes as required in the LO curriculum, as well as knowledge, skills and values/attitude outcomes (see appendix L). Life Orientation is a compulsory subject taught up to grade 12 at all public high schools in South Africa (Department of Education, 2002). It encompasses five focus areas, namely: (1) Health Promotion; (2) Social Development; (3) Personal Development; (4) Physical development and Movement; (5) and The World of Work (Department of Education, 2002). Sexuality and HIV/AIDS education are incorporated into each of these five areas, but in

practice, many of the teachers delivered HIV/AIDS education under the focus on Health Promotion. The lessons focused both on the individual and interpersonal relations with significant others.

The student workbook was translated into Afrikaans and Xhosa by professional translators with input from the teachers. A 16-year old student interpreted his understanding of the text into drawings and illustrations used in the learner workbook. The workbooks in English and Afrikaans were pre-tested by the teachers in the expert panel and revised appropriately. This process served as a formative evaluation of the intervention. It helped to assess whether the programme could be implemented within different schools taking into account the different school circumstances and philosophical positions of the educators about sexuality and HIV/AIDS education. Xhosa is widely spoken in Cape Town and sometimes used in teaching. However, the educators did not find it necessary to produce learner workbooks in Xhosa as English is the preferred language of instruction at the schools with predominantly Xhosa speaking learners. Thus, the Xhosa workbook was not pre-tested.

The intervention schools were provided with learner workbooks for each learner in either Afrikaans or English, the two media of instruction at high schools in Cape Town. A copy of the Xhosa learner workbook was provided only as a reference to all schools that required it. Teachers recommended that their manual be produced in English only. Each teacher was provided with an educator manual that contained detailed information and instructions about each lesson and activity. Additional material included posters, a dildo, condoms, material for use in various activities and a booklet on substance use. The intervention was multifaceted in medium of delivery, with great emphasis on skills training through modeling and discussion. A variety of

interactive exercises were utilized, including role-plays, small group activities and discussions.

University of Cape Town

**Table 1.1 The SATZ intervention**

<b>Lesson</b>		
<b>number</b>	<b>Lesson title</b>	<b>Methods/strategies</b>
1.	Values clarification with regard to adolescent sexuality	Student developed questionnaire for parents/guardians; homework; Role plays; whole class discussion
2.	Self-esteem and sexual decision-making	Small group activity; individual activity
3.	How our bodies function reproductively	Lecture; single sex small group activity; homework
4.	Dimensions of sexuality	Small group discussion
5.	Boys don't cry! Girls are soft!	Role play; small mixed group discussion
6.	Responsible decisions for sexual safety	Individual activity
7.	Promoting the sexual health of young people	Individual, small group and whole class discussion
8.	How do I handle this?	Single sex small group activity; role plays
9.	Situations that carry the risk of sexual intercourse	small group and whole class discussion; role play
10.	Coercion and violence in romantic relationships	Small group discussion
11.	Not for me, not now!	Individual activity
12.	How to use condoms	Role play; condom demonstration
13.	Negative consequences of sexual intercourse	Role play
14.	HIV and AIDS and the future	Individual activity; small group discussion
15.	Substance use and sexual decision-making	Individual or small group activity; role play
16.	Self-esteem	Small group activity
	<b><i>Additional sections</i></b>	
	Glossary	
	Sexual and reproductive rights of young people	
	Sexually Transmitted Infections	
	HIV/AIDS: The facts and myths	
	Resource directory	

### **1.3.3 Teacher Training**

The intervention schools were requested to send at least two grade 8 LO teachers to the training workshops. Where schools had only one grade 8 LO teacher, they could also send any other teacher enthusiastic about HIV prevention and willing to attend the training and to provide implementation support. Twenty-four teachers aged 20-59 years attended the first 4-day training workshop conducted over two consecutive weekends. Several more attended additional training workshops that had to be organized due to teacher turnover, as well as two refresher sessions. A fuller description of the training and evaluation thereof is published by Ahmed et al (2006). There was no monetary cost to the school for attending training but teachers were reimbursed for travel costs to the training venue. The intervention was revised further with the input that the teachers provided at the training. At the end of the training, all the teachers received a certificate of participation.

In summary, the principles underlying the development of the SATZ intervention were: (i) it had to be theoretically based; (ii) avoid reinventing the wheel by utilizing existing material; (iii) to ensure adoption and implementation, be acceptable to the educators and learners; (iv) fit into rather than be in conflict with the current LO requirements and OBE (v) be possible to replicate and implement within the diverse school contexts in Cape Town; and (v) render itself to rigorous evaluation.

### **1.3.4 Implementation**

Implementation took place over a 6-month period, March – August 2004, with a booster in February 2005. The booster was delivered by student volunteers from the University of Cape Town's Students HIV/AIDS Resistance Programme and was conducted in the form of a once-off workshop. The control schools implemented their

usual LO curriculum and whatever other additional interventions they had planned for the year.

The SATZ intervention replaced the HIV/AIDS and sexuality component of the Life Orientation (LO) curriculum at the intervention schools. As with other subjects at grade 8, assessments are not through examinations but tasks and activities that go into each student's portfolio. The focus of the SATZ intervention was HIV prevention, but it was designed to be compatible with these five areas of LO. The choice of LO teachers as implementers seemed an obvious choice given that they were already teaching a subject that encompassed sexuality and HIV/AIDS. The intervention therefore had to fit into the existing school LO timetables without requiring extra teaching time. The stakeholder inclusion processes described earlier facilitated adoption and implementation of the intervention.

In the previous sections, I have presented a background to the study in a discussion of the social context of HIV prevalence and prevention in South Africa. I have also presented a detailed description of the design and development of the SATZ intervention that I evaluated. In the following sections, I will discuss the conceptual framework on which the intervention and the evaluation were based.

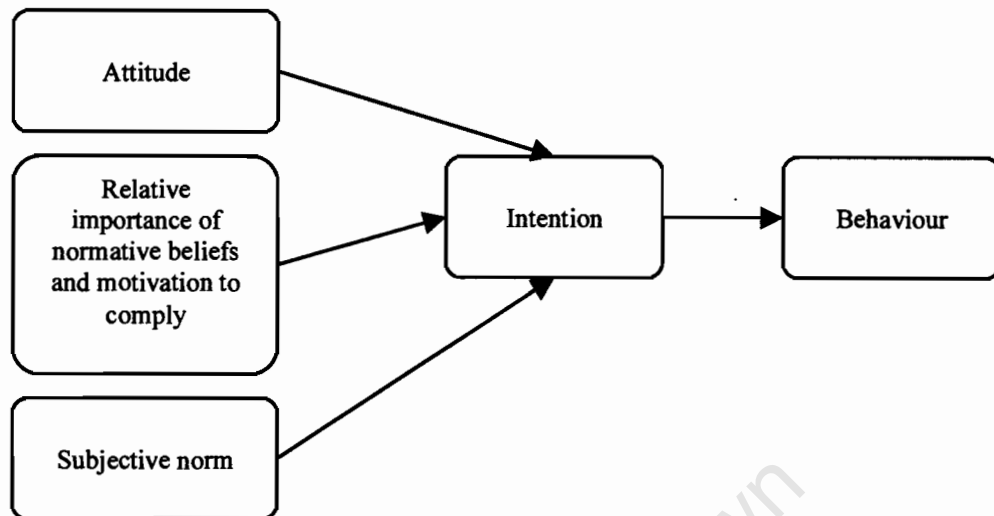
#### **1.4 The conceptual framework**

The conceptual framework on which the intervention was based is a modification of the Theory of Reasoned Action (Ajzen and Fishbein, 1980), and its revised version the Theory of Planned behaviour (Fishbein and Ajzen, 1975; Ajzen, 1988). I will first present these two theories before presenting the modified version.

#### **1.4.1 The Theory of Reasoned Action**

The theory of reasoned action (Fishbein and Ajzen, 1975) is based on an expectancy-value model, whose proposition is the principle of maximization. Expectancy-value theories hold that people are goal-oriented beings whose behaviours, performed in response to their beliefs and values, are aimed to achieve some goal. The premise of the theory is that people are not spontaneous actors. They make behavioural decisions on the basis of a rational analysis of the consequences of performing a specific behaviour and what they think other people expect them to do (Eagley and Chaiken, 1993). Thus, behaviour is determined by an individual's volitional control. According to this theory, (a) behaviour is the result of a specific intention to engage in the behaviour; (b) intention on the other hand is determined by attitude toward a behaviour and subjective norm regarding that behaviour, and therefore intentions are a function of certain beliefs; (c) attitude is determined by an individual's belief that a given outcome will occur if the behaviour is performed, and the evaluation of the outcome; and (d) subjective norm is determined by a person's normative beliefs of what salient others think he or she should do, and the motivation to comply (Carter, 1990; Eagley and Chaiken, 1993). Thus, for example, a person's intention to use condoms is a function of their attitude (beliefs that using a condom will lead to certain positive or negative outcomes) towards using a condom. It is also a function of an individual's subjective norms (salient beliefs of what significant others, like parents, think) regarding the use of condoms. This theory is diagrammatically represented below.

**Figure 1.2 Theory of Reasoned Action (Fishbein and Ajzen, 1975)**



Criticism has been leveled at this theory for its view of behaviour as a rational process. It has been challenged for the assumption that individuals cognitively consider their beliefs toward a behaviour, formulate specific attitudes toward the behaviour, and behave in a manner that results in favourable outcomes and meets the perceived expectations of significant others (Eagley and Chaiken, 1993). Applied to certain behaviours such as criminal behaviour, this theory does not provide a complete picture of the causes of behaviour (Eagley and Chaiken, 1993).

Fishbein and Ajzen (1975) maintain that external variables do not directly influence behaviour except through their impact on the proximal determinants of behaviour. This assumption that individuals can or are always in control of their behaviour has been challenged, particularly in the context of behaviours that do not depend entirely on one individual but require cooperation of others, and behaviours that require skills, abilities and opportunities (Liska, 1984). In sexual relationships, for example, gendered power relations come into play and the behavioural outcome is not always

an individual decision. Using a condom for example requires cooperation of a partner(s). Several South African studies have shown that sexual intercourse in adolescent relationships is often unplanned and does not always occur within a consensual context in which the individual can make rational personal decisions (George, 2001; Jewkes et al, 2001; MacPhail and Campbell, 2001; Richter, 1996; Reddy et al, 2003; Rutenberg et al, 2001; Wood et al, 1998; Varga and Makhubalo, 1997). The model does not take into account the variables external to the individual.

Although it has been found to successfully predict actual behaviour when the behaviour under consideration is one that is fully under the subject's control (Glanz et al, 1990), those who have challenged this theory argue that it is insufficient as a model for predicting behaviour, as intention is determined by a larger set of variables than attitude toward the behaviour and subjective norms. Factors such as perceived moral obligation (Eagley and Chaiken, 1993) and past behaviour (Bagozzi, 1981; Kashima et al, 1993; Schaalma et al, 1993) have also been found to determine intention. In adolescent relationships, power relations, peer pressure, and socio-economic status are independent factors that may affect intention. Some of these ecological variables could in some circumstances improve the theory's predictive power.

Ajzen and Fishbein (1980) however argue that this model does not assume that people scrutinize the determinants of their behaviour before every behavioural act. Rather, people form their intentions by thinking about their attitudes and subjective norms, form their attitudes by thinking about the consequences of their behaviour, and form their subjective norms by thinking about significant others' approval or disapproval of the behaviour. Therefore, all the processes of the model need not be activated for a behaviour to occur. An individual may retrieve only an intention, or a norm, which

then produces an intention (Ajzen and Fishbein, 1980; Fishbein, 2000). According to Ajzen and Fishbein (1980), external variables do not necessitate a change to the model as these only produce changes in intention. Nevertheless, attentive to some of these criticisms, Ajzen (1991) presented a revised version of the model, the Theory of Planned Behaviour.

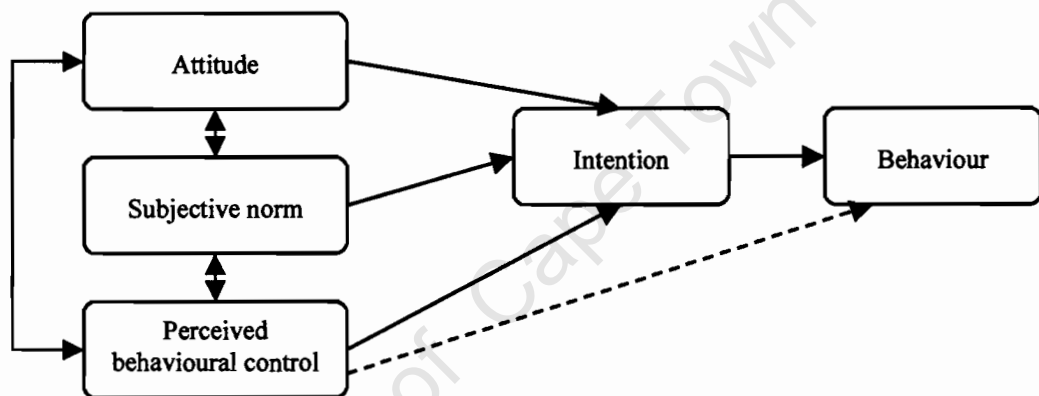
#### **1.4.2 The Theory of Planned Behaviour**

In this model, Ajzen (1988, 1991) introduces the concept of *control beliefs*, to account for the situational context in which the individual does not have complete control over a behaviour. Control beliefs are beliefs about the presence of factors that may facilitate or impede performance of the behaviour (Ajzen, 1991). Control beliefs and the perceived power of the facilitating or impeding factors give rise to *perceived behavioural control*, which is understood as an individual's perception of how easy or difficult it is to perform a behaviour (Eagley and Chaiken, 1993). Perceived behavioural control is similar to the notion of self-efficacy in Bandura's (1986) Social Cognitive theory. It is determined by beliefs concerning whether a person has the necessary resources and opportunities to perform the behaviour successfully. It is thus the extent to which a person perceives internal and external factors that are likely to constrain or interfere with performance of a behaviour.

Intention is still an important construct in this model as the immediate antecedent of behaviour. All other factors that influence behaviour are mediated through intention (Carter, 1990). Thus, in situations of complete volitional control, the intention-behaviour relationship should be optimal (Armitage and Conner, 2001). On the other hand, given behaviours that limit volitional control, Ajzen (1991) suggests that perceived behavioural control can serve as a proxy for actual control and directly contribute to the prediction of behaviour. The relative importance of intentions and

perceived behavioural control in predicting actual behaviour may therefore vary for different situations and different behaviours. Nevertheless, Ajzen (1991) maintains that it is actual (volitional) control that is most relevant in the link between control and behaviour. Actual control is however difficult to measure as it is influenced by external factors, and an individual's perception of control may not be accurate (Eagley and Chaiken, 1993). The theory is depicted in Figure 1.3 below.

**Figure 1.3 The Theory of Planned Behaviour<sup>[0]</sup> (Ajzen, 1991)**

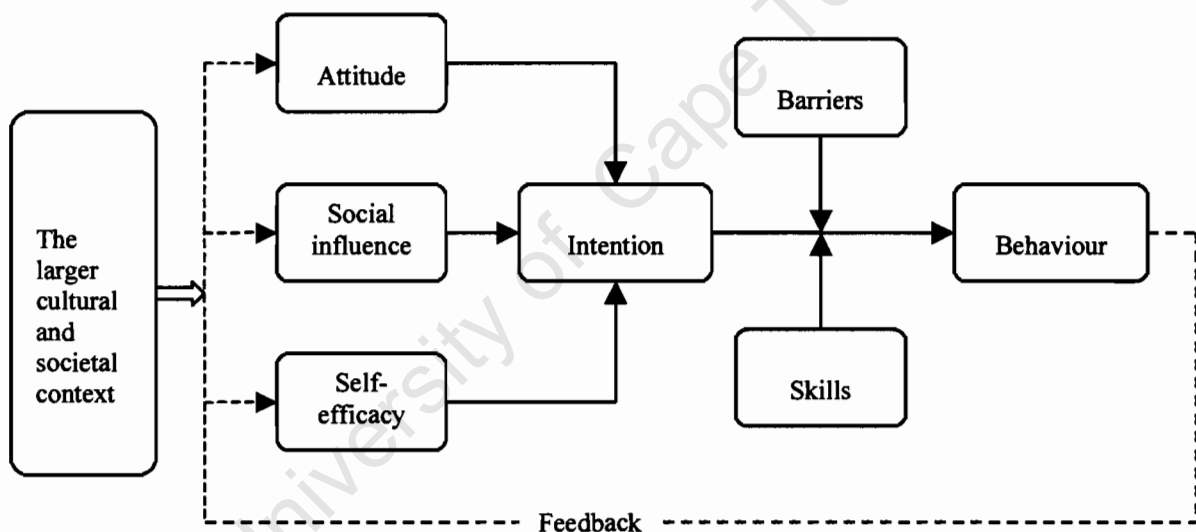


The theories of reasoned action and planned behaviour have been tested in many studies with regard to sexual behaviour with both adolescents and older populations, and their performance presented in meta-analyses (Albarracin, 2001; Jemmott and Jemmott, 1991; Sheeran and Orbell, 1998) As is evident from the discussion above, the models could be improved by taking into account other variables. Ajzen (1991), in further discussion of this theory suggests that adding other predictors of behaviour could expand the model. Many researchers while using this as the basic model have included other potential behaviour predictor variables. The conceptual framework employed in this study, which suggests the inclusion of self-efficacy, skills and barriers, is one such modification of the theory of planned behaviour.

### 1.4.3 Conceptual framework for this study

The conceptual framework employed in the development and evaluation of the SATZ intervention is a general model for behavioural determinants, which, like most social-psychological theories for behavioural determinants, includes four general categories for predicting sexual behaviour: *attitude, social influence, intentions and self-efficacy*. This model postulates that the influence of intentions on health behaviours as described in the two theories above depends on two additional factors: *skills and barriers*. A diagram representing this model is presented in Figure 1.4 below.

**Figure 1.4 The study conceptual framework**



The additional constructs introduced in this model are not new. Self-efficacy is derived from Bandura's (1986) Social Cognitive theory. It refers to an individual's belief or expectation that he/she can successfully complete a behaviour such as using a condom or persuading a partner to do so in a sexual encounter. It is the perception of mastery that is relevant here; whether they will in fact be able to carry out the behaviour is another matter. Ajzen (1991) suggests that perceived behavioural control is synonymous with self-efficacy. Some researchers have however examined these

two concepts and provided evidence that the two are separate concepts that act independently as predictors of behaviour (Armitage and Conner, 1999; White et al, 1994). White et al (1994) reported study findings that for safer sexual behaviours, self-efficacy had a strong effect on intentions to discuss and to use condoms while perceived behavioural control only produced an effect on the behavioural measure discussing the use of a condom with a new partner. This evidence possibly explains why in this revised model, perceived behavioural control is substituted with self-efficacy.

The role of skills and barriers is also not new. It has been raised in criticisms to the theory of reasoned action and theory of planned behaviour, perhaps most eloquently by Liska (1984). What this revised model does is put forth these constructs as important moderators of intention. Thus, in addition to attitude toward the behaviour, subjective norms and self-efficacy, the extent to which the intention to perform a behaviour is carried out, depends on: (a) whether the individual has the necessary skill(s) or ability to perform the behaviour; and (b) the presence of constraints, personal and environmental, to the performance of the behaviour. With regard to sexual behaviour, an example would be whether the individual has the skill to put on a condom correctly, and whether there is cooperation from a sexual partner to perform the behaviour putting on a condom.

The model, however, does not imply a unidirectional influence of attitudes, social influence and self-efficacy on behaviour. There are possible interaction effects between the variables, so that these determinants can also be consequences, and behaviour can influence the determinants. Positive experiences with behaviour, for

example, can influence psychosocial determinants of behaviour, creating what Bandura calls a reciprocal determinism (Bandura, 1986).

The inclusion of barriers in this model is particularly important for the South African context. Studies have shown that condom use amongst young people is influenced by community level factors such as attitude of service providers, confidentiality of clinic staff, access to condoms, societal attitudes about premarital sex and support structures for youth within the community and educational institutions (Karim et al, 1992; MacPhail and Campbell, 2001; Makiwane, 1998; Miles, 1993; Peltzer, 1999; Petersen et al, 2001; Richter, 1996; Wood et al, 1997). Thus, for example, an adolescent's positive intentions to use condoms may not materialise to this action if a condom cannot be obtained because health clinics are not adolescent-friendly. Postponement of sexual intercourse or abstinence on the other hand is hindered by factors such as peer pressure and group culture (Wood et al, 1998). Also as mentioned earlier, many adolescent sexual relationships do not occur within a consensual context (Jewkes et al, 2001; Richter, 1996). There is well-documented research in Cape Town showing that violence pervades many adolescent girls' first sexual encounters (Reddy et al, 2003; Wood et al, 1998). This is a potentially important constraint to either abstaining from sex or using a condom.

There is also growing discussion about the cultural relativity of theory. The debate centers on the applicability of individual psychological theories developed in the West, considered individualistic cultures, to particularly African and Asian cultures that are more collectivist (Airhihenbuwa, 1999; Airhihenbuwa and Obregon 2000; Eaton and Flisher, 2003; Triandis, 1999). It is critical that health promotion addresses the specific cultural context within which behaviour occurs. However, an important

question is whether African cultures, for example, are indeed so strictly collectivist as to render these models irrelevant to these cultural contexts, or whether the issue lies in the application of the theories. This question is beyond the scope of this study, but is one that requires further investigation. The applicability of the model in its totality, in the South African context is not fully known. Some aspects of the model have been applied to samples of adolescents in Cape Town and found to be important predictors of sexual behaviour (Vergnani, 2003). With regard to unsafe sexual behaviour amongst South African youth, Eaton et al (2003) concluded that social-cognitive models do not adequately capture the interaction between personal and contextual factors that influence unsafe sexual behaviour. In spite of Ajzen's argument, a single theory cannot comprehensively explain complex behaviour such as sexual behaviour. However, the application of this conceptual framework in this study provided insight as to how variables of the model are manifest (or not) in the population of interest. The constructs of the model were operationalized and included in the development of the outcome evaluation instrument.

In the following sections I will present the research and evidence gap that this study fills, the objectives of the research and a brief description of the evaluation approaches that were employed.

### **1.5 The Problem**

In the early years of the epidemic, HIV/AIDS was perceived (and still is) as an emergency. Hence, many interventions were rapidly implemented with little planning, and even less thought about evaluation of their effectiveness (Padayachee, 1991). It was taken for granted the interventions would have positive results. As global surveillance data became more available and reliable, it became apparent that more

infections were occurring in some developing countries compared to the more developed countries, and particularly amongst young people. In response, prevention interventions have continued to focus intensively on the youth. School-based interventions have increasingly been at the forefront of this focus on young people.

Despite the increased focus on school as a setting for HIV prevention, to date, little is known of the effectiveness of these interventions as many, particularly in sub-Saharan Africa (SSA), have not been subjected to systematic evaluation (Gallant and Maticka-Tyndale, 2004; Kirby, 1997; Kaaya et al, 2002; Mukoma and Flisher, in press; Oakley et al, 1995). Increasingly, researchers, governments and funding organisations are amongst those calling for evidence of the effectiveness of interventions that are implemented. Despite its social and economic consequences, HIV prevention is competing with other priorities for scarce resources. Within this context, it is important to evaluate interventions, particularly those that are implemented at large scale regional or national levels. Evidence for effectiveness can be a bargaining tool for more time, effort and resources to be spent on effective prevention programmes. As the HIV/AIDS epidemic enters its third decade, and as new information emerges, there is general consensus of the need for *evidence-based interventions*. This term has its origins in clinical medicine, but is now widely used with reference to social interventions. Evaluation is thus important not only for directing current programmes and assessing their effectiveness, but also to inform the design and implementation of new innovative, effective and cost-effective interventions (Coleman and Ford, 1996). It is also important in providing evidence upon which policy decisions about HIV/AIDS can be made. But evidence of effectiveness of school-based HIV prevention interventions in South Africa is scarce and in many cases inconclusive due

to limitations in study designs and lack of contextual data. This study responded to the need for evaluating school-based HIV/AIDS interventions in South African schools.

## **1.6 Research Aim**

The aim of the study was to conduct process and outcome evaluations of the SATZ intervention.

## **1.7 Objectives of the study**

The objectives were:

1. To conduct a systematic review of evaluations of school-based HIV interventions conducted internationally and in South Africa.
2. To document the implementation process (process evaluation) so as to
  - assess whether the intervention was implemented as planned;
  - assess the quality of the implementation;
  - understand the impeding and enabling factors;
  - assess acceptability and evaluation of the intervention amongst the students and educators; and
  - provide information that could assist in interpretation of the observed behavioural outcomes.

- to determine the effectiveness of the intervention in delaying sexual intercourse; and increasing consistent condom use<sup>4</sup> (outcome evaluation).

## **1.8 Study design**

The literature review was conducted by systematically appraising each study using a number of pre-defined study inclusion and appraisal criteria which are described in greater detail in chapter 2. The evaluation research employed a cluster RCT design which will be described in greater detail in chapter 3. Embedded in this was the process evaluation design in which participants were selected using convenience sampling.

## **1.9 The evaluation approach**

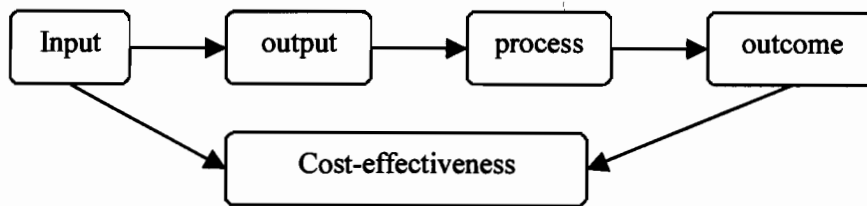
There are many definitions of evaluation, and the term is used in many different contexts. Whatever the use of the word, one thing in common is the notion of passing judgment or establishing merit, often with the aim of improving effectiveness. Chelimsky, cited by Boyle and Lemaire defines evaluation as “the application of systematic research methods to the assessment of program design, implementation, and effectiveness” (1999: 5). This is the broad sense in which evaluation was understood and practiced in this study. Thus, the research was concerned not only with the benefits of the intervention, but also with the program itself, hence the process evaluation component.

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<sup>4</sup> The term condom use as employed in this thesis refers to the use of the male latex condom. Although the female condom is now widely available in South Africa, it has received little research attention. Anecdotal evidence indicates that it is not frequently used, and less so by adolescents.

A comprehensive evaluation study would include the components depicted in Figure 1.5 below.

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**Figure 1.5 A comprehensive evaluation framework**

*Input evaluation* is an account of the type and amount of inputs, i.e. monetary, infrastructural, human and other resources that go into developing and delivering a programme. It answers the questions “*what*”, “*how many*” and “*how much*”. For example, with input evaluation of a school-based intervention, the questions would include: “*How many teachers were required?*”; “*How many hours were required of each teacher implementing the evaluation?*”; “*What type of materials were required?*” This type of evaluation is important because it provides information upon which others wanting to implement a similar programme can assess whether they have the capacity and resources to do so.

*Output evaluation* as the word implies refers to what is produced from the *inputs*. Outputs can include, for example, a photo novella or a computer based programme, or programme coverage. Input and output evaluations are often referred to as *input-output evaluation* (Chen, 2005). Input-output evaluation is an assessment of the relationship between what goes into developing the intervention, and the form that the programme took, that is, the kind of intervention that resulted from the inputs. Output evaluation is often implicit in process evaluation, which describes the actual implementation of a programme.

*Cost-effectiveness evaluation* is a measure of programme costs (Coyle et al, 1991). It involves a valuation of the costs of the intervention against the associated outcomes, and comparing this to an alternative. It assesses whether the observed outcomes justify the cost of the intervention, thus answering the questions “*Is the programme a worthwhile expenditure of scarce resources?*” Implementing an intervention just because it is useful or effective may still be a wasteful use of resources if the alternative would have had higher value at less cost. Cost-effectiveness evaluation is particularly important where programme replication is one of the goals. Others wanting to implement the same programme can weigh the costs of the intervention against the outcomes and compare this to an alternative programme.

Although an evaluation approach that encompasses all these 5 components is preferable, it is seldom possible, due to practical considerations such as financial budgets, availability of time and expertise. In this study, I conducted process and outcome evaluations. Qualitative and quantitative methodologies were employed as were appropriate for each evaluation type. The procedures and methodologies employed for each evaluation are discussed in greater detail in chapter 3. Below, I will describe briefly each of the evaluations conducted.

### **1.9.1 Process evaluation**

Process evaluation is an important evaluation in its own right, but can also serve as an important complement for outcome evaluation (Patton, 1987). It is a useful backdrop against which reported statistical outcomes can be assessed, as it provides data that can explain why change did or did not occur, and how the outcomes and the context of implementation are linked (Oakley et al, 2004). In this study, process evaluation was conducted to present a trustworthy account of the implementation. *What was attempted or done? how?, with whom and why?* It involved documenting

characteristics of the intervention, descriptions of how it was delivered, and acceptability of the programme amongst students and teachers. Thus, besides being some measure of the quality of the implementation, process evaluation also provided information on the assumptions that were made in developing the intervention, and how these impacted on its delivery and the observed outcomes.

### **1.9.2 Outcome evaluation**

While process evaluation is about the programme implementation, outcome evaluation measures the benefits/effects (intended or not) of the intervention. It refers to measurements and documentation of the programme and compares these to the objectives of the intervention (Coyle et al, 1991). This part of the research answered the “*What*” question. “*What behavioural outcomes were observed and what do they mean?*” Thus, the primary outcomes delay of intercourse and condom use were measured. I hypothesized that students who received the SATZ intervention would have lower rates of initiating sexual intercourse compared to those in the comparison schools. I also hypothesized that among those who had sex, students in the intervention group would have higher post-intervention levels of condom use.

### **1.10 Significance of the study**

This study contributes to the available small body of evidence on effectiveness of school-based HIV/AIDS interventions. By combining process and outcome evaluation, the study provides not only evidence of the intervention effect on behaviour, but also contextual data on the implementation of school-based HIV prevention interventions. The findings may have important implications for policy and further development and evaluation of school-based HIV interventions in South Africa and the SSA region. By employing a randomised controlled trial (RCT) design

that is generally considered the ‘gold standard’ in evaluation research, the study makes an important contribution to the advancement of evaluation design of school-based interventions in the region. While the design and methods employed are not new, no other South African study to my knowledge has employed a RCT design in evaluating a teacher-delivered HIV/AIDS intervention, and combined both process and outcome evaluation within this design.

### **1.11 Conclusion**

In this introductory chapter, I have located my research within the current context of HIV/AIDS in South Africa. I have done this by presenting a brief overview of the magnitude of the HIV and the current situation regarding prevention and evaluation of school-based interventions. I have also described in some detail the development and content of the SATZ intervention, and the conceptual model on which it was based. Further, I have outlined the aims and objectives of the study and the research gap that it fills. The aim of the study was to evaluate the SATZ intervention, by assessing the implementation, as well as its effect on delay of sexual intercourse and condom use. I have briefly described the process and outcome evaluations that were conducted to achieve this aim. The evaluations will be discussed in greater detail in the subsequent chapters. The discussions in this chapter therefore permeate the rest of the thesis, a synopsis of which is presented below.

### **1.12 Overview of thesis**

There are four further chapters in this thesis, each of which is summarised below.

## **Chapter 2: Literature review**

In this chapter I present two systematic literature reviews of evaluations of school-based interventions. The first review focused on studies that employed a RCT design to measure delay of intercourse and condom use. This review included published studies in English, conducted anywhere in the world. The aim was to provide a narrative synthesis of the effectiveness of the interventions in delaying intercourse and increasing condom use. The review also includes a discussion of process evaluations conducted within the RCTs. The review of RCTs was also aimed at establishing the feasibility of applying RCTs designs to social interventions, an area around which there is much dispute. The second review was of evaluations of school-based interventions conducted in South Africa. Stringent inclusion criteria were not employed to this review so as to amass as much relevant literature as possible, in order to extract implications for the development and evaluation of school-based HIV interventions in South Africa. The review documented the evaluation methodologies, as well as findings of the studies to assess whether the programmes are meeting their aims. The chapter thus presents the most current findings of evaluations of school-based studies, the methodological debates therein, and puts forth the case for employing a RCT design in my research. The chapter serves as a prelude to the following chapter, in which I present the design employed in the current study.

## **Chapter 3: Methods**

Chapter 3 is a discussion of the research design and methodologies employed in this study. Having made the case for using RCTs in chapter 2, in this chapter I describe in detail how the cluster RCT design was employed in the current research, the sampling, data collection and analysis procedures. I also discuss how the research

addressed some of the limitations identified in the review of existing literature. As two evaluation approaches were conducted, it was necessary to use various methodologies as were appropriate for the process and outcome evaluations. Thus a combination of quantitative and qualitative data collection methodologies was employed. These included face-to-face interviews, focus group discussions, classroom observation and a self administered questionnaire. Each of the methodologies is discussed in detail in this chapter. This chapter also discusses in detail the development of the questionnaire that was used to assess the behavioural outcomes, including the test-retest reliability studies, and practical data collection issues such as ethics and access to schools and learners.

#### **Chapter 4: Results**

In Chapter 4, I present the findings of the study. These are presented sequentially, starting with process evaluation findings then outcome evaluation results but I also cross-reference between the two. Process evaluation data assessed the intervention implementation, including the context within which this occurred. It thus presents findings from my observations, as well as subjective interpretations from the teachers and students, and data from interviews with teachers at the control schools. The outcome evaluation yielded a large volume of data that cannot all be presented within the length limitations of this thesis. In this chapter I therefore report on a subset of the outcome data that met the objectives of the study. These include *primary outcomes*: delay of initiation of sexual intercourse; condom use at last sex; condom use at first sex among those who reported sexual activity at follow-up; and *secondary outcomes*: number of lifetime sexual partners; condom use at first sex; and consistent condom use.

## **Chapter 5: Discussion**

In the final chapter of the thesis, I answer the question ‘*so what?*’ This question is answered in a discussion that draws together all the previous chapters of the thesis to arrive at conclusions and provide some recommendations. In the first part of the chapter, I will present some limitations and strengths of this study, to provide the context within which to understand the discussion. I will then discuss the results of the process and outcome evaluation. Finally, I will provide some recommendations for the development, implementation and evaluation of school-based HIV/AIDS interventions.

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## **Chapter 2: Literature review**

### **2.1 Introduction**

In this chapter, I will present two systematic reviews of evaluation studies that were relevant to my research. The reviews were important in order to locate my research within the current local and international thinking on evaluating school-based sexual risk prevention interventions. In particular, I will review studies that focused on the primary outcomes in the current study, which were promoting abstinence or delay of subsequent sexual intercourse and increasing condom use. Emphasis in the reviews was therefore on findings of the evaluations to establish whether school-based interventions are effective in changing behaviour, as well as the study designs, the use of theory, descriptions of the interventions and process evaluation. The objectives of the chapter were:

- to describe studies evaluating school-based sexual risk and HIV prevention interventions.
- to provide a narrative summary of the findings of these interventions

This chapter has two main sections. The first (2.2) is a systematic review of evaluations of school-based HIV/AIDS interventions that used RCT designs. This section includes published studies in English conducted anywhere in the world. The second (2.3) is a systematic review of evaluation studies of school-based interventions conducted in South Africa. In order to obtain as much evidence as possible regarding evaluation of school-based HIV interventions in South Africa, methodological restrictions were not employed in the latter review. Published and unpublished

literature were therefore included. The review also includes formative, process and outcome evaluations.

There are several previous reviews of HIV or sexual risk-reduction interventions aimed at adolescents (DiCenso et al, 2002; Flay & Collins, 2005; Gallant & Maticka-Tyndale, 2004; Johnson et al, 2003; Kim et al, 1997; Kirby et al, 1994; Mullen et al, 2002; Pedlow & Carey, 2003; Speizer et al, 2003). The reviews in this chapter include some of the studies included in the previous reviews. However, in addition to these studies, the reviews also include the most current published studies, and focus on a broad range of issues, including study design, methodology and analysis, some of which are not addressed in the previous reviews. The review of RCTs also includes findings of process evaluations, which is not addressed in any of the previous reviews cited above.

## **2.2 Review of RCTs**

The objective of the review of RCTs was to provide a narrative synthesis of RCTs evaluating school-based HIV interventions aimed at (i) delay of sexual debut amongst adolescents that have never had sex or postponement of subsequent sexual intercourse among those that have had sex; (ii) increasing condom use amongst sexually active adolescents.

### **2.2.1 Inclusion criteria**

I selected evaluation studies for inclusion in the review if they complied with the following criteria:

1. They measured intervention effects on either delay/postponement of sexual intercourse, or condom use, or both.

2. The unit of randomisation was individual students or clusters such as classrooms or schools.
3. The comparison group received a different intervention (in either medium or content) or no intervention.
4. The school was the primary setting in which the intervention was implemented. Interventions that had associated extensions to the family or community were included.
5. The interventions evaluated had the following characteristics:
  - They aimed at delaying or postponing sexual intercourse and/or increasing the frequency of condom use. These included interventions that directly targeted individual behaviour without any intended attempts to change the school norms or the broader school or community environment.
  - They were delivered in the classroom during school hours as separate programmes or part of existing curricula and may or may not have been combined with other out-of-class activities.
  - They were delivered by teachers, and /or other facilitators
  - They were implicitly or explicitly based on behaviour change model(s).
  - They were aimed at adolescents (11-18 years). Studies with participants younger or older than 18 years were included if adolescents were part of the intervention sample.

### **2.2.2 Search strategy**

I searched for studies published in English between 1985 and 2006. Geographical limitations were not applied in the search. The following electronic databases were searched:

- The Cochrane Central Register of Controlled Trials (CENTRAL)
- Behavioural Prevention Register of the Cochrane Collaborative Review Group on HIV infection and AIDS
- Online databases PubMed, AIDSLINE, MEDLINE, ERIC, EMBASE, PsychINFO, Psychlit, NHS centre for Reviews and Dissemination (CRD); BiblioMap; the evidence for Policy and Practice Information Co-ordinating Centre (EPPI) database of health promotion research; HealthPromise; CINAHL, Biblioline

I also searched libraries of local and international universities, as well as relevant institutions, organisations and agencies, including Centers for Disease Control and Prevention (CDC), UNAIDS, UNICEF and World Health Organization (WHO). Reference lists of all relevant papers obtained, including published reviews were hand searched to identify other studies. In addition, I contacted colleagues in various parts of the world to request further references.

I used the following keywords, singly or in combination: sexuality, evaluation, sex education, sexuality education, HIV/AIDS, school, adolescent, youth, teenagers, health promotion, condom use, abstinence, randomised controlled trial, experimental, AIDS education.

### **2.2.3 Results and discussion**

I identified forty abstracts for possible inclusion in the review. The majority of these were obtained through a search of PubMed. I excluded three of the abstracts: one was not published in English, one did not measure behaviour, and the third was not classroom-based. I obtained full texts of the remaining thirty seven articles, most of which were available on the internet or at universities in South Africa. Seventeen of

the studies fitted the inclusion criteria and were included in the review. These were published between 1992 and 2006. Where several studies reporting on the same intervention were found, I reviewed the study that most comprehensively addressed the intervention outcomes but referred to the other articles for additional details. The studies are summarised in Tables 2.1. and 2.2. Table 2.1 below, summarises characteristics of the interventions while Table 2.2 presented later in the chapter summaries the evaluations.

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**Table 2.1** Characteristics of RCT interventions

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
1. Aarons et al, 2000	Washington DC, USA	<p><i>Intervention:</i> Postponing Sexual Involvement, and the Self Centre</p> <p><i>Objective:</i> Delay of sexual intercourse.</p> <p><i>Content:</i> Reproductive health, abstinence, contraceptive knowledge, health risk screening, referral to appropriate services</p> <p><i>Strategies:</i> individual and small group method</p>	Regular school sexuality education programme	social cognitive theory	health professionals; peer educators	3 classroom sessions by health professionals, 5 by peer educators. 45 minute sessions	Yes
2. Borgia et al, 2005	Rome, Italy	<p><i>Intervention:</i> one teacher led intervention; one peer-led intervention.</p> <p><i>Objectives:</i> to increase knowledge of HIV transmission &amp; prevention; to address social influences and group norms regarding sexual behaviour; to improve decision-making, communication &amp; negotiation skills &amp; self efficacy; to place risks related to specific contexts and behaviour in proper dimension; to abolish stigma and prejudice towards PLHA</p> <p><i>Content:</i> not clear</p> <p><i>Strategies:</i> interactive methods</p>	Compared teacher led vs. peer-led intervention	Social learning theory	Teachers; peers  <i>Training:</i> 5 days for peer educators; 6 days for teachers	Median duration 10 hours for peer-led; 8 hours for teacher –led intervention	NR
3. Coyle et al, 1999	Texas & California, USA	<p><i>Intervention:</i> Safer Choices.</p> <p><i>Objectives:</i> to postpone sexual intercourse; increase condom use.</p> <p><i>Content:</i> HIV, STDs and pregnancy prevention</p> <p>focus on school wide change and influence of school environment of sudden behaviour</p> <p><i>Strategies:</i> role plays; peer facilitation; homework</p>	Standard knowledge based prevention curriculum.	Social cognitive theory; social influence theory; theory of reasoned action; health belief model; models of school change	Teachers and 2 peer leaders	10 sessions, 8-10 hours	

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
4. Coyle et al, 2001	Texas and California, USA	<i>Intervention:</i> Safer Choices. <i>Objectives:</i> to postpone sexual intercourse; increase condom use.  <i>Content:</i> knowledge of HIV and STD; self efficacy to refuse sex, use condoms and communicate about safer sex; attitudes about sexual behaviour and condom use; perceived risk of HIV and STD infection; communication with partners about abstinence and HIV prevention; Focus on school wide change and influence of school environment on student behaviour. Parent and community component  <i>Strategies:</i> role plays; peer facilitation; homework	Standard knowledge based prevention curriculum	Social learning theory; social influence theory; theory of reasoned action; health belief model; models of school change of social	Teachers and Peers  Training: NR	10 sessions in 9 <sup>th</sup> grade; 10 sessions in 10 <sup>th</sup> grade	NR
5. Coyle et al, 2004	California, USA	<i>Intervention:</i> Draw the Line/Respect the Line.  <i>Objectives:</i> Reduce no. of students who initiate or have sexual intercourse; increase condom use.  <i>Content:</i> limit setting, refusal skills, intra and interpersonal skills regarding sex; consequences of unplanned sex;  <i>Strategies:</i> small & large group discussions; paired & small group skills practice; individual activities; stories speaker with HIV, condom demonstration	Usual classroom activities on HIV, STDs and pregnancy	Social cognitive theory; social inoculation theory	Health educators; trained	3 year programme.  Total 20 sessions; 5, 8 and 7 lessons in 6 <sup>th</sup> , 7 <sup>th</sup> and 8 <sup>th</sup> grades respectively	NR
6. Flay et al, 2004	Chicago, USA	<i>Intervention:</i> Abayn aya Youth Project. 2 interventions, one classroom-based and one with a community component.  <i>Objective:</i> to test the efficacy of 2 programs designed to reduce high-risk behaviours.  <i>Content:</i> violence, provoking behaviour, substance use, school delinquency, sexual practices; social competence skills; school climate  <i>Strategies:</i> storytelling; proverbs; role plays; homework	Health enhancement curriculum on nutrition, health care and physical activity. Equal no. of lessons as intervention	Theories of behaviour change; Theory of triadic influence	University based health educators.  <i>Training:</i> 2 training lessons before each lesson.  4 hr workshop for teachers yearly	16-21 lessons per year of classroom curriculum in grades 5-8.	NR

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
7. Kirby, et al, 1997a	California, USA	<p><i>Intervention:</i> Postponing Sexual Involvement, and existing sexuality curriculum.</p> <p><i>Objectives:</i> delay of onset of sexual intercourse.</p> <p><i>Content:</i> risks of early intercourse; resistance of social &amp; peer pressure; assertiveness. Parent component</p> <p><i>Strategies:</i> class discussions; group activities; role plays; video &amp; slides; flyers; assemblies; rallies; fairs; media campaign; referral information</p>	Existing sexuality curriculum	NR. Implies social cognitive theory	Professional adult educators; teenage youth leaders; college interns.	5 sessions, 45-60 minutes	NR
8. Kirby et al, 1997b	Los Angeles, USA. 6 middle schools	<p><i>Intervention:</i> Project SNAPP and existing curriculum.</p> <p><i>Objectives:</i> pregnancy &amp; HIV prevention through delay onset of intercourse and increase condom use.</p> <p><i>Content:</i> knowledge of HIV &amp; pregnancy risk; negotiation skills; legal rights to healthcare; self efficacy regarding skills, community resources; contraception; talk by peer living with HIV</p> <p><i>Strategies:</i> interactive; large or small group activities; role plays, games; discussion; question-answer sessions, HIV positive speakers</p>	Regular didactic school sexuality curriculum or no intervention	Social learning theory; health belief model	Peer educators  <i>Training:</i> 50 hours  over 10 weeks professional adults	8 sessions over 2 weeks; 45-60 minutes each	No
9. Kirby et al, 2004	Texas and California, USA	<p><i>Intervention:</i> Safer Choices.</p> <p><i>Objectives:</i> Reduce no. of students who initiate sex during high school years; increase condom use.</p> <p><i>Content:</i> knowledge of HIV and STD; self efficacy to refuse sex, use condoms and communicate about safer sex; attitudes about sexual behaviour and condom use; perceived risk of HIV and STD infection; communication with partners about abstinence and HIV prevention, STD and pregnancy; Focus on school wide change and influence of school environment on student behaviour. Parent component parent and community component</p> <p><i>Strategies:</i> role plays; peer facilitation; homework</p>	Standard 5-session knowledge-based curriculum and a small number of other school activities	Social cognitive theory; social influence theory; models of school change	Teachers; peers  <i>Training:</i>  NR	Implemented over 2 years; 10 lessons in 9 <sup>th</sup> grade, 10 lessons in 10 <sup>th</sup> grade	NR

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
10. Levy, et al, 1995	Chicago, USA	<p><i>Intervention:</i> Youth AIDS Prevention Project.</p> <p><i>Objectives:</i> to prevent STDs, HIV/AIDS, and substance abuse</p> <p><i>Content:</i> Decision making skills; sexual resistance &amp; negotiation skills.</p> <p><i>Strategies:</i> active learning; class discussions; video; group exercises; homework; parent component</p>	Basic AIDS education that was current practice in their respective districts	Social cognitive theory; social influences model	Health educator	10 1 hour sessions in 7 <sup>th</sup> grade; 5 in 8 <sup>th</sup> grade  Dosage: 15 hours	1 hour booster in 8 <sup>th</sup> grade
11. Mitchell-DiCenso et al, 1997	Ontario, Canada	<p><i>Intervention:</i> McMaster Teen Program.</p> <p><i>objectives:</i> decreasing rates of sexual intercourse; improving use of birth control; decrease incidence of pregnancy</p> <p><i>Content:</i> accurate information about male and female reproductive systems; responsible relationships, problem solving, decision making, and communication skills related to sexual activity.</p> <p><i>Strategies:</i> films; small group discussion</p>	Conventional didactic sex education programme	Cognitive behavioural theory; theory of reasoned action	Public health nurses; teachers, community professionals.  <i>Training:</i> 40 hours	10 1-hour sessions	No
12. O'Donnell et al, 2002	New York, USA	<p><i>Intervention:</i> Reach for Health Community Service. 2 components: community field placements and classroom health curriculum. Developed with teachers and community</p> <p><i>Objective:</i> Increase knowledge, attitudes and skills to avoid risky behaviours and make healthy choices.</p> <p><i>Classroom Strategies:</i> interactive group discussions; artwork; meetings with teachers; writing</p>	Same classroom health curriculum as intervention group	NR	Teachers, training provided. <i>Training:</i> 4 sessions	3 hours per week of community service over 30 weeks (app 90 hrs); 40 classroom lessons in 7 <sup>th</sup> grade, 34 lessons in grade 8	NR

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
13. Stephenson et al, 2004	England	<p><i>Intervention:</i> Randomised Intervention of Pupil-Peer-Led sex Education (RIPPLE).</p> <p><i>Objectives:</i> to reduce the incidence of unwanted pregnancy, termination of pregnancy, unprotected sexual intercourse &amp; STIs; to improve the quality of sexual relationships</p> <p><i>Content:</i> relationships, contraception, STIs</p> <p><i>Strategies:</i> games, role-plays, small group work, discussions, brainstorming, condom demonstration</p>	teacher-led sex and relationships education	Designed on pragmatic rather than explicitly theoretical lines	16 -17 year old peer educators	3 classroom sessions of 1 hour each	NR
14. Thomas et al, 1992	Ontario, Canada	<p><i>Intervention:</i> McMaster Teen Program</p> <p><i>objectives:</i> decreasing rates of sexual intercourse; improving use of birth control</p>	conventional board of education sex education program	theories of social influence	adult tutors <i>training:</i> 40hours	10 one-hour sessions over 6-8 weeks	NR
15. Walker et al, 2006	Morelos, Mexico	<p><i>Intervention:</i> 2 groups: 1) promoted condom use; 2) condom use &amp; emergency contraception use. Lifeskills-based curriculum</p> <p><i>Objectives:</i> to promote condom use with emergency contraception</p> <p><i>Content:</i> Lifeskills training: consequences of unprotected sex &amp; how to avoid it; social pressure; peer pressure; cultural values communication, negotiation &amp; refusal skills</p> <p><i>Strategies:</i> not clear</p>	existing sex education	Health belief model; sociocognitive theory; social influence	Teachers. <i>Training:</i> 40 hours, = 2 hours more for teachers in emergency contraception group	15 weeks (30 hours); 16 weeks (32 hours) for contraception arm	
16. Walter and Vaughan, 1993	New York, USA	<p><i>Intervention:</i> special AIDS-preventive curriculum</p> <p><i>Content:</i> Facts about AIDS; cognitive skills; appraisal of AIDS risk; correcting misperceptions regarding risk behaviours among peers; negotiation skills to delay sex &amp; use condoms; personal values</p> <p><i>Strategies:</i> Role play; rehearsal; skills training</p>	No intervention	Health belief model; social cognitive theory; social influence theory	Teachers <i>Training:</i> 8 hours	6 50-minute sessions Dosage: app 5 hours	NR

Study	region /country	Intervention characteristics	Comparison group intervention	Theory	Facilitators	Duration	Booster
17. Wight D et al, 2002	Scotland	<p><i>Intervention:</i> Sexual Health and Relationships: Safe, Happy and Responsible (SHARE Programme).</p> <p><i>Objective:</i> To reduce unsafe sexual behaviours and unwanted pregnancies; improve the quality of sexual relationships</p> <p><i>Content:</i> understanding of attitudes and sexual experiences of the opposite sex; communication about sex</p> <p><i>Strategies:</i> Active learning, information leaflets, skills development, interactive video.</p>	Existing sex education	Social cognitive theory	<p>Teachers.</p> <p><i>Training:</i> 5 days</p>	20 sessions: 10 sessions each in 3 <sup>rd</sup> and 4 <sup>th</sup> year of school respectively	10 lessons to 3 <sup>rd</sup> year students and 10 lessons to 4 <sup>th</sup> yr

Abbreviations: NR: Not reported; STD: Sexually Transmitted Disease

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#### **2.2.4 Geographical region of included studies**

The included studies were conducted in Europe (3 studies), United States of America (11 studies), Mexico (1 study) and Canada (2 studies). Of the American studies, three (Coyle et al, 1999; Coyle et al, 2001; Kirby et al, 2004) were evaluations of the same intervention, called *Safer Choices*, and two (Aarons et al, 2000; Kirby et al, 1997a) were replications of the *Postponing Sexual Involvement* intervention previously evaluated by Howard and McCabe (1990). The study by Howard and McCabe (1990) was not included in the review because it did not involve random assignment of students to intervention and control groups. The two Canadian studies were evaluations of the *McMaster Teen Program* (Thomas et al, 1992; Mitchell-DiCenso et al, 1997) while the European studies were conducted in Scotland (Wight et al, 2002), Italy (Borgia et al, 2005) and England (Stephenson et al, 2004).

#### **2.2.5 Intervention characteristics**

In a review of educational programmes to reduce sexual risk-taking behaviours among school-aged youth in the USA, Kirby et al (1994) suggested that effective programmes have certain common elements: they are at least 14 hours long, focus on changing sexual risk-taking behaviours, have a theory base, use interactive teaching methods that help students to personalize information, focus on social pressures, reinforce clear messages about unprotected sex, provide basic accurate information, teach refusal skills, and select teachers, educators or peers who believe in the programme and provide them with training to implement the intervention. The studies in this review all included at least 3 or more of these characteristics, with varying degrees of depth, intensity and scope. They all focused on reducing or preventing one or more sexual behaviours that could lead to HIV infection, STIs or unintended

pregnancy; fifteen were based on widely used theories of behaviour change; all the studies included interactive teaching methods; and eight of the interventions had a dosage of at least 14 or more hours. Twelve of the studies also reported that training was provided to the people implementing the programmes.

A further strength of the studies was the broad focus on schools and large sample sizes in many of them. This broad focus allowed for inclusion of younger adolescents that are probably not yet sexually active as well as those who are sexually active or at higher risk. Some of the interventions also focused on both individual risk factors such as attitudes and behavioural skills, as well as social and environmental factors. Some of the interventions were pilot tested prior to implementation, while others were replications or adaptations of interventions conducted elsewhere.

#### **2.2.5.1 Content and delivery**

The main objectives across the interventions were prevention of pregnancy, STIs and HIV infection by encouraging abstinence and postponement of sexual intercourse and preventing or reducing unsafe sexual behaviours such as unprotected sexual intercourse. The interventions addressed a range of sexuality topics, including dating and relationships, knowledge and attitudes towards HIV, contraceptive use, substance use, condom use, decision-making, communication and negotiation skills regarding sex and condoms.

The programme delivery strategies varied across the studies and ranged from the use of simple approaches of providing information leaflets and awareness rallies to more complex strategies that involved interactive learning, such as video discussions, paired or group discussions, and skills building activities like role plays, poetry, drama, games and storytelling. The interventions therefore employed a variety of

theory-based activities that had components of observation, rehearsal, modeling or practice of desirable behaviours.

The majority of interventions were delivered in whole class or small group format. Pedlow and Carey (2003) suggest that individualized interventions can better personalize risk information to the individual, but have not been widely used. The greater use of group-based activities may be based on the assumption that this would impact on group norms rather than address only individual level factors. Individualized approaches also pose logistical challenges, particularly where class sizes are large. While most of the studies reported the use of interactive teaching methods, it is unclear, how much opportunity each of the students got to participate in the small group activities, or to practice the skills included in the programmes, hence personalising their risk. It is also not clear in any of the studies what the differences were in levels of exposure to the interventions within and across schools. Aarons et al (2000) mentioned that the level of participation varied from student to student in their programme. They attempted to measure individual exposure using attendance records and recall questions, but this is not discussed further in the analysis.

All the interventions were primarily delivered within a classroom setting during school hours. Some of the interventions also included a school-wide approach, a parent or community component (Coyle 1999, 2001; Kirby et al, 1997a, 2004; Flay et al, 2004; Klepp et al, 1994; Levy, 1995; O'Donnell et al, 2002). The interventions were delivered either by teachers, adult educators, peer educators, or a combination of these. For most of the programmes, the facilitators were trained but little or no information is provided about the content of the training. The facilitator training duration ranged from 2 hours to 5 days. The duration over which the interventions

were implemented ranged from 3 hours to 40 sessions. In 7 of the studies, the interventions were implemented over a period of 2-4 school years. The most intensive dosage appears to be in the intervention reported by O'Donnell et al (2002) in which there were approximately 90 hours of community work over 30 weeks, 40 lessons in 7<sup>th</sup> grade and 34 lessons in 8<sup>th</sup> grade. Some articles were not specific about how many minutes or hours made a session making it difficult to tell the exact dosage.

#### **2.2.5.2 The use of theory**

Fifteen of the studies reported explicitly on the theoretical framework employed in the interventions. These included social cognitive theories of behaviour, social learning theories, community influence theories, and theories of change. Social cognitive theory (Bandura, 1986) was the most commonly applied theory. Other theories used in the studies included social influence theory (Fisher, 1988, 1990), health belief model (Rosenstock et al, 1994) and theory of reasoned action (Fishbein and Ajzen, 1975), all of which have been widely used in sexual behaviour change interventions and are described in great detail in previous literature (Fisher & Fisher, 2000). Kok et al (1996) provide examples of risk perception theory and attribution theory to demonstrate how a mono-theoretical perspective can be counterproductive or lead to suggestions that may not contribute to a reduction in a practical problem. They suggest the use of multiple theories. Ten of the reviewed studies cited the use of more than one theory.

The use of theory is strength of these studies as it provides an opportunity to demonstrate the application of these theories to school-based HIV and sexual risk-reduction interventions. The limitation though is that many of the studies did not describe the process by which the theoretical ideas were operationalised, how for

example, the theoretical determinants of risk behaviour were identified for each theory, or how the intervention strategies employed were consistent with the theoretical method. Identifying optimal strategies for implementing interventions and topics covered is essential to designing interventions (Bartholomew et al, 2001; Pedlow & Carey, 2003), but it is not a simple process. In a separate article, Wight and Abraham (2000) discuss in detail the development of the theoretically-based *SHARE* programme which they evaluated. While the authors conclude that theoretical ideas must be carefully embedded in the lessons, they also acknowledge that operationalising theoretical ideas for a specific context was a complex process (Wight and Abraham, 2000). It is important however that in order to properly use the theoretical determinants, interventions make the link between theory and methods so that the practical implementation strategies are in accordance with the theory. Reporting this information can assist other researchers in the development of future theory-based interventions.

None of the studies used the theoretical approach that was employed in the current research, which was a revised version of the Theory of Planned behaviour (Ajzen, 1988, 1991) described in chapter 1. However, 3 studies employed the theory of Reasoned Action (Fishbein & Ajzen, 1975), and in addition to behaviour, most included the constructs that were measured in the current study, such as behavioural intentions, attitudes, social influence and self efficacy.

#### **2.2.6 The Evaluations**

The evaluations are summarised in the next table.

Table 2.2 Summary of RCT evaluations

Study	baseline Sample characteristics	Baseline N /FU [attrition]	unit of randomisation & analysis	Process evaluation	Primary outcomes measured	instruments	FU duration	Findings
1. Aarons et al, 2000	6 schools, 3 intervention, 3 control;  mean age 12.8; 52% female	522/503/564/510 [NR]	Unit of randomisation: school  Analysis: Individual	No	Virginity status; birth control use at last sex; self efficacy; secondary: attitude toward delay of intercourse; health service utilisation; smoking and alcohol use	SAQ	Baseline; 3 months; 8 months; 14 months.	Significantly higher virginity rates and less intention to have sex among intervention group females than control group females at all points of measurement. Higher use of birth control; higher knowledge & self efficacy among intervention females. More intervention youth believed youth their age were not having sex compared to control; more positive attitude toward delayed childbearing among intervention boys, and significantly higher knowledge of birth control. No change of attitudes toward abstinence and self efficacy to refuse sex. Abstinence only message had short-term effects.
2. Borgia et al, 2005	18 schools  Median age 18; mean age: 18.1 years; 49.2% female	1697/1295 [20% in peer group; 27% in teacher group]	Unit of randomisation: school. Analysis: Adjusted	Yes	Sexual behaviours: condom use at last sex; frequency of condom use, no. sexual partners; knowledge; prevention skills; risk perception; attitudes	SAQ	Baseline; post-test	No changes in sexual behaviour in either intervention group. No difference in changes in attitudes, risk perception and prevention skills in either group. Significantly greater increase in knowledge in peer-led group. Slight decrease in condom use always, and in the most recent sex both groups, but increase in proportion using condoms often or sometimes. Increase in proportion never using condoms in the peer-led group. Decrease in abstinence in teacher led group, but increase in peer-led group.
3. Coyle et al, 1999	10 intervention; 10 control schools. 9 <sup>th</sup> grade; age range: 14-18 yrs; 53% female	3869 [5%]	Unit of randomisation: school. Analysis: Adjusted	NR	Frequency of sexual intercourse; condom use		Baseline, 1 year	Intervention reduced frequency of unprotected sex, increased condom and contraceptive use at last sex. Increase in knowledge, self efficacy, normative beliefs and attitudes regarding condom use, perceptions, parent-child communication.
4. Coyle et al, 2001	20 schools; 10 intervention, 10 control. 50.3% & 53.6% female in intervention and control groups	3869/3058 [5%; 17]%	Unit of randomisation: school. Analysis: Adjusted	NR	Delay of intercourse; frequency of intercourse without a condom in the last 3 months; no sexual partners in the last 3 months.  Secondary: condom use at first sex; frequency of sex; alcohol & drug use; HIV and STD testing	SAQ	baseline, 7 months, 19 months, 31 months	Increased condom use and reduced unprotected sex in intervention group. Intervention group was more likely to use condoms at last sex than control group students. Higher knowledge of HIV and STD in intervention group. No significant differences between the 2 groups on attitudes regarding intercourse. Significant intervention effects on most psychosocial variables.

Study	baseline Sample characteristics	Baseline N /FU [attrition]	unit of randomisation & analysis	Process evaluation	Primary outcomes measured	instruments	FU duration	Findings
5. Coyle et al, 2004	10 intervention and 9 control schools; 6 <sup>th</sup> , 7 <sup>th</sup> , 8 <sup>th</sup> grade. Cohort of predominantly Latino students  <i>mean age:</i> 11.5yrs  50.1% female	2829 [9%; 12%; 36%]	<i>Unit of randomisation:</i> school. <i>Analysis:</i> Adjusted	NR	Sexual activity in the last 12 months  Condom use at last sex  <i>secondary:</i> no. sexual episodes and partners last 12 months; coercive behaviours	SAQ	Baseline and 3 annual follow-ups.  36 months;	Boys in intervention significantly less likely to report having had sex than those in control. Significant group-by-time interaction indicating boys in intervention group less likely to report sexual activity from 6-9 <sup>th</sup> grade. No statistically significant treatment group-by-time effects among sexually active students for condom use at last sex. Positive impact on most psycho-social scales. Program was effective for boys but not for girls
6. Flay et al, 2004	12 metropolitan schools; 5 <sup>th</sup> grade students; <i>mean age:</i> 10.8; 50.5% female	93.2% [ between 10.5% and 7.3%]	Cluster RCT. Randomised block design. <i>Unit of randomisation:</i> school	Some, focusing on fidelity of implementation and issues affecting implementation	Violence; provocative behaviour; school delinquency; substance use; sexual intercourse; condom use	SAQ	Baseline (beginning of grade 5), end of each subsequent year	Increased rate of condom use in intervention group compared to control. Programme effects for boys significant for all 6 behaviours in the school community intervention, marginally so in the classroom curriculum except for condom use. Increase in negative behaviours less in intervention boys compared to control. Significant reduction in the rate of increase in recent sexual intercourse, drug use violent and provocative behaviour in intervention boys compared to control. No significant effect on girls
7. Kirby et al, 1997a	56 schools; 17 community organisations <i>mean age:</i> 12.8 years. 48-55% female	10 600 [25%]	3 designs. <i>Unit of randomisation:</i> 1) classrooms to youth led, adult led or no intervention; 2) schools to adult-led intervention or sexuality education control group; 3) individuals from community based agencies to either adult-led intervention or no intervention group.  <i>Analysis:</i> individual	NR	Occurrence of first sexual intercourse. <i>Secondary:</i> beliefs, attitudes, and intentions about sex; frequency of intercourse, no. sexual partners; contraceptive use  impact of school- and community-wide activities	SAQ	For design 1, baseline, 3 months, 17 months  For designs 2 & 3, baseline, 17 months	No positive impact on delay of sexual intercourse at either FU. No short-term impact on beliefs, attitudes, intentions to have sex or sexual behaviour. Small but statistically significant changes in fewer than half of the measured attitudes, behaviours and intentions related to sexual activity at 3 months. At 17 months, none of these positive effects had been sustained. Control group less likely to report a pregnancy or STD. No significant differences between the groups in frequency of intercourse, pregnancy rates and no. sexual partners. Higher confidence in saying no to sex among adult-led intervention youth. No differences and no significant positive effects on behavioural outcomes at 17 month FU. No effect on outcomes by gender.

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Study	baseline Sample characteristics	Baseline N /FU [attrition]	unit of randomisation & analysis	Process evaluation	Primary outcomes measured	instruments	FU duration	Findings
8. Kirby et al, 1997b	6 schools. 102 7 <sup>th</sup> grade classes. Age range: NR; Mean age 12.3; 54% female	1657 [27% at 5 months, 23% at 17 months]	Unit of randomisation: classroom. Analysis: individual	NR	Delay of sexual intercourse; frequency of intercourse; no. sexual partners; condom and contraceptive use	SAQ	Baseline; 5 months; 17 months	At 5 & 17 months, no significant difference between the 2 groups in proportion of either boys or girls that initiated sex; in frequency of intercourse; number of sexual partners; or condom and contraceptive use. At 5 months, significant increase in knowledge and 2 out of 21 attitudes items in intervention group than control.
9. Kirby et al, 2004	20 schools; 10 intervention, 10 control. 52% female	Cohort sample N=3869/ 95%, 83%, 79%	Unit of randomisation: schools. Analysis: Adjusted	NR	Initiation of sex, frequency of unprotected sex; no of sex partners in unprotected sex; condom and contraceptive use at last sex;	SAQ	Baseline, 7, 19 and 31 months  Cohort data	Programme did not significantly reduce the onset of sex. Reduced the frequency of sex without a condom, no. of partners in the last 3 months with whom a condom was not used. Increased condom use during last sex and marginally increased contraceptive use. Greater impact on males than females on condom use measures
10. Levy et al, 1995	7 <sup>th</sup> and 8 <sup>th</sup> grade 15 school districts (10 intervention; 5 control). Age range: 7 <sup>th</sup> grade; 51% female	N=2392 [30%];	Unit of randomisation: school districts	NR	Condom use; intention to use condoms	SAQ	Baseline; 12 months	At 1 year FU, intervention group significantly more likely to report using condoms with foam (p=0.01) than control group students. Among students sexually active in the past month, intervention group more likely to have practiced protective behaviours compared to control group. Gender and race were significant predictors of condom with foam use in the past year. Gender and race were significant predictors of condom with foam use
11. Mitchell-DiCenso et al, 1997	21 schools, 11 intervention, 10 control; Grades 7 & 8; 272 small group. Mean age: 12.6years; 50.9% female	3289 [1%; 1.1%;6.1%; 44.1%]	Multi-stage. Unit of randomisation: schools. Analysis: individual but adjusted for clustering	NR	sexual intercourse; physical intimacy; contraceptive use; pregnancy	SAQ; private ballot	baseline, immediately after programme; annually for 4 years	More sexually active boys in intervention group reported always using birth control. Improvement in birth control use in both groups but no statistically significant differences at each FU in the proportion of sexually active boys or girls who reported always using birth control. No short- or long-term programme effect on rates of intercourse for both boys and girls and on pregnancy rates for girls.
12. O'Donnell et al, 2002	1 school. Mean age: 12.4 yrs; age range: NR; gender % NR	18 classrooms [23.5%]	Unit of randomisation: classrooms. Analysis: Adjusted	NR	Initiation of intercourse; recent sex	SAQ	Baseline in 7 <sup>th</sup> grade, FU at end of 10 <sup>th</sup> grade (2 years after intervention)	Among virgins at baseline, 43.5% of boys and 57.1% of girls in intervention group remained sexually uninitiated at FU, compared to 26.9% of boys and 46.9% of girls in control group. More boys and girls in control group reported recent sex compared to intervention group.

Study	baseline Sample characteristics	Baseline N /FU [attrition]	unit of randomisation & analysis	Process evaluation	Primary outcomes measured	instruments	FU duration	Findings
13. Stephenson et al, 2004	29 schools, 14 intervention; 13 control (n=)  Age range: 13-14 years	8766 (4837 intervention, 4671 control)	Unit of randomisation: school. Analysis: Adjusted	yes	unprotected sex before age 16  Secondary: regretted sex; satisfaction with sex education; use of sexual health services; pregnancy; abortion	SAQ; anonymized pregnancy and abortion data	6 & 18 months post intervention	Significantly fewer girls in intervention group reported sexual intercourse but similar proportions of boys in both groups reported intercourse. Fewer unintended pregnancies in intervention group. No difference between the groups on regretted first intercourse, availability of contraception or common STIs, knowledge of emergency contraception. Both boys and girls expressed preference for sex education in single-sex groups
14. Thomas et al, 1992	23 schools. 11 intervention, 12 control. Grades 7 & 8; age range 12-16 yrs	90% in both groups at 1 <sup>st</sup> & 2 <sup>nd</sup> posttest; /80% & 88% at 3 <sup>rd</sup> and 4 <sup>th</sup> posttests	Unit of randomisation: schools.	No		SAQ	Baseline, 3 months and yearly for 4 years	At pre-test, males in the experimental group had higher rates of sexual intercourse than control schools. At 4th posttest, males in both groups reported significantly higher rates of sexual intercourse. Steadily increasing frequency rate of sexual intercourse, consistent use of birth control and pregnancy for all students in both groups by fourth posttest. i.e. no improvement in use of birth control, no increase in abstinence for both groups No difference between groups at any point of FU
15. Walker et al, 2006	40 schools, 15 in each intervention arm, 10 control; 52% female	10954/9372/7308 [14%/22%]	Unit of randomisation: school  Analysis: adjusted	NR	Reported condom use at first sex  Secondary: sexual activity; knowledge & attitudes of HIV; emergency contraception; attitudes and confidence regarding condoms	SAQ	Baseline; 4 months; 16 months	Intervention did not affect condom use. Increase in knowledge of emergency contraception in both intervention groups. Sexual behaviour similar in intervention and control groups
16. Walter and Vaughan, 1993	4 schools; 9th & 11 <sup>th</sup> grade. mean age: 15.7; age range 12-20 years; 58% female	N=1316[28%]	Unit of randomisation: classrooms.  Analysis: Adjusted	NR	AIDS-related knowledge; beliefs; self efficacy; sexual intercourse; condom use.  Secondary: emergency contraception; sexual experience; substance use	SAQ	Baseline; 3 months	At FU, intervention group reported consistent condom use, practicing sex with only one partner; reduction in frequency of intercourse with a high risk partner. Significant but modest effects. Intervention was associated with favourable trends in STD incidence. Significant effects on knowledge, self efficacy, beliefs, norms and behaviour.

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Study	baseline Sample characteristics	Baseline N /FU [attrition]	unit of randomisation & analysis	Process evaluation	Primary outcomes measured	instruments	FU duration	Findings
17. Wight D et al, 2002	25 schools. 13 intervention, 12 control. <i>age range</i> 13-15 years	7616/5854	<i>Unit of randomisation:</i> schools  <i>Analysis:</i> Adjusted	Yes	condom and contraceptive use at first or most recent sexual intercourse  <i>secondary:</i> unwanted pregnancy; Exposure to STIs	SAQ	Baseline, 6 months, 2 years	No reduction in sexual risk taking. Similar proportions in both groups became sexually active during programme. No difference in condom use at first intercourse, contraceptive use. Intervention group more knowledgeable about sexual health than control group. Males less knowledgeable than women in both groups.

Abbreviations: FU- Follow-up; SAQ: Self-administered questionnaire; NR: Not reported

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### **2.2.6.1 Evaluation design**

All the studies relied on voluntary participation of both schools and students. Randomization was conducted prior to the baseline survey in most of the studies. As shown in Table 2.2, randomisation was employed either at the cluster level or individual level. Thirteen studies used schools as the unit of randomization. Two randomised classrooms, one randomised a combination of individual, classrooms and schools, while another randomised school districts. The general recommendation is that randomization should be conducted at the smallest unit possible that does not contaminate across conditions. In most cases, for school based interventions this is at the school level. Basen-Engquist et al (1997) recommend that when the intervention is school wide, the unit of randomisation should be schools not classrooms or individual students and a method of random assignment that minimises the differences between schools in the two groups should be used. Randomising clusters raises the issue of possibility of post randomisation selection bias because once clusters have been randomised, individuals in clusters can no longer be asked for their consent to be randomised to either group but can only consent to receiving the intervention to which their group has been assigned (Puffer et al, 2003). It also has implications for analysis as will be discussed later in this chapter in the discussion of the analyses conducted in the studies.

Random assignment to conditions minimizes selection biases as it controls for known or unknown and measured or unmeasured confounders, and generates unbiased comparable groups. Flay and Collins (2005) refer to randomization as the cornerstone of scientific inference and an indispensable part of school based trials. While most of the studies conducted appropriate randomization, the quality of this process differed

and was reported with varying degrees of detail across the studies. For the *Safer Choices* intervention for example, a separate article by Basen-Engquist et al (1997) provides a detailed account of the randomization procedure. Several possible confounding variables were identified at the school level, and combined into a single index. The relative influence of potentially confounding variables was assessed by principal component analysis. After varimax rotation, the importance of each of the factors was then evaluated and weighted accordingly. Schools were ranked according to their composite scores and then paired. One school from each pair was randomly assigned to the intervention group and the other to the control. The authors reported no significant differences between the control and intervention schools on any of the variables used in the randomization. They concluded that this equivalence of the groups and the multilevel analysis enhanced the utility of the study findings, addressed the issue of proper unit of analysis and enabled greater detection of school-wide effects (Basen-Engquist et al, 1997).

In comparison, some of the other studies provided little detail of how the random allocation accounted for minimizing potential confounding variables. In the study by O'Donnell et al (2002) for example, the authors only mention that students at the participating school were randomised by classroom to either the intervention or control group. Although analyses were conducted to adjust for clustering, there is no description of measures that were taken to reduce contamination of the experimental conditions within the school and therefore reducing the possibility of a positive intraclass correlation (ICC). Individuals within a cluster are non-independent as they tend to respond in a similar manner. Studies therefore have to be designed to minimise ICC. The potential for contamination of the experimental conditions is higher where classrooms within one school are randomised to either intervention or control group

as in the study by O'Donnell et al (2002). Kirby et al (1997b) mentioned possible communication between the intervention and control group students, and incorporation of aspects of the intervention by teachers into their control classes as potential limitations to their study. However, even where measures have been taken to reduce contamination by randomizing schools, other factors may cause contamination as in the study by Mitchell-DiCenso et al (1997). The intervention was conducted in 7<sup>th</sup> and 8<sup>th</sup> grade. However, once students completed grade 8, they moved on to high schools that drew students from a variety of schools thereby bringing together experimental and control group students, hence possibility of contamination.

#### **2.2.6.2 Control groups**

The comparison group in one of the studies was offered a classroom intervention similar to that of experimental group, but not the other additional community components offered to the intervention group (O'Donnell et al, 2002). In another study (Walter and Vaughan, 1993), the comparison group was not offered any intervention, while in all the other studies the comparison group received a different intervention to that of the experimental group. To optimally measure intervention effects, randomisation to a no-intervention comparison group would be preferable. This however raises ethical and scientific concerns. It would be unethical, given the epidemic levels of HIV withhold an intervention to the comparison group. On the other hand, it would be even more unethical to provide an intervention that has unknown or possibly negative effects than it would be to randomly assign schools to experimental and control conditions to find out which programmes are most effective (Flay and Collins, 2005). The scientific argument against no-intervention conditions is that they do not control for the amount of attention received or respondents'

knowledge that they were being observed, also known as the Hawthorne effect, and the perceived value of an intervention (Flay & Collins, 2005). The arguments for randomisation are nevertheless stronger than those against (Cook, 2003; Nutbeam, 1998; Oakley et al, 1995; Oakley & Fullerton, 1996; Oakley, 1998; Stephenson & Imrie, 1998; Victoria et al, 2004). With the current HIV prevalence rates and the increased global focus on schools as settings for combating HIV infection, it is generally the case that the control schools will receive some form of intervention.

#### **2.2.6.3 Sample characteristics**

The target population of the included studies consisted of adolescents (10-18 years old) attending school at the time of the intervention. The age of the samples ranged from 10.8 to 20.0 years. Only one study included participants older than 18 years (Walter & Vaughan, 1993). Of the studies that provided the sample size at baseline, these ranged from 522 (Aarons et al, 2000) to 10,954 (Walker et al, 2006). The number of schools involved in the interventions ranged from 1 (O'Donnell et al, 2002) to 56 (Kirby et al, 1997a). Thirteen of the studies involved 10 or more schools. One of the advantages in involving several schools is that the interventions broadly target adolescents with varying degrees of risk (Pedlow and Carey, 2003). In all but one of the studies that reported the gender proportions at baseline, more than fifty percent of the sample was female.

#### **2.2.6.4 Duration of follow-up**

The follow-up measurement points ranged from immediately after the intervention to four years. Four studies (Coyle et al, 1999; Levy et al, 1995; Borgia et al, 2005; Walter and Vaughan, 1993) conducted one follow-up, while the rest of the studies conducted two or more follow-ups, thus had results for short- and longer-term effect.

It was not clear from many of the studies how soon after the baseline survey the intervention begun, or how soon after the intervention the posttest occurred. With short follow-up durations such as three months in the study by Walter and Vaughan (1993), it was difficult to tell whether the reported positive effects were sustainable over a longer period. It takes time to change behaviour as is evident in the continued rise in HIV infection, so a follow-up duration of 3 months may be insufficient to make conclusions regarding the sustainability of the observed behavioural effects.

#### **2.2.6.5 Attrition**

Some of the studies provided rates of attrition of individuals or schools at follow-up while for others I derived the attrition rates from the information provided on response rates. One of the 6 schools in the study by Aarons et al (2000) closed and relocated. It is not clear from the article whether the school was replaced or if the relocated students were included in the evaluation. The evaluation by Stephenson et al (2004) lost one control school following parental objections, and some questions had to be removed from the questionnaire at 2 schools due to objections from school governors and a head teacher. None of the other studies reported losing whole clusters, but two intervention schools in the study by Walker et al (2006) did not implement the intervention even though the teachers had been trained.

Like other social structures, schools are not fixed in time, and therefore attrition due to dropout, change of class or school is not uncommon. It is important that authors report the loss of clusters as this has implications for randomization conditions and a possible “fall back” into a quasi experimental design (Flay and Collins, 2005). Only a few of the studies reported attrition rates for both the intervention and control groups. Some studies reported differences in individual-level attrition rates between

intervention and control groups (Aarons et al, 2000; Coyle et al, 2001; Mitchell-DiCenso et al, 1997; Kirby et al, 1997a, 1997b). Attrition rates ranged from 1.1% to 44.1%. Studies with longer term follow-ups experienced greater attrition at each subsequent follow-up. In the study by Coyle (2004) for example, the attrition rates were 9% at the first follow-up and 36 % at the 36 month follow-up, while Mitchell-DiCenso et al (1997) had a 1.1% attrition rate at the first posttest 6.1% at the fourth, and a 44.1% loss at the fifth posttest. Boys in the study by O'Donnell et al (2002) were more likely than girls to drop out. The studies provided possible reasons for attrition, which included absenteeism, truancy, dropout, and transfer to another school or opting out.

At the individual level, attrition due to dropout has important implications for interventions targeted at high risk behaviour as students that dropout are also more likely to engage in the risky behaviour than those that remain in school (Townsend et al, 2004; Odum and Drolet, 1997). At the study design level, attrition may compromise the external and internal validity of the study and bias intervention findings. In the analysis, it is important to consider attrition as it may reduce statistical power of the study. If attrition rates are differential between intervention and control groups, careful analysis should be conducted to account for the differences and maintain validity (Flay and Collins, 2005). Intention-to-treat analysis should be conducted, in which data are analysed for all participants regardless of whether they received the entire intervention or not, thus including noncompliant participants. Intention-to-treat analyses were conducted in a number of the studies (Aarons et al, 2000; O'Donnell et al, 2002; Walker et al, 2006; Wight et al, 2002). Walker et al (2006) provided results on the primary outcomes for both intention-to-treat and analysis of the actually treated group. On the other hand, Kirby et al (1997b) removed

cases lost to follow-up and then compared the two groups at pretest on all background characteristics, mediating variables and outcome variables. When an intention-to-treat approach is not used, bias is introduced into the results that may favour either the intervention or control group.

#### **2.2.6.6 Outcome measures**

The included studies reported behavioural measures of one or more primary outcomes of interest in the current research, that is, (i) delay of sexual debut or postponement of subsequent sexual intercourse; (ii) condom use. The range of behavioural outcome measures reported included frequency of sexual intercourse; pregnancy; age of sexual debut; delay of sexual intercourse; number of sexual partners; initiation of sexual intercourse; condom and contraceptive use. Some studies also reported secondary outcomes such as knowledge, attitudes and communication about sex. Although the majority of the studies employed a theoretical framework, some did not report any analysis on the theoretical mediators of behaviour change (Mitchell-DiCenso et al, 1997; Flay et al, 2004; Kirby et al, 2004; Walker et al, 2006).

#### **2.2.6.7 Measurement**

All the studies primarily used a self administered questionnaire to measure changes in the outcomes of interest. Some of the studies used adaptations of evaluation instruments whose validity and test-retest reliability was known from their application in previous studies (Aarons et al, 2000; Mitchell-DiCenso et al, 1997; Kirby et al, 1997a). Others, like the *Safer Choices Project*, provided a detailed description of the questionnaire development process (Basen-Engquist et al, 1999). The instrument employed in the evaluation of the *Safer Choices* intervention was developed using empirical research and findings from previous literature supporting an association

between the variables of interest and intercourse involvement or condom use; operationalising the constructs of the theoretical models employed; using the variables addressed in the intervention; conducting various analysis to determine construct and concurrent validity of the instrument; as well as conducting focus groups to test and revise the instrument (Basen-Engquist et al, 1999).

Most research on effectiveness of sexual behaviour interventions relies heavily on self-reported data. Self-reported data can however be subject to biases such as poor recall, honesty, and over- and under-reporting and therefore reach potentially false conclusions (DiClemente and Petersen, 1994; Harrington et al, 2001; Rosenthal et al, 1996). Some previous studies provide mixed results about the reliability of adolescents' self-reported data. Plummer et al (2004) in a study on sexual behaviour of adolescents in rural Tanzania used in-depth interviews, self-administered questionnaire, participant observation and biological markers to assess the validity of the data. The researchers found inconsistencies in each method, but in-depth interviews seemed to provide the most valid responses. In a study that used both self-reports and biological indicators among female adolescents, Harrington et al (2001) found substantial under-reporting of STD incidence, while Williams and Nowatzki (2005) in an adolescent self-report substance use study corroborated with urine sample tests, reported fair validity. On the other hand, a number of other studies on a range of risk behaviours have concluded that adolescents do provide valid and reliable self-reported questionnaire data (Flisher et al, 2003; Hearn et al, 2003; Klepp et al, 1994; Lintonen et al, 2004; Sheeran & Abraham, 1994). In studies involving large samples of adolescents, self-administered questionnaires are a practical way to collect data, but pilot and test-retest reliability studies are necessary to test the instruments and enhance reliability and validity.

### **2.2.6.8 Analysis**

Most of the studies employed a cluster RCT design. In a cluster RCT, the students cannot be assumed to be independent of each other, as is the case where the unit of randomisation is the individual. This potential intra-cluster homogeneity has implications for the study design and analysis. The statistical power of a cluster randomised trial is reduced in comparison with an individually randomised trial with the same number of individuals (Bennett et al, 2002).

As shown in Table 2.2, most of the studies conducted analysis to adjust for clustering or baseline differences between the experimental and control groups. The majority of the studies also reported no significant differences on the outcome measures between the intervention and control groups at baseline, suggesting that the groups were fairly well matched. For some studies however, there were baseline differences favouring either the control or the intervention group. Coyle et al (2004) found baseline differences in reports of ever having had sex. To control for these differences, they included the baseline peer norm covariate, which diminished the differences and separate analysis for males and females were conducted on some outcomes.

The *Safer Choices* evaluations (Coyle et al, 1999; Coyle et al, 2001; Kirby et al, 2004) conducted multilevel analysis that included school in the models as a random effect to account for ICC that resulted from the clustering of students within schools. The study by Mitchell-DiCenso et al (1997) also accounted for clustering by including the variables in which the 2 groups differed as covariates whenever a statistically  $p$  value was found. Some studies however conducted analysis at the individual level (Aarons et al, 2000; Kirby et al, 1997a, 1997b). Thus, the unit of randomisation (school), in the study by Kirby et al (1997a) did not match the unit of analysis (individual). This is

referred to as a ‘unit of analysis error’ (Bland and Kerry, 1997). When the analysis is done as though the unit of allocation had been individual participants without accounting for clustering, this can result in false positive conclusion that the intervention had an effect (Marinacci et al, 2001). Previous reviews have shown that many published articles of cluster RCTs do not report having accounted for clustering in their analysis (Campbell et al, 2004).

The degree of clustering can be measured by two equivalent approaches, either the ICC or the between-cluster variance (Hayes and Bennett, 1999). Several methods which take into account the ICC have been developed for analysis of cluster RCTs (Bennett et al, 2002; Donner and Klar, 2000; Koepsell et al, 1991). These include the use of regression models as applied in some of the reviewed studies, in which terms are introduced to represent each of the clusters. Multilevel analysis can also be conducted, so that effect is defined at various levels, such as individual, school, or an interaction between the individual and school level characteristics (Flay and Collins, 2005). Some authors have also specifically addressed the design and analysis issues in matched-pair cluster randomization trials, and approaches for analysis of continuous or dichotomous data in RCTs (Koepsell et al, 1991; Donner and Klar, 1994). Donner and Klar (1994) reviewed the strengths and weaknesses of various approaches, including two-sample *t* test, nonparametric approach, and approaches based on adjusting the standard chi-square test that may be taken to test the hypothesis of equality of event rates in randomized designs. Whatever the appropriate approach one takes in analysing data from cluster RCTs, the Consolidated Standards of Reporting Trials (CONSORT) statement to which many journals expect that reports conform to, suggests that data from individuals in the cluster should be used to provide some information on the extent of clustering, and to adjust for imbalances. The reports

should include design and analysis information that allows readers to accurately interpret the results (Campbell et al, 2004). Many studies however do not conduct appropriate analysis. A review of 51 cluster RCTs conducted in SSA in the last 30 years for example reported that only 10 trials conducted appropriate analyses that took clustering into account (Isaakidis and Ioannidis, 2003).

#### **2.2.6.9 Intervention effects**

Five studies reported positive intervention outcomes on abstinence or postponement of intercourse. In one of these, the effects were evident only for girls (Stephenson et al, 2004), and only for boys in two studies (Coyle et al, 2004; Flay et al, 2006). Three studies reported either a reduction in frequency of sexual intercourse, or higher virginity rates among the intervention group (Aarons et al, 2000; Coyle et al, 2004; Flay et al, 2004). Six studies reported no intervention impact on this outcome (Kirby et al, 1997a, 1997b; Mitchell-DiCenso et al, 1997; Thomas et al, 1992; Walker et al, 2006; Wight et al, 2002). These studies all had short- and longer-term follow-ups, ranging from 16 months to 4 years. The intervention evaluated by Kirby et al (1997a) was previously implemented in Atlanta and evaluated by Howard and McCabe (1990) who reported a positive impact on sexual intercourse. Kirby et al (1997a) did not however find similar positive effects on delay of intercourse. The authors attribute this partly to the fact that the intervention was originally developed, tested and implemented in an African American community and had been adapted in their study for Latino and white students. The study by Borgia et al (2005) reported a negative effect on this outcome, with a decrease in abstinence in the teacher led group, but increase in the peer-led group.

Some of the studies in which negative or no effects were reported in abstinence or delay of intercourse found some positive effects on condom use. Positive condom use effects among sexually active respondents were reported in six studies (Coyle et al, 1999, 2001; Flay et al, 2004; Kirby et al, 2004; Levy et al, 1995; Walter and Vaughan, 1993). One study however only found an increase in proportion of students using condoms often or sometimes, and a decrease in condom use at the most recent sex and in always using condoms (Borgia et al, 2005). Another negative effect in this study was an increase in the proportion of students never using condoms in the peer-led intervention group. Three studies reported no significant effects on condom or contraceptive use (Thomas et al, 1992; Walker et al, 2006; Wight D et al., 2002). Wight et al (2002) found no difference in the proportion of students in either group that used condoms at first sex. Condom use among participants in this intervention was however already high at baseline, with only 10% of students reporting first intercourse without a condom (Graham et al, 2002). The studies by Coyle et al (2004) and Kirby et al (1997b) also reported no difference in condom use between the groups. Three studies (Kirby et al, 1997b; Mitchell-DiCenso et al, 1997; Wight et al, 2002) also found no differences between the groups for all the other behavioural outcomes which were measured, which included contraceptive use, frequency of intercourse and number of sexual partners. The short duration of the interventions and non-fidelity of implementation were possible reasons for this. Three studies found the interventions to be effective for boys and little or no effect for girls (Coyle et al, 2004; Flay et al, 2004; Kirby et al, 2004).

Most of the studies that assessed mediating variables found positive effects on these. Increases in knowledge, and/or positive changes in attitudes, self efficacy, beliefs

about sex and communication with parents or partners were reported in most studies, including those for which no behavioural effects were found.

As the present and previous reviews have shown, school-based interventions aimed at adolescents can have positive results on delay of intercourse, condom use and practice of other safer sexual behaviour, although not all reviews have found this to be the case. In a research synthesis of 44 HIV interventions, Johnson et al, (2003) found that the included studies achieved positive effects on condom use, onset of sexual intercourse and number of sexual partners. Some reviews on delay of intercourse however, have not reported similar positive findings (Silva, 2002; DiCenso et al, 2002). A metaanalysis of RCTs by DiCenso et al (2002) concluded that the interventions were not effective in delaying sexual intercourse. In the current review, the effects on delay of sexual intercourse in particular are varied and modest, but encouraging nevertheless as there was no evidence of increased sexual risk-taking behaviours as a result of the interventions, except for one study (Borgia et al, 2005). The studies present useful lessons for future design of interventions, and raise questions for further evaluation research on effective interventions. The relative impact of interventions on subgroups of adolescents for example, such as interventions increasing condom use for sexually active students but having no impact on delay of intercourse are important to take into account in the design of future interventions. In addition to conclusions on intervention effectiveness, it would be useful if authors provided information on dosage of the interventions, and the dose-response relationship between the intervention and the outcomes so that the findings can be understood in this context.

#### **2.2.6.10 Process evaluations**

The four evaluations that included process evaluation provided little or no details of the findings. However, for two of these (Stephenson et al, 2004; Wight et al, 2002) I located separate articles (Oakley et al, 2004, 2006; Wight et al, 2002) in which the process evaluations that were conducted as part of the RCTs were reported. The process evaluation by Oakley et al (2004, 2006) aimed to document the implementation; compare the programme delivery between control and intervention schools; document participants' experiences; assess the effect of school contexts on the research; and describe characteristics and experiences of the peer educators. Wight et al (2002) aimed to understand enabling and confounding influences on programme delivery; impact on students; general school context; extent and quality of delivery; and student responses to the programme. These two studies are part of a new move towards embedding detailed process evaluations in the design of RCTs to help understand why and how interventions and outcomes may be related.

The studies found certain common factors that enhanced implementation, including teacher commitment, motivation, faith in the value of the intervention and willingness to implement the programme. However, the interventions were not implemented with fidelity in either of the two studies. In the study by Wight et al (2002), there was variation in implementation across the schools. Most students in three schools did not receive the minimum package while in six schools the lessons were delivered by non-trained teachers due to timetabling constraints and teacher mobility. At one school in the evaluation by Oakley et al (2004) the intervention was not implemented because it was not possible to recruit enough peer educators, while one of the control schools dropped out of the study due to parents' objections to the survey questions. Both

studies found that skills-based lessons such as practicing how to use a condom were a challenge for the teachers and peer educators.

As far as the student experiences of the interventions, levels of participation were influenced by factors such as embarrassment. The majority of students also did not view teachers as their first choice of sex education facilitators. Some girls in the study by Oakley et al (2004) found it difficult to participate in mixed sex classes and students in both experimental and control groups felt that the needs of some students would have been better met in single- rather than mixed sex groups. The students also expressed a preference for interventions offered in single-sex groups (Stephenson et al, 2004). This is an important finding, given the gender differences in intervention effects discussed earlier and the lack of intervention effects on girls in several of the studies.

These process evaluations demonstrate the complexities inherent in social settings, and therefore the complexity of conducting process evaluation. As evident in this review however, very few of the RCTs conducted process evaluation and besides the two included here, the rest provided little or no details of the methodologies or findings of process evaluations. As Oakley et al (2004) concluded, the difficulties experienced in the studies reflect the underlying objective of 'real world' evaluation that reflects the complex interrelationships between processes and outcomes. Thus, process evaluation is necessary if we are to better understand the linkages between intervention contexts, processes and programme outcomes. In multi-site studies for example, process evaluation provides information on variation between sites as shown in these two studies. Conducted as an integral part of outcome evaluations, process evaluation also has the capacity to address some of the current objections to the use of

RCTs for social and health promotion interventions such as the use of poorly designed interventions, lack of attention to contextual factors and narrow definition of outcomes (Oakley et al, 2004).

In section 2.2 above I have reviewed RCTs of school-based interventions that assessed abstinence or postponement of sexual intercourse, condom use, as well as process evaluations that have been conducted as part of these studies. I will return to this discussion further in the concluding section of this chapter. In the following section (2.3) I review evaluations of school-based HIV and sexual health promotion interventions conducted in South Africa.

### **2.3 Review of South African studies**

The aims of this review were:

- to document selected methodological aspects of the evaluations;
- to investigate whether the existing programmes are meeting their aims as reported in the key findings, and, if not, why not; and
- To extract implications for the development of school-based HIV/AIDS prevention programmes in South Africa.

#### **2.3.1 Inclusion criteria**

All published and unpublished evaluations were included in this review if they evaluated school-based HIV/AIDS prevention or sexual and reproductive health promotion interventions implemented in South Africa. Methodological limitations were not applied to this review as I wanted to include all the studies that I could find to demonstrate the current state of evaluation of school-based interventions in the country, and to highlight methodological limitations, challenges and evaluation

developments. For the review of RCTs above, it would not have been possible to include the grey literature as it would not have been possible to access the bulk of such literature owing to the many countries involved. However, for this review, which focuses on South Africa, it was possible to locate the available grey literature. For these reasons, the review was also not limited to studies that measured behaviour, but included those that measured other variables such as knowledge and attitudes.

### **2.3.2 Search strategy**

I conducted searches for articles in English on the same databases listed earlier in the search for RCTs. I also searched Social Sciences Index, Index to South African Periodicals, UCTD (Theses and Dissertations at South African Universities), and The Adolescent Reproductive Health Network (ARHNe) database, which is a database of grey literature on adolescent sexual and reproductive health from Southern and Eastern Africa. I also obtained unpublished literature through searches on library catalogues of South African universities, visits to resource centers within my reach, telephone, email or fax communication with researchers and organisations. I used the same keywords as listed in the review of RCTs, as well as "South Africa", sub-Saharan Africa, and "Africa".

### **2.3.3 Results and discussion**

The search yielded fourteen South African evaluation studies of school-based interventions. These are summarised in Table 2.3. In the light of the extent of the public health and human development challenge posed by the HIV epidemic among South African adolescents, it is certainly a cause for concern that such a small number of evaluations of school-based HIV prevention programmes were located. This could reflect the fact that a small proportion of programmes have been evaluated, but it is unlikely to be the case that only a few programmes have been implemented because

South Africa has experienced a great increase in school-based sexuality education focused on HIV/AIDS prevention in the last few years.

There are three other factors that amplify concern about the low number of evaluations of school-based HIV prevention programmes in South Africa. First, only four of the evaluations were published in the past five years (James et al, 2005; Magnani et al, 2005; Reddy et al, 2005; Visser et al, 2004). Second, a relatively small number of schools and students were included in the evaluations, which limits the statistical power associated with school-level effects. Eight of the fourteen studies involved three or fewer schools, a few with sample sizes of less than a hundred students. Third, five of the evaluations were carried out at schools in the Western Cape, and four in KwaZulu Natal. No evaluations of school-based AIDS prevention programmes were located for some provinces. Only two studies drew their samples of schools from different provinces, including rural and urban regions, representing the different language and population groups (Visser, 1996; Visser et al, 2004).

#### **2.3.4 Intervention characteristics**

In the following sections I will discuss the design, delivery strategies and duration of the interventions.

##### **2.3.4.1 Design and delivery**

There were considerable differences between the programmes in terms of who designed and implemented them. Six studies evaluated programmes that were designed and implemented by government departments, namely Departments of Health and Education (Baillie, 1991; Magnani et al, 2005; Meyer, 1989; Reddy et al, 2005; Visser, 1996; Visser et al, 2004). These programmes were developed nationally or provincially for inclusion in the school LO curriculum, but schools were at liberty

as far as implementation was concerned. Three programmes were designed using a participatory method which involved students, parents and teachers (Kuhn et al, 1994; Mathews et al, 1995, 1996). One of these (Mathews, 1995), was a formative evaluation undertaken to develop a socially and culturally appropriate classroom HIV education resource. Two programmes were designed by independent professionals (Mitchell, 1994; Page, 1990). In one of these, the intervention was in the form of a Drama Approach to AIDS Education ("DramAide"), delivered by qualified actors, teachers and nurses, with participation from students (Harvey et al, 2000). The programme consisted of drama, song, poetry, dance and posters, while comparison schools were provided with a booklet in Zulu containing information about HIV/AIDS. James et al (2005) evaluated an intervention in the form of a photo novella, while the remaining study did not evaluate any specific programme but inquired about sex education received at school (Seydel, 1992).

#### **2.3.4.2 Duration of the interventions**

There were large differences in the duration and intensity of the programmes. The programme with the shortest duration was that evaluated by James et al (2005), in which the intervention students read the photo novella once. The programme with the greatest intensity was implemented for ten hours over two teaching days (Mitchell, 1994). At the other extreme in terms of duration was the programme evaluated by Mathews et al (1996) that was implemented over a period of nine months. For programmes implemented by facilitators other than teachers, the least intensity was the programme described by Baillie (1991) which consisted of only one or two lessons per year. Three studies (Harvey et al, 2000; Seydel, 1992; Meyer, 1989) did not provide any details of intensity or duration of the programmes they evaluated. The

duration and intensity of the programmes evaluated by Magnani et al (2005), Reddy et al (2005) and Visser et al (2004) is not clear as there was variation in implementation across the schools.

The fact that these variations between the programmes exist implies that there are limitations in the extent to which findings from the evaluations can be generalised to other existing programmes. If, for example, it was found that a particular programme failed to demonstrate a positive effect on an outcome of interest, this could be ascribed to a number of factors. Such factors could include the way the programme was designed, and the duration and intensity of the programme. Conversely, if all the programmes shared certain characteristics, and some differed from the others in terms of effect on outcome variables, it would be possible to attribute differences in the effect on outcome variables to non-shared programme characteristics.

### **2.3.5 The evaluations**

In the preceding section I have discussed the characteristics of the intervention. In the sections below, I will address the characteristics of the evaluations.

#### **2.3.5.1 Type of evaluation**

Two studies presented formative evaluations aimed at documenting the development of the programmes (Bailie, 1991; Mathews et al, 1995). The study by Bailie (1991) aimed at gaining greater understanding of pupils' attitudes to sexuality and the sexuality education programme they were receiving. Mathews et al (1995) reported on a formative evaluation of a programme developed in partnership with students, teachers and parents in a predominantly working class Muslim community in Cape Town. This was followed by an outcome evaluation study to determine whether the programme was appropriate for a different cultural setting. Thus, they examined the

effect of the programme on factors such as knowledge, attitudes, and communication with significant others (Mathews et al, 1996). Although Visser et al (2004) conducted outcome evaluation to investigate programme effectiveness theirs was mainly a detailed process evaluation to assess the implementation of the programme and barriers to implementation. The remaining studies were all outcome evaluations. However, some studies included aspects of formative (Kuhn et al, 1994; Mitchell, 1994) or process (Visser, 1996; Reddy et al, 2005) evaluations as a secondary component.

### **2.3.5.2 Study design**

One study relied exclusively on qualitative methods (Baillie, 1991). Mathews et al (1996) undertook a quantitative survey in the first phase of the study, followed by qualitative methods, while Seydel (1992) based her report on a once-off questionnaire administered to female adolescents attending a reproductive health clinic. Harvey et al (2000) undertook a randomized community intervention trial, and Magnani et al (2005) conducted 2 panel surveys, one in 1999 and the other in 2001. The evaluation by Magnani et al (2005) also employed econometric approaches to address the potential bias emanating from non-random exposure to the life skills education. The remaining six studies employed pre- and post-test designs. Of these, the studies by James et al (2005) and Reddy et al (2005) had the most rigorous pre- and post-test designs with a control group and two follow-up surveys. Three other studies employed a control group (Kuhn et al, 1994; Meyer, 1989; Mitchell, 1994). One would attach greater importance to the results of these studies compared to the studies that did not employ control groups. For the studies without comparison groups, one is not able to attribute any changes that are detected to the programme. Other factors,

such as passage of time or completion of the assessment instruments, may have contributed to any observed changes. In order to be able to attribute changes to the programme with greater confidence, control groups are necessary. Clearly, there have been some advancements in evaluation designs as demonstrated by the more recent studies (Harvey et al, 2000; James et al, 2005; Magnani et al, 2005; Reddy et al, 2005) which employed more rigorous designs compared to earlier studies.

For studies that employed a pre- and post-test design, there was variation in the period between completion of the intervention and the post-test evaluation. Two studies conducted the post-test immediately after the programme (Kuhn et al, 1994; Visser, 1996); three studies both immediately after the programme, and again at 5 weeks (Page, 1990), 6 weeks (James et al, 2005), 6.5 weeks (Mitchell, 1994) and 10 months after baseline (Reddy et al, 2005); three studies did not test subjects immediately after the intervention, but 2 weeks, 6 months and 1 year later respectively (Mathews et al, 1996; Harvey et al, 2000; Visser et al, 2004); while another conducted daily assessments (Meyer, 1989). Clearly, the longer after the programme the post-test is conducted the more confident one can be that any positive effects of the programme will have a meaningful influence on sexual behaviour. This is exemplified by Mitchell's (1994) study. A significant increase in knowledge and understanding was observed in the intervention group relative to the control group immediately after the programme. However, at delayed follow-up, these differences between the two groups had disappeared. It is thus a source of concern that most of the studies had short follow-up periods. This can be attributed partly to the demands of funding agencies for rapid completion of projects, and partly to the tight time frames under which many students conduct their dissertation and thesis studies. It could however also be due to poor designs of the studies.

### **2.3.5.3 Evaluation instruments**

The majority of evaluations were conducted principally by self-administered questionnaires. Focus group discussions were the only source of data in the evaluation by Bailie (1991). Although a quantitative survey was conducted in an earlier phase of the study reported by Mathews et al (1995), the formative evaluation was conducted using focus groups and free attitude interviews. Face-to-face interviews were the principal data collection method in the evaluation by Magnani et al (2004). Only one study combined both qualitative and quantitative methodologies in the form of interviews, focus group discussion and self administered questionnaires (Visser et al, 2004).

The studies used questionnaires comprising either closed-ended questions or both closed- and open-ended questions. The fact that each study used a questionnaire that was not used by any of the other studies makes it difficult to compare the results of the different evaluation studies. Even though three of the most recent studies I located, (Magnani et al, 2005; Reddy et al, 2005; Visser et al, 2004) evaluated programmes developed under the auspices of the National departments of Education, Health and Welfare, there is no suggestion that a similar questionnaire was employed.

### **2.3.6 Key evaluation findings**

As this review did not include only studies assessing sexual intercourse and condom use, the headings used in presenting the findings below are not similar to those used in the review of RCTs. The headings in this section represent some of the key findings on the determinants of behaviour that were reported in the studies. In the sections below I will discuss each of these evaluation findings.

### **2.3.6.1 Knowledge and attitudes**

With the exception of the studies by Baillie (1991) and Mathews et al (1995), all the studies investigated the effects of the programmes on knowledge. This included knowledge of HIV/AIDS, other sexually transmitted infections (STIs), knowledge of condoms and other methods of preventing STI or pregnancy. For studies that assessed attitudes, they looked at attitudes towards people living with HIV/AIDS (PLHA) (James et al, 2005; Kuhn et al, 1994; Mitchell, 1994; Reddy et al, 2005; Visser, 1996), attitudes towards the use of condoms or contraceptive methods (Meyer, 1989; Visser et al, 2004), premarital sex and STIs (Page, 1990) or HIV preventive behaviour (Harvey et al, 2000; Mathews et al, 1996; Reddy et al, 2005).

Some of the studies that had pre-tests found that levels of knowledge were low and attitudes unfavourable before the programme (Harvey et al, 2000; Kuhn et al, 1994; Meyer, 1989; Mitchell, 1994; Page, 1990; Visser et al, 2004). Marked improvements were noted after the intervention. A typical finding regarding knowledge is that the number of respondents who knew that HIV cannot be transmitted through touching increased from 44.0% at pre-test to 71.7% at post-test, whilst for the control group the corresponding figures were 46.1% and 45.1% respectively (Kuhn et al, 1994). Likewise, a typical finding regarding attitudes is that 48.0% of the students were not afraid of a person with AIDS before the programme, compared to 68.0% after the programme (Visser, 1996). Visser et al (2004) reported statistically significant changes in knowledge and attitude towards HIV/AIDS and preventive behaviour while modest gains in knowledge were reported in the study by Magnani et al (2005). Providing literature only as an intervention did not seem to have any effect on attitudes (Harvey et al, 2000).

It is encouraging that the programmes were able to increase levels of knowledge, even though many of the studies had methodological shortcomings as described earlier. Negative findings would have been a cause for concern. If, for example, a study without a control group had failed to detect a positive effect following the programme, a study with a control group among the same population would be most unlikely to demonstrate a positive effect.

Besides the evaluations by Reddy et al (2005) and Visser et al (2004) which were conducted 10 and 12 months after the intervention respectively, the other studies had short follow-up durations, thus it is not possible to tell whether the short-term effects of the programme dissipated or not. These two studies however, show that programmes can have longer-term effects. Visser et al (2004) reported modest but significant increases in knowledge a year after the intervention.

There were two studies where the expected positive changes did not occur. Seydel (1992) did not detect changes in attitudes or knowledge after exposure to intervention programmes. However, she asked respondents to indicate whether or not they received sex education at school. If they had, they were asked whether, in their opinion, it had any effect on knowledge or attitudes. Thus, there were no objective data about the impact of the programmes. The second exception was the study by Mathews et al (1996). Their respondents, who attended a suburban, middle-class school in Cape Town, had very high knowledge levels before the programme. Over 90%, for example, knew that AIDS could be transmitted vertically and that sex without a condom is risky. There was no increase in knowledge for those items for which the students had a high level of knowledge before the programme. For other items for which the levels of knowledge were low at baseline, there was an increase in

levels of knowledge after the programme. For example, the percentage who knew why people with a sexually transmitted infection have a higher risk of getting infected with HIV increased significantly from 6.4% to 20.8%. Attitudes were also very positive before the programme hence no post-intervention effect, again suggesting that programmes have less potential to exert a positive impact when conditions are favourable prior to the intervention. This suggests that the level of knowledge and the extent to which attitudes are positive needs to be taken into account when planning a programme. It would not be a sensible use of resources to attempt to increase very high levels of knowledge even further, or to induce already favourable attitudes to be even more favourable. Rather, one should focus on areas where the pre-programme knowledge levels or attitudes are unfavourable, where there is the scope to demonstrate positive effects.

#### **2.3.6.2 Susceptibility to HIV infection**

A person's perception of their personal risk for contracting HIV is an important determinant of their sexual behaviour. People who believe that they could contract HIV and who feel anxious about the risk, are more likely to change their behaviour than those who feel immune or who do not perceive a personal risk (Flisher et al, 1999). Whilst improvements were reported on most knowledge scales by a majority of the studies, only Harvey et al (2000) reported an increase (49% to 54%) in the proportion of sexually active students in the intervention group who thought they could contract HIV. No significant differences were reported with regard to susceptibility in the other studies that addressed this issue (Kuhn et al, 1994; Visser, 1996). The majority of respondents in the study by Kuhn et al (1994) considered that only particular groups were at risk of contracting HIV infection, such as "prostitutes"

and "women who sell their bodies". Furthermore, AIDS was characterised as a "white disease". Only 16% of the students in this study stated explicitly after the programme that AIDS could affect anyone. This study was however conducted at a time when there was less public discussion about HIV and less visibility of PLHA in the country. It is likely that with increased visibility of people of diverse backgrounds living with HIV/AIDS the perceptions may have changed since. In Visser's (1996) study, there was a non-significant increase in the proportion of students who believed that AIDS did not only affect only certain population groups, but more students were sure that they were not at risk of contracting HIV after the intervention. The four most recent evaluations (James et al, 2005; Magnani et al, 2005; Reddy et al, 2005; Visser et al, 2004) did not address the issue of perceived susceptibility to HIV infection.

These results suggest that programmes should prioritise increasing the insight of the programme participants into their susceptibility to HIV infection if they practice behaviour likely to put them at risk. Of course, this challenge may be easier to meet since the incidence rates have increased among South African adolescents, as indicated in the introduction chapter. Not only has this led to increased media coverage of the HIV epidemic, but it is becoming increasingly more likely that adolescents participating in programmes may themselves be living with HIV or likely to know of people their own age who are living with HIV or people who have died from AIDS. It is reasonable to assume that these factors will result in an increase in the perceived susceptibility of South African adolescents to HIV.

### **2.3.6.3 Self-efficacy**

Five studies included this variable in their evaluations and reported positive effects. Mitchell (1994) investigated self-efficacy with respect to avoiding HIV infection and

reducing sexual transmission of HIV, and found no evidence of an increase in self efficacy immediately after the programme. However, at follow-up 6.5 weeks later, there was a trend for improvement in both domains. Thus, a failure to demonstrate an impact immediately after the programme does not imply that longer term effects are absent. Harvey et al (2000) found an increase in percentage of students in the drama intervention schools who thought they would be able to tell their girlfriend/boyfriend to use a condom during intercourse. Percentage decreases were found in the booklet intervention group. As was the case for knowledge and attitudes, the students in the study by Mathews et al (1996) displayed favourable self-efficacy before the programme in some respects; for example, over 85% of the students believed that they would be able to show their partner love without having sex, and that they would be able to insist on using a condom during sex even if their partner did not want to do so. The programme did not increase the levels of self-efficacy for those behaviours for which self- efficacy was high before the programme. However, where low self efficacy was reported before the intervention, there were positive effects. For example, more than half of the sexually active students believed that it was difficult to refuse when their partner wanted sex. This proportion decreased after the programme. Even though this difference was not statistically significant, it was in the desired direction. Magnani et al (2005) investigated perceived self-efficacy to obtain and use condoms. At the second wave of the study, a larger proportion of respondents were confident in their ability to obtain condoms when needed. Gender and age differences were observed, with younger females displaying lower levels of self-efficacy compared to males and older youth (Magnani et al, 2005). Again, these findings underline the importance of tailoring the programme to fit the characteristics of the students at baseline.

#### **2.3.6.4 Communication about sex/sexuality**

Five studies investigated whether communication with family, friends and/or girl- or boyfriends about sexuality changed as a result of the interventions (Kuhn et al, 1994; Meyer, 1989; Page, 1990; Reddy et al, 2005; Seydel, 1992). In general, the programmes had a positive effect on the amount of communication about sexuality. An exception is the study by Page (1990), which found that there was an increase in communication with friends, no change in communication with girl- or boyfriends, and a decrease in communication with parents. However, this study was conducted at a boarding school, where one would expect that there would in any case be minimal contact with parents.

Although the amount of communication increased, none of the studies discussed the content of the communication. An increase in communication is not necessarily a good thing. It is possible, for example, that there was an increase in communication about sexuality with (say) parents, but the communication was characterised by conflict and recrimination. In this case, an increased amount of communication would be unlikely to exert a positive effect on sexual behaviour.

#### **2.3.6.5 Behaviour**

Only one study that investigated behavioural intention reported a positive effect on intention to have sex (Reddy et al, 2005). The other studies did not find positive effect on behavioural intention to use condoms (Kuhn et al, 1994), change sexual behaviour except use of condoms more frequently (Page, 1990) or to undergo a HIV blood test or have sexual relationships (Visser, 1996).

Five studies (Harvey et al, 2000; Magnani et al, 2005; Mathews et al, 1996; Reddy et al, 2005; Visser et al, 2004) asked about actual behaviour, but this was measured appropriately in three of them (Harvey et al, 2000; Magnani et al, 2005; Reddy et al, 2005). Harvey et al (2000) reported an increase in condom use amongst intervention students. There was no evidence of an increase of sexual activity following the intervention, but the proportion of students under the age of 18 years that were sexually active fell slightly in both groups. Mathews et al (1996), Magnani et al (2005), Reddy et al (2005) and Visser et al (2004) found that significantly more students became sexually active at the second point of assessment. This is not a surprising finding, particularly in the studies by Magnani et al (2005) and Visser et al (2004) given that the youth were one and two years older at the time of the second survey. Visser et al (2005) also attributed this to more honesty in completing the questionnaire at posttest. The practice of secondary abstinence (delay of subsequent sexual intercourse by those that have had sex) also increased, especially amongst females (Magnani et al, 2005; Reddy et al, 2005; Visser, 1996).

The programme evaluated by Mathews et al (1996) had no effect on the prevalence of condom use at last intercourse, and a significantly negative change on the proportion that had a condom. Reddy et al (2005) reported a reduction in the number of sexual partners. The behaviour changes that were observed were modest, and as Mathews et al (1996) concede, the absence of control groups in these studies makes it impossible to distinguish changes that can be attributed to the programmes from changes that would have occurred in the absence of a programme. Seydel's (1992) study, in which attendees at a reproductive health clinic were asked about their experience of school-based sex education programmes, indicated that there were differences between those who has received "some" and "much" sex education. Those that had received "much"

sex education were more likely to choose condoms and less likely to use the pill as their preferred contraceptive method. Among those who had “no” sex education, a much smaller proportion chose the condom as their preferred method of contraception, with a bigger proportion choosing the injection. It is difficult to interpret these results as they refer to a number of sex education programmes and it is unclear whether choice of contraception reflects behavioural intention or actual behaviour. Also, the focus was on contraception as opposed to HIV prevention, which has a bearing on the reasons that a particular method of contraception is chosen. The once-off reading of a photo novella in the study by James et al (2005) increased condom use.

Some of these findings are disappointing, and underline the importance of conducting evaluations of intervention programmes. There are several possible explanations for the failures of the programmes to affect behaviour or behavioural intention, such as the limited duration of the programmes, the fact that they were not embedded in a theoretical framework, did not address skills such as decision-making and assertiveness or the interventions were not properly implemented. This last point is well illustrated in the process evaluation by Visser et al (2004). The study found that the HIV/AIDS programme was not successfully implemented in the majority of the schools to facilitate change in the behaviour patterns of learners. The main barrier to implementation was structural and organisational factors within the school system, such as lack of resources and relationship dynamics like lack of support from principals and other staff members who did not view LO as important (Visser et al, 2004). In schools where principals were willing to support the programme they were overwhelmed by organizational, financial and structural problems, as well as a myriad of changes that were occurring within the national school system. However, even in

schools where some implementation occurred, the teachers failed to build learners' life skills and capacity, focusing rather on facts about HIV/AIDS, awareness and education (Reddy et al, 2005; Visser et al, 2004). There are some interesting similarities in these findings and those reported by Oakley et al (2004) discussed in the review of RCTs. Even though these studies were conducted in different continents, they both found that as a non-examination subject, sex or HIV education had a low status compared to other subjects, which hindered implementation of the interventions. The schools were under pressure to raise academic standards and sex education was not a priority on this agenda hence was allocated fewer lessons.

In the book *"Letting Them Die": Why HIV/AIDS Prevention Programmes Fail*, Catherine Campbell strongly illustrates these points about the complex nature of social contexts, the relationship dynamics therein and their influence on sexual behaviours (Campbell, 2003). Using a case study of an intervention aimed at mineworkers, commercial sex workers and young people in a mining town in South Africa, the book discusses in detail the difficulties and powerlessness that each of these three groups experienced in practicing healthy behaviours in a complex social context that was unsupportive to health enhancing behaviours. Mine workers for example considered themselves likely to die from their dangerous jobs anyway, hence reluctance to use condoms. Thus although well-meaning and well-funded, the intervention failed to change behaviours, not due to ignorance of the individuals engaging in high risk behaviours, but mainly due to social and community structures characterized by the interrelated factors of high unemployment rates, distrust, lack of personal intimacy, migrant labour system, poverty sex inequality and cultural taboos that undermined any intentions to perform safer sexual behaviours (Campbell, 2003). The relationship and organisational dynamics in a school setting may not be as

complicated, but they exist nevertheless and have implications for the implementation of interventions and therefore the behavioural outcomes.

#### **2.3.6.6 Involving communities in developing HIV/AIDS education programmes**

Two studies reported the involvement of school communities in developing the intervention (Kuhn et al, 1994; Mathews et al, 1995). The programme by Kuhn et al (1994) was initiated through a process of consultation and training with teachers, parents, school nurses, students and the educational authorities. The aim was to utilise existing resources, and give primary responsibility of the programme to the school community. Mathews et al (1995) conducted a formative evaluation aimed at exploring religious and cultural beliefs, and understanding students' sexual experiences and sexual health needs so as to develop culturally and socially appropriate classroom AIDS resources. By involving the school community, the researchers realised that their assumptions about AIDS education were not shared by the community and were challenged. What they thought to be public health imperatives were in conflict with the acceptable religious and cultural values of the community. For example, during the piloting stage of the intervention, teachers were faced with the question of whether precautions against HIV should include safer sex and acceptance of all PLHA, in a community in which Muslim religious teaching forbade premarital sex and homosexuality. The teachers' concern was that the program should respect and uphold religious values of the community. On the other hand, students were experimenting with sex, and many spoke of experiencing desire and pressure to have sex. The essential conflict between the parents and teachers' needs to promote religious values, and students' needs to cope with experiences of

sexuality and to protect themselves in high risk situations was evident in the discussions.

These studies suggest strongly the need for researchers and programme designers to undertake formative evaluation to inform programme development. It is also important that the school community is involved in the development of the evaluation. Some of the implementation barriers reported by Visser et al (2004), for example, may have been minimised if principals were involved in developing the programme and supporting its implementation. The study by Mathews et al (1995) highlights the moral, religious, cultural and personal conflicts facing HIV education in a multicultural context. The researchers conceded that they had failed by not taking sufficient heed of the reservations and uneasiness voiced by teachers in the first few discussions. Findings from this formative evaluation were used to develop a photo novella using the students' experiences, and also to inform the development of the AIDS education programme in partnership with teachers. Qualitative methods were shown to be useful in understanding in-depth the social and cultural factors related to adolescent sexuality.

#### **2.3.6.7 Respondents' Evaluations of the programmes**

In general, respondents provided positive evaluations of the programmes. This was manifest, for example, in requests for more information on HIV and AIDS (Baillie, 1991; Kuhn et al, 1994; Mitchell, 1994; Mathews et al, 1996; Seydel, 1992; Visser, 1996). However, in some studies respondents indicated that they would have preferred a greater emphasis on visual and participatory methods as opposed to lectures and other passive methods (Baillie, 1991; Mathews et al, 1996; Visser, 1996). For

example, Bailie's (1991) formative evaluation of a programme offered by the National Health Department reported that the programme should:

- include more imaginative and stimulating teaching methods;
- promote more trusting relationships between programme facilitator and students;
- increase the use of small discussion groups and role plays;
- address issues of concern to the adolescents;
- involve parents and the community members to a greater extent; and
- offer easier access to the students for individual counseling.

The suggestion for more visual and participatory methods is supported by evidence from the study by Harvey et al (2000) in which longer-term positive effects were reported. The "DramAide" intervention schools in the study had higher scores of improvement in knowledge and attitude compared to the schools receiving information literature only.

**Table 2.3 Evaluations of school-based reproductive health promotion and HIV prevention programmes in South Africa**

Author	Description of programme and region	Sample	Details of evaluation	Factors investigated	Summary of results
1. Bailie, 1991	Developed by National Health Department. Presented by trained advisors. 1 or 2 lessons per year. Cape Town	3 high schools Grades 6 - 12 Age 12 - 19 years. Purposive sampling N = 60	Formative evaluation 6 focus groups with learners	Knowledge of STIs & reproductive anatomy; Knowledge & attitude to contraception Sexual attitudes Students' opinions of the programme	Higher levels of knowledge reported amongst std 9-12 compared to lower grades. Superficial knowledge of contraceptive methods; fear of negative effects of contraception. Students expressed dislike for lectures; issues addressed are not of concern to respondents. Need for more visual and creative presentations
2. Harvey et al, 2000	For intervention group, a 3-phase programme; Phase I: a play presented by qualified actors, teachers & nurses; Phase II: drama workshops for teachers & students; Phase III: a 'school open day' presented by students.  For control group, a 10-pagebooklet information in Zulu  KwaZulu Natal.	2 pairs of schools from 5 districts (4 rural, 1 urban)  Std. 8 pupils  N=1080 at pre-test; 699 at post-test  Mean age =17.6 years at pretest; 18.3 at posttest	Outcome evaluation  Randomized community intervention trial  Pre- & Post intervention SAQ with closed questions	Knowledge of HIV/AIDS  Attitude towards  HIV/AIDS and PWA  Behaviour	Increase in mean % score on behaviour for sexually active students in drama intervention schools. No change in booklet intervention schools  Statistically significant higher knowledge in intervention group. Increase in attitude and behaviour score in intervention group, no change in control. No evidence that non-sexually active students became sexually active due to the intervention. Increase in condom use in intervention group.
3. James et al, 2005	systematically developed photo-novella (Laduma) on accurate factual information to increase knowledge and reduce misperceptions about STIs, increase positive attitude towards safe sexual practices, enhance self-efficacy and adoption of skills  KwaZulu Natal	19 schools, rural & urban; 10 intervention, n = 599; 9 control schools, n = 569  2 classes randomly selected from all the grade 11 classes at each school  N=1168; Age range 15-22 years	Experimental pre-post test design  SAQ	knowledge, attitudes, communication and behavioural intentions with respect to STIs,  communication about STIs  sexual behaviour  condom use.	Increase in knowledge on the spread of STIs.  Improved change in attitude to condom use and towards PLHA & STIs increased intention to practice safe sex behaviours in intervention group.  male learners in intervention group reported a more positive attitude towards PLHA and people with STIs

Author	Description of programme and region	Sample	Details of evaluation	Factors investigated	Summary of results
4. Kuhn et al, 1994	Developed through brainstorming with staff & students Attempted to reach out to parents Presented by trained teachers Intense high-profile focus on AIDS for 2 weeks Cape Town	A high school in a socio-economically is advantaged urban area 2 classes from each grade. Control school, N= 336 at pre-test, 276 at post-test Programme school, N = 231 at pre-test, 206 at post-test Mean age = 18 ( range 12 - 30)	Formative and outcome evaluations SAQ with closed & open - ended questions	Knowledge Attitudes to PWA Susceptibility Communication with parents, peers, teachers, sexual partners and nurses Condom use	Significantly higher increase in knowledge in programme group Low but increased acceptance of PWA in programme group. No increase in % of students who thought AIDS was everyone's problem. Dramatic impact on communication with parents, friends, teachers, nurses & sexual partners. Small, statistically significant change in intention to use condoms. A range of negative attitudes towards condoms were reported.
5. Magnani et al, 2005	A life skills curriculum overseen by the National Project Committee of the Departments of health and Education Each province followed committee guidelines to design and implement the programme KwaZulu Natal	N=2222 Probability sample of households in 2 magisterial districts. Multi-stage cluster sampling of households with youth 14-22 years.	2 panel surveys, 1999 & 2001. SAQ Impact measure: net dose-response relationship between life skills exposure and outcomes Interviews with youth and adults Interviews with principals	Exposure to life skills education. Impact on: Sexual debut Secondary abstinence Number of sexual partners Condom behaviour	Substantial increase in exposure to life skills education from 1999-2001 Significant but modest gains in knowledge of aspects of reproductive health, STIs, HIV/AIDS, and perceived condom efficacy. Larger effects on condom use at first and last sex No consistent effects on age at first sex; Increase in secondary abstinence Increase in proportion of sexually active youth; No significant change with regard to number of sexual partners in the last 4 weeks. Increase in self-efficacy to obtain and use condoms
6. Mathews et al, 1996	Designed by students, teachers and parents Classroom-based activities, video, photo comic Taught by two guidance teachers 9 months duration Cape Town	1 high-school in an affluent area. Grade 10 N = 232. Mean age = 15 Females - 49% Christians - 84%, Moslems - 7%. 79.2% never had sex.	Pre-tests and post-tests Direct observation 2 interviews with guidance teachers 2 focus groups Students' diaries	Knowledge of HIV & AIDS. Attitude towards PWA Self-efficacy Behaviour Student opinions of the programme	High accurate knowledge levels at pretest. No change at follow-up. No significant changes in attitude towards PWA Significant increase in the proportions that would use a condom. More students became sexually active during the intervention Request for more in-depth information on Catholicism, homosexuality and living with HIV. Teachers found the programme manual easy to use.

Author	Description of programme and region	Sample	Details of evaluation	Factors investigated	Summary of results
7. Mathe ws et al, 1995	Qualitative research aimed at developing culturally appropriate resources for AIDS education with input from teachers and students  Cape Town	Teachers and students in a high school in a Muslim community  Purposive selection of students	Formative evaluation using focus groups and free attitude interviews	The cultural meaning and social context of sexuality and sexual behaviour	Researchers' assumptions about AIDS education were in conflict with cultural and religious values. Students experienced conflict between their sexual desires and societal and religious values.  Findings informed the AIDS education programme later developed.
8. Meyer, 1989	Developed by National Health Department  Use of flashcards, audio-visual equipment, group discussions, role playing  Soshanguve	2 high-schools intervention N=30; comparison group N=30  Random selection	Pre-test – post-test with control group  Daily assessment  SAQ	Knowledge of STDs, physiological development and contraceptive methods  Interpersonal communication  Respondents' evaluation	Improvements in knowledge of STDs, physiological development & contraceptive methods in programme group  Improvement in communication with parents & friends  Students requested further information on topics discussed
9. Mitchel l, 1994	Professionally designed and delivered  10 hrs over 2 full teaching days  Cape Town	Private multiracial Anglican boys secondary school  intervention N = 60; control group N= 30  Ages 16 – 18  Random sampling	Pre-test (1 experimental 1 control).  Post-test (4 groups).  Post-test immediately & 6½ weeks later.  SAQ	Knowledge & under-standing of HIV & AIDS  Attitude towards PWA  Perceived social norms  Self efficacy	Significant increase in knowledge and understanding relative to the comparison group at immediate follow-up  At delayed follow-up – no significant changes in knowledge  Self-efficacy improved at 6 <sup>th</sup> weeks follow-up. No details of changes in other s in outcomes at follow-up.
10 Page, 1990	Presented by 5 trained volunteer counselors  1 hour weekly for 4 weeks.  Midrand	Private boarding school Convenience sampling 35 male, 18 female  Mean age 17.7, range 16 – 18 years  61% of males and 22% of females had had sexual intercourse.	Pre-test- post-test  Repeated measures  Subjective/outcome evaluation	Knowledge of contraception, STDs and sexual knowledge.  Attitude towards pre-marital sex  Behaviour  Communication	Significant increase in knowledge  No change in attitudes towards pre marital sex  Clearer sexual values  Students would be more comfortable with using contraception after the intervention.  No effect on sexual behaviour  Increase in communication with friends. Less communication with parents. No change in communication with boy/girlfriend.

Author	Description of programme and region	Sample	Details of evaluation	Factors investigated	Summary of results
11 Seydel, 1992	No specific programme Western Cape	Attendees at reproductive health clinic N = 67 English speaking, sexually active females Ages 12-19 No sex education N= 21; some N=21; much N=25	SAQ No control group.	Knowledge of Contraception and biological facts about reproduction Attitude towards abortion and sexual abuse	37.3% had “comprehensive” sex education at school No increases in knowledge No changes in attitude No differences in the “no sex education”, “some sex education” & “much sex education groups
12 Reddy et al, 2005	The KwaZulu Natal Department of Education’s Life Skills Programme aimed at reducing prevalence of HIV among students. 16-hour intervention, once a week for two school terms. Implemented by trained teachers Pietermaritzburg	22 schools 11 intervention, 11 control. 2 grade 9 classes at each school randomly selected. baseline n= 513 in control; 628 in intervention group. mean age =15.6 years; age range 12-21 years	pre-test, multiple post-test, control group design. Semi-structured SAQ Measurement at baseline; posttest (6 months after baseline; 4 months after the post-test. Process and outcome evaluation	knowledge, attitudes toward condom use and people living with PLHA, perceptions about sexual behaviour, communication about safer sex, social support, self-efficacy	More students in both the control group had had sexual intercourse at posttest No change in intention o have sex. Greater proportion in intervention males decreased number of sexual partners. Increase in knowledge. Positive attitudes towards PLHA. Greater confidence in communicating about sex with siblings, friends, parents, and partners. The differences between the groups were small and most were not statistically significant.
13 Visser, 1996	Developed by the National Health Department Presented by counselling teachers 8 - 18 periods over 6 weeks different provinces	11 urban and rural schools N = 339 Grades 8-11 All races	Process and outcome evaluation. Before-and-after design SAQ; 2 focus groups per school Interviews with presenters Process evaluation with teachers, assessing implementation	Knowledge of STDs, HIV transmission and prevention against AIDS Attitude towards PWA Perception of condom use Behavioural intentions	Significant increase in all knowledge scales except susceptibility; e.g. knowledge that: AIDS could not be cured - pretest 69%, posttest 82%; condoms prevent AIDS - pretest 48%, posttest 59% Increase in positive attitude towards PWA No significant difference in perceptions of condom use No significant differences on behavioural intention

Author	Description of programme and region	Sample	Details of evaluation	Factors investigated	Summary of results
14 Visser, et al, 2004	Developed by the National Departments of Education, Health and Welfare, and helping organisations.  Implemented by trained teachers  different provinces	24 high schools in 2 urban educational districts  Convenient sampling  of classes in 5 schools  N=873 at pretest; 794  at posttest  Age range-19  47% male, 53% females	Conducted over 2 years.  Process evaluation: interviews with teachers and principals; focus groups with learners.  Outcome evaluation: self administered questionnaire  Pre- and posttest design with one year duration.	Outcomes: Knowledge of HIV/AIDS and  Attitude towards HIV/AIDS and condom use  Sexual behaviour  Psychological wellbeing; Feelings of personal control  Process: impact of training on teachers ability to present HIV/AIDS education; teachers' experience of implementation; perceived outcomes	Statistically significant changes in knowledge of HIV/AIDS Amongst learners and teachers.  No significant changes in learners' attitudes toward condom use, psychological wellbeing and feelings of personal control.  Increased high risk behaviour  No implementation of the programme in the majority of the schools  In most schools, no time allocated to HIV/AIDS education

SAQ: Self-administered questionnaire

## **2.4 Limitations of the reviews**

These reviews have several limitations. The benefit of limiting the first review to RCTs of school-based targeted behaviour change interventions was that I reviewed relatively well written and well conducted studies that provided the most robust evidence. The limitation however is that in doing so, I excluded some rigorous RCTs of targeted behaviour change programmes aimed at adolescents but conducted in settings other than schools. By using the study design as the primary inclusion criteria, I also excluded studies that employed other designs such as quasi-experimental and non-randomized controlled studies, some of which may have provided additional evidence in the review. In the review of South African studies, I searched only for studies in English, thereby excluding studies in Afrikaans. The evidence of overall effectiveness of school-based studies aimed at abstinence or delay of intercourse or condom use would have been strengthened by conducting a meta-analysis. However, many of the studies included in the review did not provide sufficient details to conduct a meta-analysis.

## **2.5 Discussion and conclusion**

In this chapter I have presented two reviews of school-based interventions; one of RCTs aimed at promoting abstinence or delay of intercourse, and condom use; the other of evaluation studies conducted in South Africa. The review of RCTs was limited to studies assessing these two behaviours, while the review of South African studies included any evaluation studies of school-based HIV/AIDS, sexuality or reproductive health interventions that addressed behaviour and other attributes that are crucial to HIV prevention among adolescents.

Some general conclusions can be drawn regarding school-based interventions and evaluations from the two reviews presented above. Firstly, the number of evaluation studies located was surprisingly small, given the direct relationship between sexual behaviour and HIV infection or prevention amongst young people. Secondly, because the studies employed different evaluation questionnaires, this poses challenges in comparing the results. Thirdly, most of the studies provided scanty details regarding the intervention content and students' exposure to the intervention. Fourthly, the small number of and little detail on process evaluation makes it difficult to understand the contexts in which the interventions were implemented, the fidelity and quality of implementation, difficulties that were encountered and how these impacted on the intervention implementation. This is particularly important as process evaluation data could shed some light for example on why some interventions had negative or no effect.

Overall, the review of RCTs showed considerable evidence for the effectiveness of school-based HIV prevention programmes. Encouraging positive findings were reported on condom use, but negative, small or no effects on abstinence or delay of intercourse. This highlights the need to implement and evaluate rigorously interventions that promote the delay of sexual intercourse, particularly among younger non-sexually active adolescents. While there is general consensus regarding the need for evidence-based interventions, the use of RCTs in the evaluation of educational and social interventions is a contested issue that has been debated extensively (Cook, 2003; Macintyre and Petticrew, 2000; Nutbeam, 1998; Oakley et al, 1995; Oakley & Fullerton, 1996; Oakley, 1998; Stephenson and Imrie, 1998; Victoria et al, 2004). The debates centre on the ethical and practical factors associated with the experimental designs associated with clinical research to evaluate complex behaviour hence

oversimplifying causation and real-world situations; and the costs of undertaking large RCTs in complex institutional settings such as schools. The studies reviewed here demonstrated that while applying RCT designs to school-based interventions may be complex, it is not unfeasible and many of the challenges can be overcome. Other study designs, including non-randomised controlled trials are valuable in detecting associations between an intervention and an outcome, and probably pose fewer of the ethical and feasibility dilemmas. However, they cannot rule out the possibility that the association was caused by a third factor linked to both intervention and outcome. One would therefore attach greater importance to the results of studies employing RCT designs. This, as identified in the review is one of the shortcomings of the South African evaluations as only a few employed designs that enable one to be confident that changes that were manifest were caused by the intervention. However, some of the studies provide important data on the development and implementation of the interventions which demonstrate how processes both inside and outside the school can influence the implementation of school-based HIV and sex education interventions.

The scarcity of rigorous studies in South Africa may be due to the complexities associated with RCTs, scarcity of resources and evaluation capacity. However, while school remains an attractive setting for preventive health promotion interventions, the very capacity of children to access HIV interventions through the school is threatened by the AIDS epidemic, making it even more crucial to establish effective interventions as a matter of priority.

One of the emergent questions from this review is why some interventions had different gender effects. One of the challenges of implementing school-based

interventions is that besides the gender differences, the students may be at different levels in terms of cognitive development, maturity and sexual experience. A universal programme may have different effects for subgroups of students as evidenced in some of the reviewed studies.

The reviews also identified some weaknesses in the studies, including randomising too few units; analytic limitations such as not controlling for differences between the groups in the analyses, and the unit of randomization not matching the unit of analysis; short follow-up durations; little information on operationalisation of the theoretical frameworks, intervention content, and data analysis. The major limitation in the South African studies was that most of them employed non-experimental designs that made it difficult to link the outcomes directly to the intervention. Some of these limitations should be seen within the context that journal articles allow for only a limited amount of space. It is possible that some of the detail was available but not reported in the articles. However, published articles should provide sufficient detail and clarity so that readers can understand the conduct and findings of the studies.

In conclusion, the reviews point to the need to improve the quality and reporting of evaluation of school-based interventions. In most of the RCT studies, for example, the control groups were offered an intervention, but this is not discussed or described in detail. It is possible that this may have had an effect on the observed outcomes, if for example, the control group received an intervention similar to that offered the intervention group. Also, statistical analyses must be appropriate for the data, and the conclusions must match the statistical analyses conducted. Although RCTs are desirable compared to uncontrolled experimentation, poorly conducted RCTs can lead to erroneous conclusions. However, rather than dismiss RCTs as inappropriate, or

process evaluation and qualitative methods as having no place in evaluation, researchers should select the evaluation design(s) most appropriate for their particular research question, whilst maintaining the highest possible scientific standards. The measures for determining effect should also reflect the aim of the intervention. The challenge then is how to properly apply RCTs to behaviour change interventions that occur in complex multi level, multi-dimensional and very diverse contexts such as schools. In meeting this challenge, the science, ethics and feasibility issues inherent in RCTs should be applicable to social interventions just as they are in clinical trials (Oakley et al, 2003).

The current study attempted to build on the strengths of the evaluation studies reviewed, and to address some of the limitations. As discussed further in the following chapter, the study in particular addressed the evaluation design limitations identified in the South African studies, shortcomings in the analysis of RCT data, and the scarcity of contextual data. A cluster RCT design was employed which combined both process and outcome evaluations. The design and methodologies are discussed in Chapter 3.

## **Chapter 3: Methods**

### **3.1 Introduction**

In chapter one, I described briefly the RCT design and methodologies employed in this study. In Chapter 2, I explored this further by reviewing evaluation studies that have employed RCT designs to evaluate school-based HIV interventions; as well as studies conducted in South Africa. As mentioned in Chapter 2, the debates surrounding the suitability of RCT designs to social interventions cannot be exhausted in this thesis. There are no straightforward solutions as the debates are rooted in competition between paradigms. Suffice it to say that RCT designs are feasible and can be ethically and successfully employed in social interventions as they are in other research domains. In the current chapter, I draw on the review to present the design that was employed in the study, and the attempts that were made to overcome the limitations identified in the literature.

A cluster RCT design was employed and a variety of evaluation methodologies as were appropriate for the process and outcome evaluations. The core component of the study is the outcome evaluation assessing the abstinence or delay of intercourse; and condom use. To this end, a quantitative approach was employed, with the use of a self-administered questionnaire. For process evaluation, qualitative methodologies were employed, namely, educator lesson logs, interviews with educators, classroom observations and focus group discussions with learners. Combining both quantitative and qualitative approaches and diverse data collection strategies created greater potential of providing the most convincing evidence of effectiveness, and contextual data that were not available using outcome evaluation questionnaire only, as well as

those contextual factors that could not be easily quantified. Further discussion of the study design and methodologies follows in the sections below.

For ease of presentation, this chapter has three main headings, namely study design (3.2); methodology (3.3); and Data analysis (3.4). In section 3.2, I present the study design, sampling and consent procedures employed in the study. Section 3.2 is a discussion of the various methodologies employed for each of the evaluations, namely process and outcome. The final section, 3.4, describes the analyses conducted for each of the evaluations.

As is often the case with research projects, the processes in this project did not always flow in a neat linear manner as presented here. Practical considerations sometimes dictated that the evaluation plans be revised. However, the quality of the study was not compromised by the changes to the processes of developing and evaluating the intervention.

## **3.2 Study design**

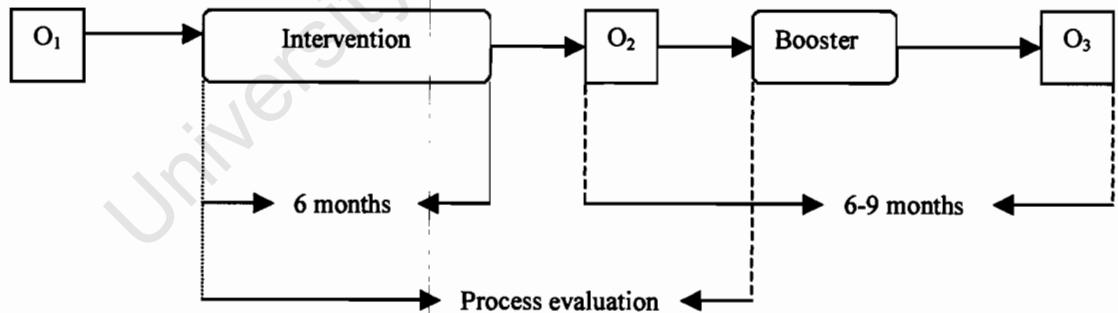
### **3.2.1 Rationale**

The study design was a cluster RCT with matched pairs of schools, and school as the unit of randomisation. One of the rationales for randomizing at the cluster level was that the desired sexual behaviour change would be greater in magnitude, permanence and generalization if achieved through group- rather than individual-processes (Cook, 2005). When larger groups such as schools are targeted, changes in norms and networks can emerge. With regard to feasibility, randomising individual students would have been unethical as all students were entitled to receiving HIV/AIDS education as part of their LO curriculum. To randomise individual students within a classroom would also have been practically impossible and unlikely to be accepted by

the schools. Potential for contamination of the treatment group would also have been higher.

Process evaluation was conducted during programme implementation and in the period between the 1<sup>st</sup> and 2<sup>nd</sup> follow-ups. Interviews were also conducted with LO teachers at the control schools after implementation of the SATZ intervention was completed. Outcome evaluation was conducted at the intervention and control schools at three points of measurement: immediately preceding the intervention (baseline), immediately after completion of the intervention (first follow-up), and 6-8 months after the intervention (second follow-up). The study design is illustrated diagrammatically below (Fig. 3.1), where O<sub>1</sub>, O<sub>2</sub>, and O<sub>3</sub> represent baseline, 1st, and 2<sup>nd</sup> follow-up surveys respectively. The evaluation was conducted over a 15-month period (February 2004 to May 2005).

**Figure 3.1** The evaluation design



### 3.2.2 Population

The target population was grade eight learners attending public high schools in the Cape Town Metropole.

### **3.2.3 Sampling procedures**

The sampling was conducted in a series of steps which are discussed in greater detail in the sections below.

#### **Step 1: Stratification by postal code**

In the first stage of the sampling procedure, all high schools in the Cape Town Metropole were stratified by postal (zip) code groupings. Each postal code grouping contains areas that are similar in terms of key demographic factors such as socio-economic level, race and language. Each stratum is thus relatively homogenous. This is partly because the postal code groupings were to a significant extent informed by the Group Areas Act<sup>5</sup>. According to this Apartheid era legislation, each residential area was designated for occupation by members of a single race group. The postal code groupings therefore included several areas that were designated for occupation by the same race group. Although this Act was repealed in 1991, it continues to influence the schools that learners attend, not so much by virtue of “racial” classification, but because of the economic situation and geographical area within which learners reside. Admittedly, there has been some, albeit slow, integration in the schools. The integration has occurred particularly (and probably only) in the previously coloured and white public schools, some of which are now predominantly black. Thus the extent of integration is minimal and evident only in a few suburbs. The use of racial categories in post-apartheid health-related research has been debated in detail in previous literature (Ellison & de Wet, 1998) and will not be repeated here. Suffice it to say that for the most part, the racial segregation created under apartheid

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<sup>5</sup>The apartheid government’s Population Registration Act of 1950 officially classified the South African population along racial lines as ‘Black’, ‘Coloured’, Indian’ and ‘White’. In the Group Areas Act, the geographical location in which one lived was determined along these racial categories. Accordingly, the racial group to which one belonged determined an individual’s access to everything, including the schools they attended.

prevails making these categories relevant today. Although this is changing more rapidly in some areas of Cape Town than others, the postal area groupings still remain relevant in developing sampling strategies to generate samples that are representative of all of Cape Town in terms of variables such as socio-economic level and language. This stratification approach ensured a wide range of strata from which to sample schools that were representative not only of the population of interest, but also that the level of risk in the sexual behaviours of interest would be equivalent between the intervention and control groups.

### **Step 2: selection of sampling frame**

In the second stage of the sampling procedure, schools were selected so that the proportion of the selected schools in a selected stratum was directly proportional to the number of students in that stratum as shown in Table 3.1 below. Within each stratum, the selection probability of a school was proportional to the number of students in that school. Larger schools therefore had a higher probability of being selected.

**Table 3.1 Sampling frame**

Postal code grouping	Total students		No. of schools in the postal code grouping	No. of schools selected	Racial breakdown of selected schools		
	N	%			C	W	B
15	32,091	17.7	38	7	5	1	1
16	34,205	18.9	38	7	6	1	0
18	6,086	3.4	9	1	0	1	0
19	7,275	4.0	5	2	0	0	2
20	8,809	4.9	7	2	0	0	2
22	23,917	13.2	30	5	5	0	0
23	17,359	9.6	9	4	0	0	4
24	20,640	11.4	36	4	4	0	0
25	6,726	3.7	9	2	1	1	0
26	3,516	1.9	6	0	0	0	0
27	15,304	8.5	18	3	2	1	0
28	5,090	2.8	9	2	2	0	0
<b>Total</b>	<b>181,018</b>	<b>100.0</b>	<b>214</b>	<b>39</b>	<b>25</b>	<b>5</b>	<b>9</b>

Abbreviations: C= coloured; W= White; B= Black

Thirty-nine schools were selected using this procedure. These selection procedures were employed in previous studies conducted by researchers at the Department of Psychiatry and Mental Health, University of Cape Town. The 39 schools had participated in a 1997 survey addressing prevalence rates and correlates of sexual and other risk behaviour among learners in Grades 8 and 11 (N = 2,930) (Flisher et al, 2003). This cohort study was followed up in 1999 and 2001. The same sample was also used in a 1999 study in which correlates of condom usage among Grade 11 students were documented (N = 2,000) (Vergnani, 2002, 2003). Thus, selection of schools for this study from these 39 schools had the following advantages: (a) on the

basis of previous work, there was confidence that the sample was representative of all high-schools in Cape Town in terms of socio-economic level, race and language; (b) Through previous work in these schools, the researchers had established good collaboration relationships with the principals and other key personnel, making access to some of the schools a little easier; (c) there was confidence that based on previous work, large projects such as this one could be successfully implemented at these particular schools; and (d) in the previous epidemiological projects, it was mentioned to the schools that intervention studies would follow in future. The current study contributed to fulfilling this ethical obligation.

### Step 3: Sample size calculation and selection of schools

Using data from a cohort study conducted with school-going adolescents in Cape Town (Flisher et al, 2003), the Hayes & Bennett formula (Hayes and Bennett, 1999) for pair-matched samples was used to calculate the necessary sample sizes appropriate for each of the 2 outcomes of interest (Lombard et al, 2002). Using this formula, the required number of schools for a matched pair design is given by:

$$c = 2 + (z_{\alpha/2} + z_{\beta})^2 \left[ \frac{\pi_0(1 - \pi_0)}{n} + \frac{\pi_1(1 - \pi_1)}{n} + k_m^2(\pi_0^2 + \pi_1^2) \right] / (\pi_0 - \pi_1)^2$$

where  $z_{\alpha/2}$ ,  $z_{\beta}$  are the standard normal distribution values;  $\pi_0$ ,  $\pi_1$  are the “annual” incidence in the control and intervention schools;  $n$  is the number of students per school; and  $k_m$  is the coefficient of variation within the matched pairs.

The sample size calculation took into account the power of the study (0.80), loss to follow-up (20%), non-consenting (20%), effects of intervention (5.5 percentage points) and significance level ( $p < 0.05$ ). The number of schools required was calculated for each outcome as follows:<sup>6</sup>

### **Outcome 1: Delay of onset of sexual activity**

Based on the cohort study by Flisher et al (2003), it was assumed that the background annual incidence of initiating sexual activity is 15%. Using the Hayes and Bennett (1999) formula,

- to detect a 50% reduction in the annual incidence (to 7.5% annual incidence) 6 pairs of schools were required, with 100 students who have never had sex per school.
- to detect a 33% reduction in the annual incidence (to 10% annual incidence) 10 pairs of schools were required, with 100 students who have never had sex at each school.

### **Outcome 2: Condom use**

Assuming a background prevalence of 38% of condom use at last sex among sexually active Grade 8 students (this is a weighted estimate across gender, using the data from the same cohort study by Flisher et al, 2003), the following calculation was made

- To detect an increase in the prevalence of condom use at last sex from 38% to 50%, 26 schools (13 pairs) were required, with 30 sexually active students per school.

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<sup>6</sup> I should like to thank Carl Lombard for the sample size calculations

- Based on previous sample size calculations (Lombard et al, 2002), it was also estimated that 200 students would be needed in each of the intervention and control schools.

Although 13 schools were required in each arm (control and intervention), 15 were selected from the 39 thus increasing the sample size to take care of possible attrition and maintain statistical power at the cluster-level in the event that clusters were lost. A random numbers table was used for this procedure. The selected 15 schools were located in various areas of Cape Town, some in high-density- high-poverty townships, and others in relatively affluent suburbs. The schools selected from each postal code grouping were as shown in Table 3.2 below.

**Table 3.2 Number of schools selected**

Postal Code grouping (total no. schools in postal code)	No. schools selected for sampling frame	No. schools selected for SATZ project
15(38)	7	3
16 (38)	7	3
18(9)	1	0
19(5)	2	0
20(7)	2	1
22(30)	5	2
23(9)	4	2
24(36)	4	3
25(9)	2	0
26(6)	0	0
27(18)	3	1
28(9)	2	0
<b>Total (214)</b>	<b>39</b>	<b>15</b>

#### **Step 4: Matching schools in pairs**

I phoned the 15 schools to inform them of their random selection to participate in the project. The principal at each of these schools was then asked to identify a similar school based on characteristics such as student population size, learner demographics, language of instruction, geographical area in which the school was located and socio-economic background of the learners. Where the principals had difficulty determining the latter, the amount of school fees was used as a proxy for the socio-economic background. One of the design problems associated with school-based trials is the control of contamination of intervention conditions which could mitigate the intervention effects (Peterson et al, 2000). To reduce this possibility of contamination, the principals were also requested to suggest schools that were not located too close to their own. Fifteen pairs of schools were matched using this procedure.

I sent an introductory letter to each of the 30 schools, requesting them to participate in the study. The letter explained the objectives of the project, the selection process, and that the school would be randomly selected to be either in the intervention group or the delayed intervention control group. Attached to this was the letter of permission to conduct the study received from the WCED. Meetings were held at each school with the principal or the LO teacher(s) or both. At this meeting the contents of the letter were further explained, and principals were informed that there would be no financial incentives for participating in the project. The principals had to give consent to participate before randomisation. The researcher had no fore knowledge of the group to which any school would be assigned.

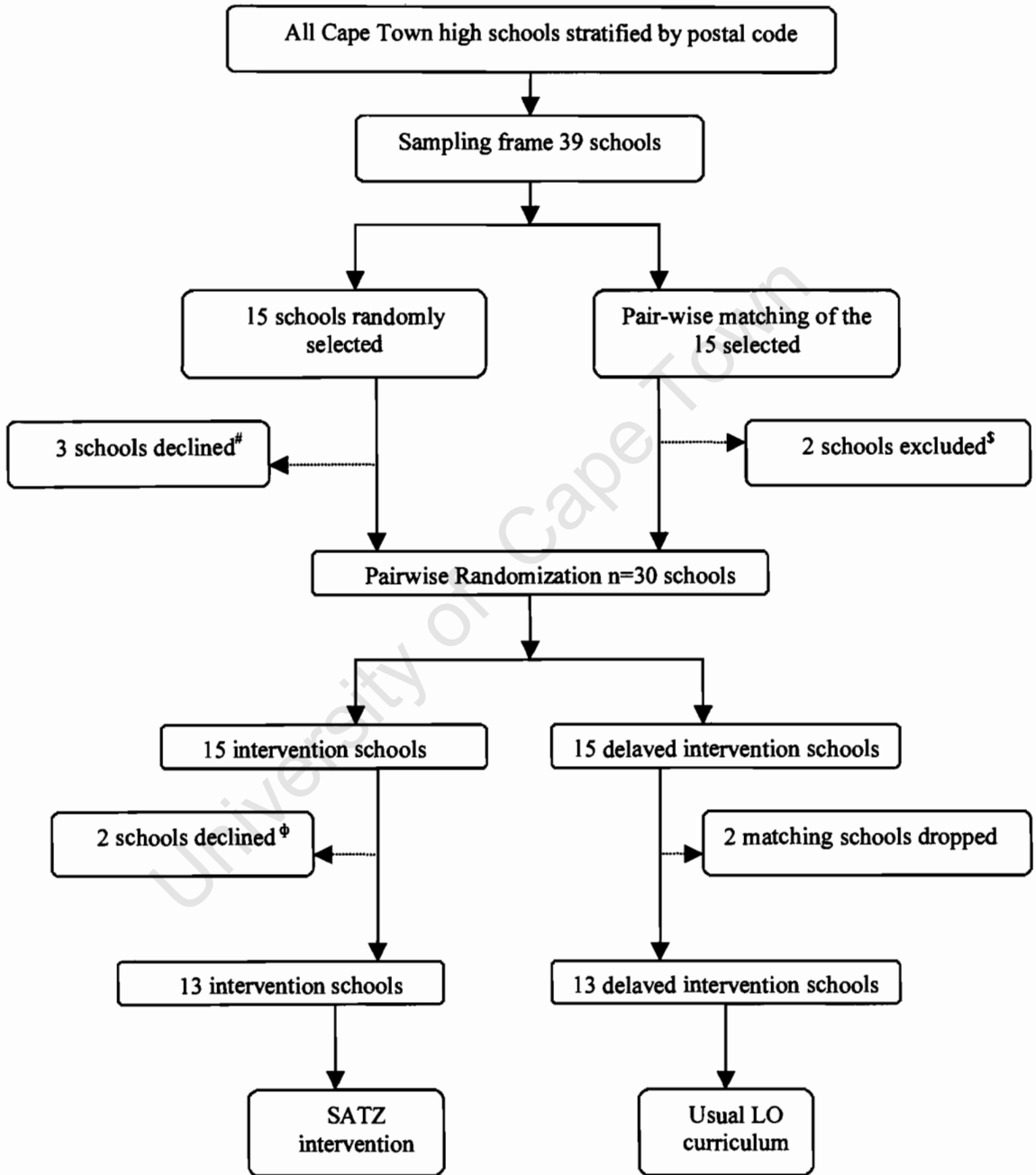
Of the original 30, 2 schools were replaced, as there was another lifeskills project due to begin with grade 8s. I informed the principals telephonically of the decision to

exclude their schools from the project. A further three schools were not interested in participating in the study. These schools were replaced with similar schools. The random selection and matching procedures described earlier were employed.

#### **Step 5: Randomisation to the intervention or control group**

Within each pair, one school was randomly selected to become an intervention school. The random selection was done by putting the school names in a box, one pair at a time, and drawing one to be the intervention school. The risk of losing clusters was minimal as allocation was conducted pair wise. This method of random assignment of schools rather than individual learners or classrooms, and the stratification conducted before randomisation also minimised differences between intervention and control groups at baseline to produce groups that were comparable and reduce the threat to internal validity. Using this procedure, the unknown characteristics and measures are likely to be equally distributed. To minimize the possibility of selection bias, this procedure was conducted by someone in the SATZ Project team who was not directly involved in the evaluation and in the sample selection. The multi-stage sampling strategy employed in the study is summarised in the Figure below.

Figure 3.2 Multi-stage sampling strategy



<sup>#</sup> The schools said they had too much work to participate in the research and were replaced with similar schools randomly selected from the same strata. <sup>\$</sup>A lifeskills (including HIV/AIDS) intervention and

research project was taking place with grade 8 learners at the schools. <sup>ϕ</sup>At one school, teachers were not available to attend the training workshops, while the other school was not interested. The two matching schools were excluded.

### **3.2.4 Ethical procedures**

The study was approved by the Western Cape Education Department, and the Ethics Committee Faculty of Health Sciences, University of Cape Town. Ethical clearance for the broader SATZ project was also provided by the relevant ethical committee for medical and health research in Norway (since the SATZ Project was coordinated by the University of Bergen, Norway).

### **3.2.5 Access to schools**

In addition to the intervention, the study design, method of intervention, validity and reliability of measures used to judge effectiveness, evidence of success is inextricably linked to issues of access to the intervention setting and to the programme participants. Schools in Cape Town are inundated with requests to participate in interventions and research. Educators feel already overburdened by their daily work without the added effort involved in facilitating research studies. Access to the schools therefore had to be carefully negotiated with the principals and educators. I sent a letter to the 30 schools informing them of their selection to either the intervention or delayed intervention group. In the letter the intervention schools were informed that they would need to send at least two grade 8 LO teachers to a four day training taking place on two consecutive weekends. They were also informed that they would implement the SATZ curriculum in place of their planned LO lessons on sexuality and HIV/AIDS. The control schools were informed that they would participate in the research but continue implementing their usual life orientation curriculum or whatever other life skills and HIV/AIDS prevention activities they had

planned for the year. Having an intervention in the control schools reduced the likelihood that the SATZ intervention effects could be attributed to group interaction.

Two schools having been randomised into the intervention group refused to participate. One of the schools cited educator unavailability for the training workshops, while the other was not interested. The two control schools matched to the declining intervention schools were dropped from the sample. The final sample of SATZ participating schools was 26, 13 in the intervention and 13 in the delayed intervention group, thus meeting the number of schools required in the sample size calculation. Meetings were held at each of the schools with the LO teacher designated by the principal as the contact person at the school. The meetings involved planning the data collection, procedures for getting consent letters to parents and getting buy-in and support for the study from the other teachers at the school in a manner that furthered the needs of the research but was also sensitive to the needs and specific circumstances of each school and the teaching burden that teachers already bore.

### **3.2.6 Parental/Guardian consent**

I sent an information letter seeking passive consent to guardians/parents of all grade eight learners participating in any of the research phases of this study, namely the pilot phase, test retest studies, process evaluation group discussions and the baseline, 1st and 2nd follow-up surveys. The letter outlined the aims of the project, ethical considerations as well as what would be expected of the learners. Parents were informed that they could turn down their children's participation and could withdraw them at any point of the research. Attached to the letter was a form that declining parents had to return either to me or to the school. If this form was not returned, it was assumed that the parents had understood the contents of the letter and consented to their child/children's participation. Parents could only decline their children's

participation in the research but not the intervention as LO is a compulsory subject. Some parents did not send back the form but sent oral declinations through the LO educators or their children. One hundred and sixty-four parent refusal forms were received from 11 schools before the baseline survey, with more refusals in some schools than others. Some parents had erroneously returned the forms as consent for their children to participate in which case they were contacted for clarity on the matter. The decision to use passive rather than active consent was informed by findings from a study in Cape Town which challenged assumptions of active consent and its potential for introducing volunteer bias (Mathews et al, 2005).

At the 11 schools where declination forms were received prior to baseline data collection, I phoned all the parents that provided a contact number. At one school, 17 of the 19 parents that had objected to their children's participation changed their minds and allowed them to do so. Further explanation had helped clarify the objectives of the research. The most common reasons for refusal included "my child is too young to be exposed to the topic of sex"; "my child is struggling to settle into high school and this would be another issue to deal with"; "In my religion it's not right to talk about sex". Several parents did not want to give any reason for refusal and were not pressed to do so. In total parents of 126 students declined participation, and 17 learners at 5 schools refused to participate in the baseline.

### **3.2.7 Access to learners**

There was no exclusion criteria employed at the individual level. All grade eight learners that were on the school register and present at the school on the day of the survey were eligible to participate in the study. Prior to completing the questionnaire at baseline, each learner was provided with an assent form which described the SATZ project, explained the objectives of the research, assured anonymity and

confidentiality, gave a brief of what would be done with the information and emphasised that there would be no penalty for refusing to participate. On the day of each survey, the fieldworkers also read these forms aloud. Each learner signed the assent form agreeing to participate in the research at all points of data collection. The learners were also informed that they could withdraw from the study at any point even if their parents had consented, and could omit questions they did not wish to answer. At most schools all the learners agreed to participate. Prior to each survey, the fieldworkers checked with the educators and learners that there were no additional parent objection forms other than those that I had received. Learners that were willing to participate but whose parents had declined were excluded from the research unless their parents informed me otherwise. These consent and access procedures were applied to all schools and learners participating in the various phases of the research.

In the section above, I have discussed the research design and consent procedures employed in the study. Section 3.3 below is a discussion of the evaluation methods employed in the study for each evaluation type.

### **3.3 Methodology**

#### **3.3.1 Process evaluation**

The aims of the process evaluation were:

- To assess whether the intervention was implemented as planned
- To assess the quality of the implementation
- To explore the context and understand the within-school and external impeding and enabling factors which might impact on both the implementation and effectiveness of the intervention

- To assess acceptability and subjective evaluations of the intervention amongst the students and teachers; and
- To provide contextual information that could assist in the interpretation of the behavioural outcomes.

Besides being an evaluation in its own right, process evaluation provided vital contextual data to better understand and interpret the behavioural outcomes. The process evaluation was conducted at intervention schools during and after implementation using the following four methods: (i) educator lesson log; (ii) classroom observations; (iii) interviews with educators; (iv) focus group discussions with learners. Interviews were also conducted with LO educators at the control schools to establish what interventions had occurred during the SATZ intervention implementation period. Depicting the implementation required detailed descriptions in order to understand the extent to which the intervention was implemented, and the dynamics of how the intervention, the schools and the relationships therein operated (Patton, 1990). Qualitative methodologies were therefore the most appropriate for the process evaluation as they allowed for in-depth exploration of the implementation process. Each of the process evaluation methods is discussed in greater detail below.

### **3.3.1.1 Educator lesson log**

This was a diary-like process evaluation document that each educator completed at the end of each lesson (Appendix A). It was a means for assessing the integrity and quality of implementation by getting the educators to document the implementation process. This method is rooted in a strategy of concientization that engaged the teachers in participatory processes of reflection, action and reflection, thereby identifying shortcomings in their delivery and seeking strategies for improvement.

The log allowed educators to do this on a regular basis hence also giving them an active role in the evaluation and in shaping their delivery of subsequent lessons.

In discussions with the educators, it was agreed that the log should be completed in two parts. Part one consisted questions relating to lessons 1-8, with 6 questions each for lessons 2, 4-8; and 9 and 7 questions each for lessons 1 and 3. It contained questions on activities implemented, whether or not the activities were implemented as planned, enabling factors, and reasons for not implementing certain lessons or activities, the educators' assessment of the curriculum, the implementation process, learners' response as well as suggestions for improvement. There was also a section on educators' overall rating of the intervention, barriers and enabling factors. At the training, the educators expressed support for the log and committed to completing it at the end of each lesson. Each educator received part I of the log at the start of implementation.

Part II of the log was given to the educators after they had completed the first part. In response to educators' feedback that Part I of the log was too long, in Part II I did not ask detailed questions about each activity. Rather than have them not complete the log sufficiently, I shortened it and asked questions about the lessons and not for each activity. Educators were however not restricted to these questions but were encouraged to provide general comments, suggestions and any other information they considered useful. Getting teachers to complete the log had to be carefully negotiated as it implied extra work. They were encouraged to use it as a form of self-assessment about the manner in which they were delivering the intervention.

One advantage of using this method was that educators could record their thoughts, experiences and suggestions about each lesson immediately after delivering it, or at

least a few days later while it was still fresh in memory. The lesson log also made it possible to obtain specific process evaluation indicators about each lesson, such as the time spent on the lesson and the particular activities implemented. These repetitive questions about each lesson would be rather monotonous to ask in a face-to-face interview. Of the 30 lesson logs issued, I received back 18 completed logs from 12 schools.

### **3.3.1.2 Classroom observations**

The purpose of classroom observations was to obtain a first hand experience of how each teacher was implementing the intervention, as well as a general view of the classroom contexts, interactions and dynamics at the different schools. I negotiated classroom observation with the educators during the first refresher training. Only one teacher immediately objected to being observed in the classroom. My assumption was that the educator's discomfort stemmed from the fact that she had only attended the refresher training and not all the previous trainings and was probably uncomfortable with implementing the curriculum. However, following further discussion with the educator, she agreed to the observation.

It would be practically impossible to observe each educator during the entire intervention, as this would not only require more researchers, but would also interfere with the normal classroom dynamics. Each implementing educator was therefore observed during one lesson. The lesson observed was dependent upon the time-tabling of LO periods at each school and the availability of the observing researchers. Although not an entirely accurate representation how each teacher implemented the whole intervention, observing one lesson provided insights into the classroom context which could not be obtained from the other process evaluation methodologies

employed in the study. The observations were conducted by myself and two other researchers on the SATZ team.

This method involved observing without interruption everything that was taking place in the classroom and recording this on a standard observation form for each lesson observed (Appendix B). However, the observers were not restricted to this information because the implementation of each lesson would vary depending on a number of factors, such as the educator's knowledge of the subject matter, the relationship between the educator and learners, the classroom context and the learners' response to the content. Observation is also a very subjective process and the observers' interpretations may not fit neatly into pre-defined categories of events. The observers also recorded everything else they considered relevant to the process evaluation.

We observed 26 teachers at the 13 schools during one lesson each. As all the teachers were aware in advance that they would be observed during a particular lesson, the possibility that some planned the lessons to impress the observers could not be ruled out.

### **3.3.1.3 Interviews with educators**

I interviewed all educators that implemented the SATZ curriculum and were still at the schools at the end of the 6-month implementation period. The interviews were aimed at understanding the educators' impressions of the intervention, their views on the implementation, as well as their perceived impact of the intervention on the learners and the school environment. I used an interview guide to keep the conversation focused on the intervention (Appendix C). However, the questions also arose from the information the educators provided in the course of the interview. I

also used the interviews to further explore some of the information provided in the logs, which I had received before the interviews. The interviews were conducted at the end of the intervention, when the educators could provide feedback from the entire implementation period and therefore had a better impression of the programme as a whole. The teachers were informed that their names would not be mentioned in the research report.

At each school the teachers were interviewed either together (maximum 3 teachers at a time) or individually. This was dependent on the teachers' availability and time they could allocate to the interview. Eleven teachers were interviewed individually, while 14 teachers were interviewed either in pairs or triplets. Fifteen female and 10 male teachers at 12 schools participated in the 40-60 minute interviews. Teachers at one school could not avail themselves for the interview due to other commitments.

#### **3.3.1.4 Group discussions with learners**

A group discussion was conducted with learners at each intervention school to investigate their impressions and experiences of the intervention, the content, materials employed, and the implementation process. Focus groups are typically involve bringing together a small group of people to participate in a carefully planned discussion on a defined topic, with the aim of making use of group interaction to produce data and insights (Morgan, 1988). Focus group discussions are a useful and widely used method for simultaneously obtaining various viewpoints and therefore group rather than individual data.

It is often suggested in the literature that participants of a focus group should generally be selected so that they are homogeneous through sharing certain characteristics that are of interest to the researcher (Morgan, 1988). In this instance,

participants were all grade eight learners who had been exposed to the SATZ intervention. Each group consisted of learners from the same school. By virtue of this, the participants also often shared other characteristics such as socio-economic status and language.

At each school, two to four learners were selected from each class depending on the number of grade eight classes. Convenience sampling was employed. Each group comprised 7-12 learners. Twelve mixed-sex focus groups were conducted, one at each school. At the remaining school, numerous attempts were made to hold a discussion, but the teachers were unable to organize a time or group of students due to other commitments and institutional factors such as examinations.

As the discussions were aimed at gathering process evaluation data, there was no need to have separate groups for girls and boys. Rather, emphasis was on encouraging group interaction and in-depth inclusive discussions about all aspects of the programme and its implementation. Data from the focus group discussions complemented other process evaluation data collected through interviews and classroom observations. It also provided students' opinions, which could be examined against the educators' opinions of the programme and the implementation.

The discussions were facilitated by myself and/or moderators experienced in conducting group discussions with adolescents. The moderator role is important because if discussions are not well facilitated a few participants can dominate the discussions, losing the value of group interaction. On the other hand, some participants may be hesitant to raise differing views in order to maintain group consensus. The facilitators' role was therefore to guide the discussion, ensuring that everybody participated and the participants did not stray off topic, but there was also

sufficient flexibility so as not to inhibit some useful discussions. A similar discussion guide (Appendix D) was used by all the facilitators. The questions on the discussion guide were merely to steer the discussion and keep it on topic. For the most part, questions flowed from the interaction amongst the learners. The facilitators began each group with explaining the purpose of the discussion. Together with the learners, some ground rules were established to guide the discussion. The moderators then introduced the various issues of discussion by asking the questions in the discussion guide, moving from the general to more specific issues. The structure of discussions was fairly similar in all groups, with some differences based upon characteristics of the participants and the facilitator. Discussions were held either in Afrikaans, English, Xhosa or a combination of these languages whichever the learners were comfortable with. Learners were encouraged not to be inhibited by language. The discussions lasted an hour to an hour and a half each and were held at the schools.

### **3.3.1.5 Interviews at control schools**

At each of the control schools, two senior medical students who had background knowledge of the SATZ intervention conducted interviews with either the grade 8 LO educator, or the head of LO, or both.<sup>7</sup> The objective was to document what had taken place at the control schools during the 6-month period when the SATZ programme was implemented. It was particularly important to establish whether and what teachers at these schools knew of the SATZ intervention. Twenty three teachers (17 female and 6 male) participated in the interviews, which were conducted at the schools. I developed an interview guide which the interviewers used to guide the interviews

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<sup>7</sup> I would like to thank Rianne Falkena and Inge van de Oever from Vrije Universiteit for conducting the interviews

(Appendix E). The interviews lasted approximately one hour and were conducted in English.

A summary of the process evaluation data collection is presented in Table 3.3 below.

**Table 3.3 Process evaluation data sources**

<b>Method</b>	<b>No. completed</b>
Educator interviews	
▪ intervention schools	17
▪ delayed intervention schools	13
Educator logs	18
Observation forms	26
Student FGDs	12

### **3.3.2 Outcome evaluation**

The aim of outcome evaluation was to assess the effect of the intervention on the two behaviours of interest, delay or postponement of sexual intercourse; and condom use. Outcome evaluation relied on self-reported data collected by use of a self administered questionnaire. This was a practical method of collecting data from the large sample of adolescents involved in this study. In Chapter 2, I discussed the potential reliability and validity limitations of using self-administered questionnaires. I also provided evidence from various studies indicating that adolescents do provide reliable data using self-administered questionnaires (Flisher et al, 2004; Hearn et al, 2003; Klepp et al, 1994; Lintonen et al, 2004; Sheeran & Abraham, 1994). Several measures were taken in order to increase the validity and reliability of the responses. These included testing and retesting the instrument, as well as using a data collection methodology that increased students self-assurance that their responses would be

treated as confidential and accessible only to the researchers without any identifying link to each individual learner. The students were informed that their responses would be useful in developing interventions to prevent HIV infection amongst young people in South Africa, and that honesty was important as they would be making contribution to this important endeavour.

### **3.3.2.1 Developing the questionnaire**

The questionnaire employed in this study was developed in a series of steps. These involved a review of existing questionnaires; data from the situation analysis; input from expert groups and students; consideration for the theoretical model employed, the objectives of the intervention and practical issues such as time available for questionnaire administration, language and age appropriateness of the questions. To enhance reliability and validity, two test-retest reliability studies were also conducted. These questionnaire development steps are described in greater detail below.

#### **Step 1: Review of existing instruments**

A catalogue of 7 relevant self- or interviewer-administered questionnaires in English used in previous studies with young people particularly in African settings was compiled. From this catalogue, items that were relevant to the conceptual framework of the study and the intervention objectives were selected. This resulted in a questionnaire containing 208 items covering a broad range of variables including attitude towards delay of sexual intercourse and condom use, knowledge about HIV/AIDS, relationship with parents, behavioural intentions, beliefs about HIV/AIDS, health seeking behaviour, social influence, exposure to HIV information, self efficacy, subjective norms, behaviour and exposure to HIV/AIDS information. Emphasis at this stage was on including all items and scales relevant to the broad

objectives of the study. The reliability and validity of some of the scales were known as they had been tested either with school-going adolescents in Cape Town (Vergnani, 2003), or with youth samples elsewhere in South Africa (Kelly, 2000).

**Step 2: matching items to theory and study objectives.**

The questionnaire was examined against the six determinants of behaviour described in the theoretical model in Chapter I. These included attitude, self efficacy, social influence, intention, skills and barriers. It was also examined against the learning and performance objectives identified during the intervention mapping process. Scales that were not part of these determinants or did not measure any of the intervention objectives were excluded. This resulted in scales for knowledge, attitudes, skills, subjective norms, perception of risk, sexual behaviour, exposure to HIV/AIDS information and communication with parents and significant others. In addition, scales for demographic characteristics and exposure to gender and sexual violence were included.

**Step 3: Reviewing the instrument with stakeholders: face and content validity**

To establish face and content validity, the questionnaire was discussed with a group of 7 researchers within the SATZ project, and the project's advisory board which included students and teachers. The questions and response options were examined against the backdrop of the learning and performance objectives identified in the intervention development, as well as the theoretical framework, vocabulary, language and age appropriateness. For each determinant of behaviour, items that fulfilled these criteria were retained. All other items were discarded.

During this process, it soon emerged that whilst most psychosocial models have been used in the investigation of condom use amongst young people, there is less research on the influence of these determinants on postponement of sexual intercourse. A critical question here is whether, for example, the intention not to use condoms may be related to the adoption of other safer sexual behaviours such as abstinence. Thus, where questions were not available for a particular learning objective, these were developed based on the specific learning and behavioural objective and using available literature and data from the situation analysis. The questions were then discussed with the relevant stakeholders mentioned above. Suggestions were made for changes to terminology and wording of some items. It was also decided through this group process that separate versions of the questionnaire should be administered for males and females, as items that were gender specific (for example Q177-184) were cumbersome and some required skip instructions.

#### **Step 4: translation and back- translation**

The resulting questionnaire with 188 items was translated into Afrikaans and Xhosa then back translated into English. Although Cape Town is culturally diverse, English, Xhosa and Afrikaans are the main languages used singularly or together as the medium of instruction in schools. Two contractors that were not part of the project and were not involved in developing the questionnaire did the translations. Two other people that were not involved in the project or in the Xhosa and Afrikaans translations did the back translations into English. I checked the back-translations to ensure that the Xhosa and Afrikaans versions were accurate. Where the back translation differed from the English version, a second translation was sought and the back translation procedure repeated. The ordering of items was consistent in the three languages.

### **Step 5: Piloting the instrument**

The questionnaire was piloted in paper-pencil version in Afrikaans, English or Xhosa amongst grade 8 learners at three schools in Cape Town. One school was conveniently selected for each language. The pilot schools were not part of the sample of 26 randomly selected schools that would participate in the evaluation, but were similar in many respects. Fifty-five learners took part in the pilot. Teachers at the schools were requested to bring together a group of 20 learners at each school for this exercise. Teachers were not given any criteria for selecting the learners but were requested not to include only the learners considered to be more intelligent but to pick them randomly, ensuring representation of both genders.

The purpose of the pilot was to further establish face validity by testing the questionnaire for comprehension, readability, the learners' understanding of instructions, vocabulary and age appropriateness. The learners completed the questionnaire individually in the classroom as they would in the final survey. No teachers were present during this process. The learners were requested to take note of any questions that they would wish to discuss later on. They were also allowed to ask questions and seek clarity for any items on the questionnaire that they did not understand. Fieldworkers took note of these questions.

After completing the questionnaire, the learners participated in a group discussion. The purpose of the discussions was to obtain feedback on the questions. Experienced researchers facilitated each group. Although I had prepared a discussion guide, the aim was to discuss the questions and issues that the learners raised regarding the questionnaire, particularly items that they had difficulty understanding. The confidentiality and consent procedures described earlier applied to the discussions.

Explaining to the learners that this activity would be used to improve the questionnaire and that their opinions mattered perhaps contributed to the enthusiasm with which they engaged in the discussions. They were also allowed to speak in the language that they felt most comfortable with. Refreshments were provided during the discussions. The facilitators took notes from the discussions.

Separate groups were held for boys and girls. This was done in order to enhance the degree of openness in the group, as some of the questions relating to sexual behaviour were considered sensitive. Furthermore, as the questionnaires were gender specific, it was likely, and was evident from the discussions that girls and boys may react and respond differently to the questions. As the purpose of the discussions was not to discuss any personal issues, there was no need to separate learners that were sexually active from those that were not. In retrospect, this might have been useful as it later emerged in the discussions that learners who had not had sex could not relate to some of the self efficacy items on the questionnaire as the concepts were too abstract. These questions were revised based upon the feedback from the students.

Learners provided feedback on the instructions, words used in the instrument, questions that they found difficult to understand or to answer, questions that they thought required rephrasing, and those that they found too sensitive to answer. One common comment from learners who completed the Afrikaans and Xhosa questionnaires was that some of the language was “too old” for them. These were, for example, words for ‘girl/boyfriend’, ‘sex’ and ‘sexual intercourse’ that they said were used by older people. This feedback was important as the use of Afrikaans and Xhosa in daily conversation varies depending on the area of Cape Town in which one lives. Young people also have their own ‘sexual lingo’ that does not fit snugly into the

conventional language. The learners provided alternative words that would be understood by people of their age. The feedback was incorporated into the revised questionnaire and the new or revised items were translated into Xhosa and Afrikaans and back translated into English. The final questionnaire design was done using the Questionnaire Development Software™ (QDS version 2.1; Nova research Company).

#### **Step 6: First Test-retest reliability study**

A test-retest reliability study was conducted with grade 8 learners at four conveniently selected schools (N=200). The schools were selected to represent English, Afrikaans and Xhosa. The 4 schools were not part of the sample of 26 SATZ project schools. At the English medium school, 83 of the learners were given a paper questionnaire and 98 completed the questionnaire on a Personal Digital Assistant (PDA), also referred to as palm™ pilot. The questionnaire was loaded onto the palms using the Personal Data Collection Toolset (PDACT), a palm pilot interviewing system. See Zwarenstein et al (in press) for a description and evaluation of PDACT. Learners at the other three schools, two with predominantly Xhosa speaking learners and one with Afrikaans speaking learners, completed a paper and pen questionnaire.

The aims of the test-retest study were; Firstly, to assess the test-retest reliability of the questionnaire; Secondly, to compare palm pilot and paper questionnaires on test-retest reliability; thirdly to assess the feasibility and acceptability of using palm pilots with a large sample of adolescents. The test-retest duration was 23 days. The same group of learners completed the same questionnaire on both occasions.

### 3.3.2.2 Test-retest reliability: comparison of PDA vs. paper questionnaires

Spearman's correlation coefficient was used as the measure for test-retest reliability. In the comparison of PDA versus paper and pen questionnaires, the palm pilot questionnaire performed just as well as the paper questionnaire on the test-retest reliability measure as shown in Table 3.4 below.

**Table 3.4 Test-retest reliability of psychosocial variables for palm and paper questionnaires**

N=300<sup>#</sup>

Scale	Spearman test-retest correlation coefficient	
	Paper questionnaire n=211	Palm pilot questionnaire n=83
Knowledge of HIV/AIDS	0.59	0.48
Attitudes towards sexual behaviour	0.64	0.64
Attitudes towards condom use	0.62	0.73
Attitudes towards carrying condoms	0.59	0.48
Perceived risk of pregnancy, STI & HIV infection	0.72	0.58
Behavioural norms regarding abstinence	0.58	0.56
Sexual behavioural norms	0.61	0.58
Social norms about condoms with reference to friends and parents	0.59	0.42
Self efficacy to abstain from sex	0.64	0.63
Self efficacy regarding safe sex when under the influence of alcohol or marijuana	0.63	0.75
Self efficacy to use a condom	0.50	0.63
Self efficacy to use condoms when under the influence of alcohol or marijuana	0.50	0.65

<sup>#</sup> n varies due to dropout or question-specific non-response

As shown in Table 3.5 below the palm pilot questionnaire resulted higher in inter-item correlation compared to the paper questionnaire for 10 of the 13 scales. On self reported sexual behaviour (Table 3.6), there was substantial test-retest agreement on the item asking whether a student had ever had vaginal sex, with a *kappa* statistic of 0.72 and 0.67 for paper and palm questionnaires respectively. There was moderate test-retest agreement on intention to have sex within the next 6 months with *kappa* = .38 for the paper questionnaire, and  $\kappa=.29$  for the palm questionnaire.

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**Table 3.5 Comparison of electronic and Paper questionnaire inter-item correlation**

N=300

Scale	Number of items	Sample item	Response format	Cronbach's alpha	
				Paper Questionnaire n=211	Palm pilot questionnaire n=83
Knowledge of HIV/AIDS	13	Is there a cure for HIV/AIDS?	2 point scale (1= correct; 0= incorrect)	0.63	0.54
Attitudes towards sexual behaviour	6	If I had a boyfriend and he refused to have sex with me I will think that he does not love me	5-point scale (strongly agree-strongly disagree)	0.59	0.66
Attitudes towards condom use	8	If my partner used a condom during sex, I would feel less pleasure	5-point scale (strongly agree-strongly disagree)	0.60	0.68
Attitudes towards carrying condoms	7	It is okay for girls my age to carry condoms if they plan to have sex	5-point scale (strongly agree-strongly disagree)	0.77	0.70
Perceived risk of pregnancy, STI & HIV infection	9	To what extent do you think HIV is a threat against your personal health?	5-point scale	0.74	0.84
Sexual behavioural norms	2	In your school, about how many learners do you think have had sex?	6 point scale (none-almost all of them)	0.72	0.75

Social norms about condoms with reference to friends and parents	8	Most of my friends think that I should use a condom when having sex	5 point scale(strongly agree-strongly disagree)	0.75	0.8
Self efficacy to abstain from sex	11	I would be able to refuse to have sex with my boyfriend if I didn't feel like having sex	5 point(strongly agree-strongly disagree)	0.8	0.87
Self efficacy regarding safe sex when under the influence of alcohol or marijuana	5	I would be able to refuse to have sexual intercourse even if I have drank alcohol	5 point(strongly agree-strongly disagree)	0.8	0.81
Self efficacy to use a condom	10	I would be able to refuse to have sex if my partner did not want to use a condom	5 point(strongly agree-strongly disagree)	0.81	0.88
Self efficacy to use condoms when under the influence of alcohol or marijuana	3	I would be able to make sure that my partner uses a condom even if I have used dagga	5 point(strongly agree-strongly disagree)	0.80	0.69
Self efficacy about obtaining condoms	3	I would be able to the clinic to fetch condoms	5 point(strongly agree-strongly disagree)	0.81	0.82

**Table 3.6 Test-retest reliability of self-reported risk behaviour N=300**

Questionnaire item	Prevalence at Time 1 (%)		Prevalence at Time 2 (%)		Kappa	
	Paper questionnaire	Palm pilot questionnaire	Paper questionnaire	Palm pilot questionnaire	Paper questionnaire	Palm pilot questionnaire
Have you ever had vaginal sexual intercourse?	15.7	15.9	13.9	24.4	0.72	0.67
How likely is it that you will have sex during the next 6 months?	15.3	18.2	15.5	15.5	0.38	0.29
Imagine you were about to have sexual intercourse, how likely is it that you would have a condom with you?	42.7	59.5	53.5	49.3	0.25	0.29

\* responses were reversed when coding the data: very unlikely =5; very likely =1.

### 3.3.2.3 Acceptability of PDAs

At the retest, both paper and PDA questionnaires contained questions on the acceptability of using PDAs compared to paper questionnaires. The majority of students in both groups expressed preference for palm questionnaires and thought they would be more confidential compared to paper questionnaires (Table 3.7). In the PDA group 85% thought that it would be easier to provide truthful answers using this method rather than paper and pen questionnaires while 49% in the paper group were unsure. The paper group had of course not had the opportunity to use the PDAs.

**Table 3.7 Student reports regarding the validity of their responses to the questions about sexual behaviour: Comparison between electronic and paper questionnaires: N= 200**

Question	Student's allocation:	Student responses*#		
		Electronic Questionnaire n (%)	Paper Questionnaire n (%)	Unsure n (%)
Which method would you prefer for answering questions about sex?	Palm pilot group	62 (85%)	5 (7%)	6 (8%)
	Paper group	39 (53%)	21 (28%)	14 (19%)
When answering questions about sex, which method do you think is more confidential?	Palm Pilot group	65 (89%)	7 (10%)	1 (1%)
	Paper group	40 (55%)	21 (30%)	12 (16%)
Which method makes it easier to give truthful answers to questions about sex?	Palm Pilot group	66 (88%)	5 (7%)	4 (5%)
	Paper group	24 (32%)	14 (19%)	36 (49%)

\*all p values were <0.01; # n varies due to dropout or question-specific non-response

Using PDAs also had additional practical and financial advantages. They eliminated illegible responses and incomplete data common in paper questionnaires, hence better quality data. Data from the PDA are also available in a spreadsheet straightaway, eliminating the manual data entry phase and common errors associated with this, and shortening the duration between data collection and analysis. In addition, a cost calculation showed the palms were cheaper than paper questionnaires as they could be re-used in other studies. Given these advantages, and the favourable feasibility, acceptability and reliability findings, the decision was made to use the palm pilots in the evaluation study.

To assess test-retest reliability, the same questionnaire was also administered in paper version at the other two SATZ project sites, Mankweng and Dar es Salaam. Cronbach's alpha ( $\alpha$ ) coefficient was used as a measure of test-retest reliability. The test-retest results from paper questionnaires at the three sites were compared. Scales with  $\alpha \geq 0.5$  were considered to be reliable. There were some variations in the test-retest reliability with some scales performing better in some sites compared to others. However the Cronbach's alpha coefficient was greater than 0.5 on most scales. Items with low correlations and scales with low test-retest reliability scores ( $\alpha < 0.5$ ) across the sites were revised or deleted. Using this procedure, 33 items were dropped after the 1st test-retest study, and others were revised.

Based on these comparisons, the questionnaire was revised. Additional scales to measure involvement in community activities, violent behaviour, suicidal behaviour and substance use were included. Substantial changes were therefore made to the questionnaire, making it necessary to conduct a second test-retest reliability study. In addition to assessing the reliability of the revised questionnaire, the second test-retest

study was also an opportunity to pilot the use of PDAs with a larger sample of adolescents at diverse schools and in different languages. As this was the final questionnaire employed in the outcome evaluation at the 26 SATZ schools, I will discuss the data collection procedures for the 2nd test-retest reliability study in greater detail below.

#### **3.3.2.4 Second Test –retest reliability study**

The questionnaire employed in the second test-retest consisted of 155 items. It was administered to the same group of learners on two occasions within an interval of 13-17 days. To increase reliability of the responses, all the instructions and each question were provided in both English and either Xhosa or Afrikaans. Separate questionnaires were also administered for boys and girls. On the PDA screen the questionnaires appeared as follows:

- Afrikaans - English Male
- Afrikaans English Female
- Xhosa - English Male
- Xhosa – English Female

The advantage of using two languages was that if a learner did not understand a question in one language they could read it in the other. Learners were however encouraged to read in the language in which they felt most competent.

##### **(i) Participants**

The second test-retest reliability study was conducted at 3 schools that had not participated in any of the previous phases of the research, one school for each

language. The sample was 194 learners at the first administration and 179 at retest as shown in the Table 3.8 below.

**Table 3.8 2<sup>nd</sup> test-retest reliability study sample**

Administration	Sex	Language		
		English	Xhosa	Afrikaans
Test	Male	6	20	50
	Female	38	34	46
Retest	Male	6	20	46
	Female	35	28	44

**(ii) Procedure for questionnaire administration**

The questionnaire procedure described here was employed for both the second test-retest reliability study and the 3 outcome evaluation surveys at the 26 SATZ project schools.

A team of trained male and female fieldworkers administered the questionnaire. Having male and female fieldworkers was important in the event that some respondents may feel more comfortable speaking to someone of the same sex about some of the questions. In addition to English, all the fieldworkers were proficient in Afrikaans and/or Xhosa. The fieldworkers attended a full day training session covering objectives of the SATZ project, the questionnaire, how to use PDAs and ethical and practical data collection procedures to be followed in the schools. To ensure quality control in the questionnaire administration and establish some uniformity at all schools, there was a detailed protocol of what the fieldworkers were to do from the moment they arrived at the school to the moment they left. A written introduction also ensured that uniform instructions were read aloud at all schools. The

fieldworkers were involved only at the data collection phase of the project. They were blind to the conditions being compared and did not know which were control or intervention schools.

To link data for each respondent at test and retest, a unique number was assigned to each questionnaire at the first administration. The students were supplied with an envelope into which they put this number once they had entered it into the questionnaire. They wrote their name, class and school on the envelope, then signed, made a drawing, put a sticker or other self-selected unique identifier across the seal as a guarantee that we did not open the envelope. The envelopes were given back to the fieldworkers. At the subsequent administration, the students checked that the seal was intact, opened the envelope, and entered this number on the new questionnaire.

Although the PDAs raised great interest amongst teachers and learners alike, no school staff or other people besides the research team and the participating learners were allowed into the rooms during questionnaire administration. The primary reason for this was to increase the validity of the responses by increasing the learners' buy-in into the confidentiality of the study. Learners would be more inclined to provide honest answers if assured that their teachers would not have access to their information. This was a potential barrier to honest responses as observed during the previous phases of questionnaire development. A recurring question from the participating learners was whether the educators would see their responses. An explanation that they would not be required to enter their names and that their questionnaires could not be retrieved except using a specific procedure at the university quickly calmed these fears. To further enhance confidentiality and reduce the possibility of response bias, schools were requested to allocate rooms with

sufficient space for students to sit in an exam-like setting, a distance away from each other. This was the ideal, but was not always possible at schools that did not have a hall or large classrooms.

During questionnaire administration, one fieldworker completed an observation form (Appendix F). The form stated the time when questionnaire administration was started and completed, as well as questions from the learners and other necessary comments from the fieldworkers. This was important in order to keep track of questions that posed difficulties at each school. It was also a record of the amount of time required to complete the questionnaire at each school, which was useful in planning the subsequent surveys. Any technical problems with the PDAs were also reported on this form. After completion of the questionnaire, the research team stayed on at the school for a short while in case the learners had any questions or issues they wished to discuss. Learners who refused or did not have parental permission to participate either worked quietly in the room while their colleagues completed the questionnaire, or were moved to another venue. The students were provided with snacks during questionnaire completion.

### **(iii) Using the PDA**

Each learner was handed a PDA with the four questionnaires. One fieldworker did a step-by-step demonstration of using the PDAs, starting with basic instructions on how to switch on the power and selecting the correct gender and language questionnaire. The demonstration was done in the learners' language of choice, sometimes in two languages if the learners were used to different mediums of instruction. The other fieldworkers checked before proceeding with the demonstration that the learners had selected the correct gender and language specific questionnaire. Learners did each

step as it was demonstrated. Depending on the number of learners, each fieldworker was responsible for about 10-15 learners. Having one person work with the same learners throughout the session helped build some trust. In some cases if another fieldworker offered assistance, the learner would request to speak to the fieldworker that they started with. The demonstration process was followed up to question 9. Up to this point, the learners would have learnt how to enter numbers and letters for the few questions for which this was required, and the majority were comfortable with using the PDA. Other instructions such as scrolling and particular questions that many learners seemed to have trouble with were explained as they went along. Learners were offered the opportunity to ask the research team questions related to the project and the questionnaire at any point.

At each school, the demonstration was a challenge due to the students' excitement with the PDAs. Most of the learners had never used a computer, let alone a PDA. Some students were fast learners and wanted to get on with it or to assist their friends, while others did not concentrate and were constantly doing the wrong thing, or just took longer to understand the instructions. For instance, instead of pressing 'Next' to proceed to the following question some learners pressed 'Previous' and would still be at the beginning of the questionnaire when others were well into it. However, once the excitement lessened and the majority of the learners knew what to do, they settled down. Those that required more help in learning how to use the PDAs received individual instructions until they were comfortable with the process.

Once the respondent had selected a questionnaire, the programming did not allow them to exit until the questionnaire was done. To proceed to the following question, learners clicked on the 'Next' button. To return to a previous question, learners

clicked on 'Previous' (See appendix G for a visual presentation of the questionnaire on PDA). This action however did not show the previous responses entered and the respondent had to re-enter their selected option, hence minimising response bias. All the questions had a "Not applicable" option (appearing as N on the screen) which the learners used either for questions they did not want to answer or those that were not applicable to them. One shortcoming with this option was that it was not possible to tell whether the respondent had refused to answer or the question was not applicable. However, there were only 4 questions that were not applicable to some learners (Questions 105-108) because they asked specifically about sexual activity and were therefore not applicable to learners that had never had sex. At the analysis level, this information could easily be verified by checking the response to the question "Have you ever had vaginal sex?" (Question 102). In retrospect, a skip instruction may have been useful for these questions. However, using skip instructions also has shortcomings and it has been associated with higher item nonresponse. If not processed correctly it can also lead to inconsistent responses between questions.

If a learner did not want to complete the questionnaire to the end or had to leave for some other reason, they gave it back to the fieldworkers. The fieldworkers used the 'Not applicable' option to finish off any incomplete questionnaires. The entries by the fieldworkers were therefore coded as missing. A comments log on the PDA allowed fieldworkers to make notes indicating that they had completed the questionnaire from a specific question. For each learner, fieldworkers also entered into the comments log the questionnaire number, school and class of the respondent. This enabled me to verify and resolve any discrepancies in the questionnaire number as entered by both the learner and the fieldworker.

The data were downloaded on the same day via hot sync cables to a central computer. Each questionnaire was downloaded together with the accompanying fieldworker comments and a log file showing the PDA serial number, date of data collection and time that the questionnaire was started and completed. The fieldworkers ticked each learner's name against the class list for those that participated in the study, and 'Absent' or 'Refused' as appropriate. For the follow-up surveys in the evaluation study, this made it possible to keep records of learners that were absent at the first administration so that they could be included at the next visit to the school. Anonymity was maintained as the registers were not linked to questionnaire numbers.

### **3.3.2.5 Analysis of second test-retest data**

#### **(i) Scales**

Data were analysed using Statistical Package for Social Sciences (SPSS) version 12.0. A subset of scales was selected for the reliability analysis. These included items on knowledge, psychometric and behaviour measures. The number of items and scale descriptions are shown in Table 3.9.

Psychometric scales were scored using Likert's method of summated ratings. Items were scored from 1 to 5 in the same direction (least favourable to most favourable). A multi-item scale score was then computed by summing up the scores assigned to each response item and computing the mean. This method of scoring is generally used because of its simplicity and high levels of reliability. The assumptions are firstly that the items contain approximately the same proportion of information about the construct being measured and have roughly equal variances so that they contribute equally to the total scale score; and secondly, the items should be substantially

linearly related to the total score computed from all other items in that scale (Ware & Gandek, 1998).

For the knowledge scale, a multi-item scale score was computed by summing up the scores for each response item. A correct response was coded 1 and an incorrect or “don’t know” response was coded as 0. Missing items were replaced with the scale mean to obtain a knowledge score for each valid case. On the behaviour items, having engaged in the behaviour was coded 1 and not having engaged in the behaviour was coded 0.

Cases with missing responses to >50% of the items on a scale, were recoded as missing and excluded from the analysis for that particular scale. For those missing 50% or less of the responses, the missing data were replaced with the scale mean.

#### **(ii) Internal consistency**

The internal consistency of the scales was determined using Cronbach’s alpha coefficient. Internal consistency is based on item homogeneity, the assumption being that an item should be considerably linearly related to the construct being measured. This procedure takes into account errors resulting from differences in the conditions of administration and the level of motivation and attentiveness of the respondents at the time of administration. The closer the alpha coefficient is to 1.0, the more likely the items of the scale measure a single construct. Cronbach alpha coefficient of 0.70 to 0.80 is generally an acceptable reliability. The threshold may however differ depending on factors such as the number of items, the population of interest, and the nature of the study, for example, where interest is in the value of the scale for an individual, or for comparing groups (Bland & Altman, 1997). Cronbach’s alpha

coefficients greater than 0.5 were taken to support greater internal consistency within the scale.

Each item in the scale was correlated with the scale total. An item was considered for removal if it was considerably less correlated ( $<0.5$ ) with the scale total than other items in the scale. Cronbach's alpha coefficient was then computed without this item. If the internal consistency improved, the item was removed from the scale.

### **(iii) Reliability**

To assess the relationship between test and retest for categorical Likert-scale data, single measure intraclass correlation coefficients (ICC) were calculated. Intraclass correlation coefficient is an estimate of the relative variability within and between cases or clusters (Higgins and Green, 2005). The closer the ICC to 1.0, the greater the test-retest reliability.

Kappa scores were computed to measure the test-retest agreement of the dichotomous variables on self reported sexual and violent behaviour. A Kappa statistic of 1 indicates almost perfect agreement while 0 indicates no agreement beyond chance. Kappa values can be characterized as 0-0.20 poor; 0.21-0.40 fair; 0.40 -0.60 moderate; 0.61-0.80 good/substantial; 0.81- 1.00 very good or almost perfect agreement (Bland and Altman, 1997; Landis and Koch, 1997). Prevalence rates and McNemar's test for homogeneity were also calculated. A p-value less than 0.05 in the McNemar's test indicates a significant difference between the prevalence rates at the two questionnaire administrations. If prevalence is  $<5\%$ , the observed agreement measure is a superior measure than kappa and also if McNemar's p value is  $<0.05$  it implies a significant difference between the prevalence rates hence observed agreement is reported (Fisher et al, 2004; Maclure & Willett, 1987).

#### **(iv) Results**

The number of items, scale descriptions and test-retest reliability results are presented in the table below. As can be noted from the table, the mean scores for the test and retest are quite similar for all the scales. Cronbach's  $\alpha$  coefficient  $\geq 0.50$  were taken to be satisfactory internal consistency. Overall, the instrument showed good to very good internal consistency for each construct with  $\alpha > 0.5$ . Only two scales, 'self-efficacy to obtain a condom' and 'outcome expectancy towards STD's or pregnancy' had  $\alpha < 0.60$ .

Single measure intraclass correlation coefficients are reported. Compared to the results of the 1st test-retest, the scales showed higher inter-item correlation. The test-retest reliability was moderate to good, with ICC ranging from 0.48 to 0.70. Except for the scale for condom availability, all the other scales had ICC  $> 0.50$ . The scales on knowledge, attitude towards condoms and self efficacy to abstain or use a condom had particularly high internal consistency, with  $\alpha > 0.80$ .

Table 3.10 presents the observed agreement on sexual behaviour items. The prevalence rates on sexual behaviour were slightly higher at time 2. The Kappa results showed a 69% agreement on the item 'ever had vaginal sex', poor agreement for oral sex, and fair for anal sex.

Although the questionnaire exhibited low test-retest reliability scores on some constructs, none of the scales showed unacceptably low reliability coefficients. No further changes were made to the questionnaire following the second test-retest and it was administered for the baseline, first and second follow-up surveys at the 26 SATZ

project schools (see Appendix H).<sup>8</sup> At the second follow-up, questions were added to measure exposure to the SATZ intervention (Q161-171).

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<sup>8</sup> The questionnaire employed at the second follow-up contained additional questions that measured the use of 'tik' (crystal methamphetamine) for a different study (Q156-160)

**Table 3.9 Internal consistency and test –retest reliability (second test-retest reliability study): N=194**

Scale	Number of items	Sample item	Response format	Scale means (SD)#		Internal consistency		Test-retest reliability
				Test	Cronbach's $\alpha$	Retest	ICC	
Knowledge of HIV/AIDS	14	Can HIV be found in vaginal fluids?	Yes, No, don't know	9.6 (3.0)	0.82	9.6 (2.3)	0.70	
Attitudes towards delay of sexual intercourse	4	If I had a boyfriend and he effused to have sex with me, I will think that he does not love me	5-point scale strongly agree; neither agree or disagree; disagree; strongly disagree	3.8 (1.0)	0.68	3.8 (0.9)	0.52	
Attitudes towards condoms	6	Using a condom is a way of expressing responsibility for my partner and myself	5-point scale strongly agree-strongly disagree	4.0 (0.8)	0.81	4.1 (0.9)	0.56	
Outcome Expectancy towards STD's or pregnancy	7	Sexually transmitted diseases are very serious health problems for people my age	5-point scale strongly agree-strongly disagree	3.9 (0.5)	0.58	3.9 (0.6)	0.50	
Subjective norms about abstinence	5	Most of my friends think one has to be older before having sex	5-point scale strongly agree-strongly disagree	4.1 (0.7)	0.66	4.0 (0.8)	0.51	

Scale	Number of items	Sample item	Response format	Scale means (SD) <sup>#</sup>	Internal consistency	Test-retest reliability
Subjective norms about condoms	5	My parents think that I should use a condom when I have sex	5-point scale strongly agree-strongly disagree	4.1 (0.7) 0.72	4.0 (0.8)	0.66
Sexual behaviour norms	4	Imagine that you were about to have sexual intercourse, how likely is it that you would use a condom?	5-point scale very likely - very unlikely	4.2 (0.9) 0.76	4.2 (0.9)	0.53
Self efficacy to abstain	8	I am able to refuse to have sex with boyfriends who offer me gifts for sex	5-point scale strongly agree-strongly disagree	4.0 (0.8) 0.81	4.1 (0.8)	0.63
Self efficacy to use a condom	11	I am able to make sure that I use a condom every time I have sex	5-point scale strongly agree-strongly disagree	4.1 (0.7) 0.88	4.1 (0.7)	0.69
Self efficacy to obtain a condom	3	I would be able to go to a clinic to fetch condoms	5-point scale strongly agree-strongly disagree	3.9 (0.9) 0.59	3.9 (0.9)	0.48

Table 3.10# N varies due to missing data

**Table 3.10 Prevalence rates and test retest reliability of sexual behaviour:  
N=194**

Reported behaviour <sup>#</sup>	N	Prevalence time 1 (%)	Prevalence time 2 (%)	Kappa coefficient
Have you ever had vaginal sexual intercourse?	150	18.8	21.1	0.69
Have you ever had oral sexual intercourse?	150	11.2	15.8	0.37
Have you ever had anal sexual intercourse?	153	10.2	12.1	0.44

<sup>#</sup> These questions were defined on the questionnaire as: 'This means sexual intercourse during which the penis enters the vagina, mouth or anus'.

### 3.3.2.6 Procedure for baseline and follow-up surveys

The questionnaire administration procedures employed in the second test-retest study and described earlier were followed for all three surveys. At the follow-up surveys, up to two extra questionnaire administration sessions were organised at the schools so as to include students that were absent on the first occasion. Absenteeism and drop out rates were very high at some schools, hence the necessity for the extra visits. Letters were sent via the school to students that were absent during the first visit, informing them of the next date for questionnaire administration. Students that had transferred to other schools or dropped out of school were not followed up. However, students that were new to the project schools or had been absent at the baseline survey were included in the first follow-up. No new subjects were included at the second follow-up.

### **3.4 Data analysis**

In this section I will present the data analysis procedures that I employed in the process and outcome evaluations.

#### **3.4.1 Process evaluation**

##### **3.4.1.1 Educator logs**

Questions with response options were coded, with lowest scores awarded for the least favourable response and highest scores for the most favourable response. Descriptive analyses were performed on the coded lesson log data using SPSS version 13.0. The open ended questions were coded thematically, as were data from classroom observations.

##### **3.4.1.2 Interviews with educators and focus groups with learners**

All interviews and focus group discussions were audio taped with consent from the participants, transcribed verbatim and where necessary translated from Afrikaans and Xhosa into English. Transcriptions were complimented with moderator notes taken during the interviews and discussions. The data were entered into QSR NVivo, a computer software package for qualitative data management (QSR International, 2000). Using NVivo, I analysed the data line-by-line and coded them into themes and sub-themes. The coding was both deductive and inductive, as some of the themes were already predefined in the questions posed, while others were identified when reading the transcripts. Some authors suggest that more than one coder should be involved in the process to improve reliability of the analysis (Hruschka et al, 2004). For this study, reliability was enhanced by coding each transcript at least twice within a three-week period. During this process some data were recoded under different

themes while some appeared under more than one category. The software only helps to organise the data and does not take the researcher's role of interpreting the data. Making sense of the data was therefore a subjective process.

### **3.4.2 Outcome evaluation**

A large volume of data were collected in this research as the questionnaire contained scales for each of the theoretical determinants of behaviour discussed in Chapter 1, as well as other additional items. In this section, I will deal specifically with the analysis of the primary and secondary outcomes.

The primary outcomes were:

- delay of initiation of sexual intercourse
- condom use at last sex
- condom use at first sex among those who reported sexual intercourse at follow-up

The secondary outcomes were:

- number of lifetime sexual partners
- consistent condom use

#### **3.4.2.1 Preliminary analysis**

All outcome data were pre-coded and available in Excel spreadsheets immediately after completion of the questionnaires. The data were transformed into SPSS 13.0, cleaned and re-coded appropriately. Preliminary analyses were conducted to describe the data. Analyses were then conducted to compare the intervention and control

groups at baseline for demographic characteristics and the primary outcomes using paired sample *t* tests. All analyses were conducted pair-wise.

### 3.5 Summary of the research

The research process as described in this chapter is summarised in Table 3.11 below.

**Table 3.11 Summary of the research**

Systematic review of relevant literature	Review of RCTs; Review of South African evaluation studies
Pilot study	4 schools; N=55
Test-retest reliability studies	
1 <sup>st</sup> test-retest study	PDA vs. paper questionnaire reliability comparison. 4 schools; N=300
2 <sup>nd</sup> test-retest study	Conducted using PDAs. 3 schools; N= 194
Outcome evaluation	26 schools; 13 intervention, 13 control
Outcome measures	Self administered questionnaire: baseline, first follow-up at 6 months, second follow-up at 6-9 months
Primary outcomes	Initiation of sexual intercourse; condom use at last sex; condom use at first sex for those that transitioned to sexual intercourse at follow-up
Participants	N= 6364 grade 8 students
Process evaluation	26 Classroom observations; 18 lesson logs; 17 interviews (N=25 teachers); 12 FGDs (n= 122 students)

### 3.6 Conclusion

In this chapter, I have presented in detail the research design and methodologies that were employed in the current research for both the process and outcome evaluations. I have also provided a detailed description of the development of the outcome questionnaire as well as the test-retest studies conducted as part of questionnaire development process. As shown in this chapter, the study employed a rigorous design

and questionnaire development procedure. Involving students in helping phrase some of the questions was important in ensuring that the vocabulary was one that adolescents would understand. More importantly, I have discussed how the current study attempted to overcome the design and methodological limitations identified in previous studies. Further, I have described the use of PDAs for data collection, which to my knowledge has not previously been used in survey research with large samples of school-going adolescents in South Africa. In the following chapter, I present the results of the process and outcome evaluations.

University of Cape Town

## **Chapter 4: Results**

### **4.1 Introduction**

As discussed in chapters 1 and 3, I conducted both process and outcome evaluations. The aim of the process evaluation was to assess how the intervention was implemented, while the outcome evaluation assessed the effectiveness of the intervention with a focus on the primary behavioural outcomes (delay of sexual intercourse and condom use).

In this chapter I will present the results of these two evaluations. In the first part of the chapter I will present findings of the process evaluation that was conducted at the intervention schools. This will be followed by a description of the interventions that occurred at the control schools. Later in the chapter I will present results of the outcome evaluation. Where necessary, I will cross reference findings from the two evaluations, process and outcome. The aim of this chapter is mainly to present the results of the evaluations. A more detailed discussion and further interpretation of these results is presented in chapter 5.

### **4.2 Process evaluation**

In this section I draw on data from the 18 educator lesson logs; 17 interviews with implementing educators; 26 classroom observations, and 12 FGDs with learners at intervention schools. The procedures that were followed for each of these data collection techniques were described in the previous chapter. These methodologies provided data on the school contexts within which the implementation occurred, and whether the intervention was delivered as planned.

The indicators for process evaluation included:

- Fidelity of implementation
- Number of lessons implemented by each teacher
- The use of participatory activities
- Students' views of the intervention
- Teachers' views of the intervention and implementation process

Educator logs and classroom observations were conducted during the implementation while interviews with teachers and FGDs with learners were conducted after implementation. Interviews were also conducted with LO teachers at the 13 control schools to establish what interventions were implemented during the 6 month SATZ intervention period, and how this was done.

As far as possible I present the quotes verbatim, but for clarity and to contextualize the quotes within the presentation of the findings, I have made minor grammatical edits to some of them.

#### **4.2.1 The school contexts**

Information about the school contexts was obtained from observations, interviews with teachers and FGDs with students. Some of the characteristics that the schools had in common included the fact that they were all located in the Cape Town metropolitan area; they all followed the Department of Education's curriculum for public schools, and therefore they all were expected to teach LO as part of that curriculum. Among the sample of students that participated in the study, one of the homogenous characteristics of course was that all they were adolescents growing up in South Africa in a time of HIV/AIDS, and who, in many ways, despite their real or

perceived differences, faced similar challenges. The majority of the learners also resided in the communities within which the schools they attended were located. The specific demographic characteristics of the sample that participated in this study are described in Table 4.6 later in this chapter. However, the schools were by no means homogenous. Just as they had similarities, they also differed from each other in many ways. This was largely due to broader social and political factors such as the history of racial segregation, economic inequalities, religious, cultural and other differences that characterize the South African society. They also differed due to individual, interpersonal and school level factors such as teacher motivation, relationships between teachers and school management, teacher discipline, the approach of the principals to the running of their school and available resources such as physical infrastructure and the presence or lack of trained teachers.

#### **4.2.1.1 Language**

One school was an Afrikaans medium school with a majority white student population; eight had a predominantly coloured student population with English and/or Afrikaans as the languages of instruction; and four consisted of a majority of black students with English as the official medium of instruction (although in reality the teachers used both English and Xhosa for most subjects. Almost all of the black students had Xhosa as their home language. The majority of them understood Xhosa better than English. However, the teachers at the intervention schools were of the opinion that it was much easier to teach sexuality in English. This was because some of the words did not sound as rude as in English as they did in Xhosa. In addition, conversational Xhosa and sexual lingo amongst the students differed depending on what area of Cape Town they lived in. Hence during the development of the

intervention and in the training, the teachers suggested that the learner workbooks for the predominantly black schools be produced in English. The students for whom Afrikaans or English was the home language on the other hand were advantaged by having the intervention implemented in these languages. However, as shown in the demographic characteristics of respondents later in this chapter (Table 4.6), the majority of the learners had either Xhosa or Afrikaans as their home language compared to the smaller proportion that indicated that English was their home language.

#### **4.2.1.2 The school communities**

The majority of the schools were located in working class areas, some in very under-resourced communities. In the baseline questionnaire, 21% of the whole sample described their home as a 'shack' (these are dwellings commonly made of recycled plastic, polythene, cardboard, wood or corrugated iron sheets), "wendy house" or 'backyard dwelling'. At several of the schools, teachers indicated that a sizeable number of students lived on their own as their parents were away working and only returned home on weekends. In the outcome data, 9.9% (n=317) intervention group students reported not living with any of their biological parents. At one school, 50/203 students did not live with any biological parent. This however does not imply that the learners did not have any adult primary caregiver but I did not ask any questions about whom they lived with. A few of the schools were located in neighbourhoods known to have a problem with gangsterism, which sometimes spilled over into the schools. An anecdotal illustration was two occasions when teachers warned me to leave the school due to the possibility of gang violence in the neighbourhood. The use of drugs was also mentioned by the teachers to be a problem in many of the communities in which

the schools were located, both in the more affluent neighbourhoods and those that were comparatively under-resourced.

#### **4.2.1.3 School level resources**

Many of the schools were overcrowded, and several did not have basic essentials for learning such as furniture and science laboratories or facilities for extracurricular learning such as playing fields. The average class sizes at these schools were about 65 students. On the other hand, a few schools were better resourced, had classes of between 23 and 42 students. These schools also had better facilities, and greater teacher stability. At some of the lesser resourced schools, the teachers that were tasked with teaching LO were not trained in teaching. These schools also had high rates of teacher turnover as discussed in the following section.

#### **4.2.1.4 Educator turnover**

Eight of the thirteen schools experienced change of LO teachers, losing either all or at least one of the teachers that attended the first SATZ training due to illness, transfers, pregnancy or move to another grade. However these are not the only factors that can lead to loss of teachers. The issue of teacher stability was closely linked to resources among other factors. Some schools could afford to pay their teachers a higher salary and to provide them with better resources than others and therefore had lower educator turnover. Only five of the schools (7, 8, 12, 18, and 23) had the same teacher(s) deliver the entire intervention. At some schools, lessons were missed, and at others they were delivered by substitute teachers, some of whom attended a one-day-SATZ training organized to cater for the changes. One school had 5 different teachers over the 6-month implementation period. Three classes at one school and two at another had the entire intervention implemented by teachers who did not attend any

of the training workshops. Each school however had at least one trained teacher who provided support to those that did not attend the entire training. Student absenteeism was also high in some schools, hence exposure to the intervention was varied. As discussed in greater detail in the following sections, these contextual factors posed major challenges for both the implementation and the evaluation.

#### **4.2.2 Fidelity of implementation**

Once the schools and teachers had adopted the programme, it was crucial for evaluation purposes that they implemented it as intended. This was because the evaluation was designed based upon the objectives, content and activities of the programme. The importance of adherence to the intervention as planned was stressed throughout the training and in the numerous conversations between the intervention designers and the implementing educators.

The suggested duration for implementing the intervention was 17 hours, but it took the teachers 26-55 periods depending on the number of periods allocated to LO and each teacher's pace. Each period was 45-55 minutes, which translated to between 19.5 and 50.4 hours across the schools. Early into the implementation, the project staff realized that the allocated 6-month duration was too short for completion. Teachers were requested to omit the last lesson on self esteem if they did not have sufficient time, as it was aimed at reinforcing an earlier lesson. The intervention designers also selected one or two activities each for lessons 5-15, retaining those that required the least time. Table 4.1 below shows the number of lessons implemented at each school. This is not recorded for each teacher due to the change of teachers at some schools.

**Table 4.1** Number of lessons implemented at each school

School	Total no. teachers involved in implementation	No lessons implemented of the total of 16 lessons
1	5	15 <sup>a</sup>
2	3	16
4	3	16 <sup>b</sup>
7	1	16 <sup>c</sup>
8	3	15 <sup>c</sup>
9	4	16
11	5	15
12	2	14 <sup>bc</sup>
13	4	15
18	1	16 <sup>c</sup>
22	2	16
23	2	16 <sup>c</sup>
26	3	16

<sup>a</sup> Lesson 12 (condom use & demo) not implemented in all or some of the classes

<sup>b</sup> lesson 12 implemented by an outside facilitator (nurse)

<sup>c</sup> The same teacher(s) delivered the intervention from beginning to end

As shown in the table above, all the teachers attempted at least 14 of the 16 lessons. In the questionnaire administered at the second follow-up, various questions were asked on students' self reported exposure to the intervention. More than half (55.9%) of the students reported having received 10 or more lessons, while 27.7% received 5 to 10 lessons. Caution is warranted in interpreting the self-reported exposure data presented

in this chapter as they are subject to students' recall and depend on the individual student's school attendance. Nevertheless the majority of students reported having received more than a third of all the lessons.

In the log, educators were also asked to indicate whether the lessons were implemented as planned. Teachers were asked to report any modifications to the lessons and activities, besides those made by the programme designers. The response options were scored from 0 if the lesson was not implemented, to 4 for implementation exactly as planned. The scores were summed up to obtain a mean score for each lesson or activity. For lessons 1-8, this question was asked of each activity, while for lessons 9-15 it was asked for each lesson. This was because as mentioned in chapter 3, the teachers found Part 1 of the lesson log too long and requested that Part II should contain fewer questions. The results of these ratings are based on 14 logs. As shown in Table 4.2 below, the teachers reported that they implemented most activities almost exactly as planned, the mean score being higher than 3.2 for the 19 activities in lessons 1-8. Of the nine activities that received mean ratings lower than 3.0, 4 were homework; 2 were group activities; 2 were role plays; and 1 was an individual activity.

**Table 4.2 Mean scores on fidelity of lesson implementation**

(To what extent was the activity implemented as planned?) N=13

Lesson	Activity mean (SD) <sup>d,e</sup>					
	1	2	3	4	5	6
1 Values clarification with regard to adolescent sexuality	3.5 (0.53)	3.4 (0.7)	2.6(0.9)	2.7(0.9)	2.4(1.2)	2.0(1.7)
2 Self-esteem and sexual decision-making	3.7 (0.47)	3.4 (0.7)				
3 How our bodies function reproductively	3.4 (0.7)	3.3 (0.6)				
4 Dimensions of sexuality	2.7 (1.4)	2.1 (1.4)				
5 Boys don't cry! Girls are soft!	3.6 (0.5)	1.8 (1.8)				
6 Responsible decisions for sexual safety	3.5 (0.7)	2.2 (1.8)				
7 Promoting the sexual health of young people	3.5 (0.7)	2.6 (1.4)				
8 How do I handle this?	3.2 (0.8)	2.2 (1.7)				

<sup>d</sup> Only lesson 1 contained more than 2 activities<sup>e</sup> Responses were scored as: 0 - did not implement this activity; 1 – not at all as planned; 2- only to a small extent; 3- to a large extent; 4- exactly as planned Table 4.3 below presents mean ratings for lessons 9-15. These were based on responses of only 7 teachers who completed the second part of the log. The rating for lesson 16 is not provided as some teachers omitted the lesson as requested by the programme designers.

**Table 4.3 Teachers' ratings of lesson implementation**

(Were the lessons implemented as outlined in the learner workbook and educator manual?) N=7

	<b>Lesson</b>	<b>Mean score (SD) <sup>f</sup></b>
9	Situations that carry the risk of sexual intercourse	3.8 (0.4)
10	Coercion and violence in romantic relationships	3.2 (0.4)
11	Not for me, not now!	3.5 (0.8)
12	How to use condoms	3.0 (1.5)
13	Negative consequences of sexual intercourse	3.2 (0.8)
14	HIV and AIDS and the future	3.5 (0.8)
15	Substance use and sexual decision-making	3.5 (0.8)

<sup>f</sup> 0 did not implement this lesson/activity; 1 - not at all as planned; 2- only to a small extent; 3- to a large extent; 4- exactly as planned

Table 4.4 presents other mean scores of the teachers' self evaluation of the implementation. The results indicate that the teachers found the intervention relatively easy to implement (mean score of 3.1) and rated highly the fidelity and quality of their delivery. They also did not often have to use additional material other than what was provided.

**Table 4.4 Teachers' overall assessment of implementation: N=12**

Measure/question	Response format (coding)	Mean Score (SD) <sup>g</sup>
To what extent do you think you have implemented the intervention as per the expectations put forward during your training?	Not at all as expected - Completely as expected (1-5)	3.7 (0.8)
Implementation of SATZ was easy/difficult	very difficult - very easy (1-4)	3.0 (0.8)
Overall, how would you evaluate the quality of your implementation?	very low quality - very high quality to (1-4)	3.3 (0.6)
How often did you have to use additional material besides that provided?	most of the time- never (4-0)	1.3 (0.7)
On a scale of 1-5 how successful do you think, was the implementation of the following activities?	not successful at all – very successful (1-5)	
Role plays		2.8 (1.5)
Small group activities		3.3 (1.1)
Homework		3.0 (0.9)

<sup>g</sup> Rating only for teachers who implemented the lesson

I received the teachers' lesson logs before the interviews, so I was able to explore further the information provided in the logs and presented in the tables above during the interviews. The interviews and findings from classroom observations did not concur entirely with the views expressed in the lesson logs and the teachers' ratings of implementation fidelity and quality. This indicates that some of the lesson log data were partially unreliable as some of the information the teachers presented regarding what they did, what we observed in the classroom and what they said in the interviews were not always correlated. For example, there were some major deviations at some schools from the planned delivery and changes to some of the content.

In one school, an outside facilitator who was not a teacher or staff member at the school implemented the lesson on self-esteem and sexual decision-making. Even though this was recorded in the classroom observation form, the teacher had not reported this in her lesson log. In another school, the reproductive functions lesson was delivered by a biology teacher, while a nursing sister from an outside organisation delivered the lesson on condoms at another school. The intervention contained seven lessons with role-play activities. Based on the teachers' mostly negative experiences of the first role play, the intervention designers had cut out further role play activities. However, some teachers used their discretion and continued to implement role-plays, while others substituted them with a video or asking students to write a dialogue individually or in small groups. These modifications were not part of the SATZ implementation plan and the educators did not discuss them with the evaluation designers before hand.

Lesson 12 was on correct condom use and included a demonstration using a dildo. Four educators at two schools (schools 12 and 9) did not implement this lesson, while two others at school 1 briefly discussed condoms as a means of prevention but did not conduct the condom demonstration. During the interviews, one of the educators said that she did not have the dildo at hand during the lesson, while another cited religious beliefs that prohibited him from conducting the condom demonstration. However, two of the seven classes at the school where these teachers were based received the lesson and condom demonstration from another SATZ trained educator.

At school 12 where the lesson on condom use was not delivered, the educators felt that the "*children were not ready for that lesson*" because they were still "*young and immature*". It appeared however to have been a case of the two educators being

uncomfortable with the lesson rather than the learners' age or sexual inexperience because they (the educators) at some point considered having a clinic sister implement this lesson. Ironically, while they thought the learners were not ready, the educators also believed that most of their grade 8 learners were sexually active. They mentioned that the school lost about 50 girls annually due to pregnancy, most of them in grade 9 or during the transition period from grade 8 to 9. Three of the 141 grade 8 learners at the school became pregnant during the SATZ implementation period. The educators' views that the learners 'were not ready' for a condom lesson were contradictory in the face of this evidence. Yet, the educators insisted on "*abstinence that is what we taught, and if you don't you going to die, cause you going to get the virus, AIDS and you going to die*". The teachers had also introduced the message that AIDS equals death, which was not included in the intervention. The concerns about some of the content of the intervention being too advanced for grade 8 were however shared by teachers at other schools.

As shown in the discussion above, there were considerable differences across and within the schools in the fidelity with which the intervention was implemented. There were particularly major deviations and differences in the implementation (or lack thereof) of skills-based activities such as role-plays and condom demonstration. Although all the teachers attempted at least 14 of the 16 lessons, only a few of them implemented them as intended in the programme as many had to modify the some activities to suit their individual characteristics and classroom conditions. The teachers may have rated their implementation highly in the logs because they were using or had attempted to use strategies that were new to many of them, which they considered a good achievement.

There were no identifiable patterns of teachers that implemented the intervention with more fidelity or better than others, which made it difficult to categorise the schools by fidelity and quality of implementation and therefore to perform the analysis of outcome data based upon implementation fidelity. There were, for example, teachers at the same schools who had very varied levels of implementation fidelity, some doing very well and others not so well. Some of the teachers who attended the four day training did not implement the intervention with fidelity, while others that attended only one day of training delivered the lessons with more fidelity. Some teachers in very poorly resourced schools implemented the intervention with more fidelity than others in better-resourced schools with smaller class sizes. For the most part, however, the overall fidelity and quality of implementation was better at the schools that had greater teacher stability compared to those where teachers changed.

#### **4.2.3 Acceptability of the intervention and teachers' views on implementation**

I also assessed the acceptability of the intervention among teachers and students. The teachers summed up the implementation as very challenging and demanding, but also a very good and enjoyable learning experience for them and the learners. This was not surprising, as the teachers had expressed their support for the programme during the training, and anticipated some of the challenges that they encountered. Educators said that ongoing support and monitoring from the SATZ team kept them focused and committed to completing the programme. Overall, while the educators acknowledged that there were some implementation challenges as discussed earlier, most of them found the intervention acceptable because as one of them put it, "*the outline was very clear, it was very specific, the exercises, were also quite fairly clear for the learner and both myself that made things easy as I went along*". [Female teacher, school 18]

Many educators mentioned that the intervention challenged them to accommodate different values, while others reported becoming more student-centered:

*“you had to be committed, ...you had to think of ideas of making it interesting, ...it was not just a question of standing there and giving them information, you had to be involved emotionally as well, try and be part of them and really think of, you know, step down from the level of adulthood and get into their shoes, you know, in order to understand them, so, it was very demanding... I had now to look at things from learners point of view and not from my point of view, of what I like and what I don't like, I had to change my attitude, and know that the centre is the learner and not me”* [Female educator, school 8]

Having worked through the lessons during training, the educators were asked prior to implementation to map out the number of periods they anticipated for implementation of each lesson. It turned out that both the intervention designers and the teachers had underestimated the duration it would take to implement the lessons. There was great variation in the amount of time it took each teacher, and most rushed through the last few lessons. For example the recommended duration for the first lesson on values clarification was 2 hours, but some educators who expected to cover it in 3 periods took up to 6 hours. This was attributed to the number of activities, and students' cognitive difficulties in understanding the terms 'norms' and 'values'. Teachers also felt that the vocabulary was too advanced for grade 8, given what many said were lower than average literacy levels at their schools. In the schools where majority of the students spoke Xhosa as their home language, using the Xhosa reference book did not make things easier as the problem was not with the language of instruction but with the low literacy levels. Teachers viewed the literacy problem as one that should

be tackled at primary school level because high schools were “*inheriting learners who cannot read*”. Majority of the teachers felt that proper implementation of the SATZ intervention required a minimum of 1 year.

However, the time shortage was not just with reference to the duration of periods and the number of activities in the intervention. It was also due to timetabling where I found that at some schools LO being a non-examination subject received less importance than other subjects and was allocated fewer lessons. As a result, the LO periods were few and far between at several schools, and not knowing the duration of each period, some teachers had difficulties doing advance planning of their lessons. Any unexpected or unscheduled activities were also done during the LO periods.

*“The periods are sometimes too scattered, today you get a 30 minute period, tomorrow it’s 35, the day after that it’s a 55, ... sometimes we see them three times in a seven cycle, and you see them maybe on day one and you see them again on day five, you find that on day five they’ve forgotten what you did on day one, you know, so you have to re-cap again, you know”* [Female teacher, school 8]

*“at our school, today you a piece of paper, where you are being told, right today it’s 25 minute periods, and things like that”* [Female educator, school 12]

A significant amount of time was also lost due to inadequate preparation by some teachers, and a rotation system that required learners to move from one class to another for each subject. This system was highly ineffective and time consuming at most schools, particularly those with large class sizes and not enough furniture, so students moved around with their bags, chairs and desks. At one school, it took

learners approximately 20 minutes to settle down and by the time the lesson begun there was only about 25 minutes of the period remaining, most of which the educator spent yelling for attention.

All the educators said it was an excellent program, but criticized it for focusing only on sexuality, leaving little time to teach other LO focus areas such as ‘world of work’ which were not sufficiently incorporated into the intervention. Although this is a valid criticism, some of the teachers also mentioned that they tended to focus on certain areas of LO more than others and there was often no balance in terms of the amount of time, intensity and student assessments that they gave to each LO focus area. Also, the SATZ intervention was never intended as a complete LO curriculum covering all the 5 focus areas and all the participating schools were aware of this at the start of the project. The educators nevertheless acknowledged that the intervention filled a gap because there was no standard LO curriculum issued to all the schools in Cape Town. Each school followed guidelines from the Department of Education but developed its own curriculum by combining various materials received from the Department and NGOs. The teachers mentioned that the topics in the SATZ intervention were not entirely new, as they formed part of the LO focus areas. What the SATZ intervention had done is put the information together in one workbook, addressed sexuality and HIV/AIDS education in a greater detail, included lessons on self esteem, assertiveness and decision-making as well as greater focus on skills-based activities. The programme therefore saved educators time and effort spent “*scrapping around*” to put together a curriculum. It also provided them with assessment tools as required in OBE, extra teaching materials such as posters, training and ongoing support during implementation. However, some educators also pointed out that they used additional material, particularly for the lesson on substance use, as the information in the

workbook was not sufficient. All the teachers intended to use all or parts of the intervention in future even though the SATZ project would not continue to supply it. Some were already using it with their grade 9 classes, and one school had made sufficient copies for the following years' (2006) grade 8 students. This was encouraging, but was no guarantee that the intervention would continue to be implemented. The intervention effectiveness had also not been established to determine whether it could be disseminated more widely.

#### **4.2.3.1 The role of educator training**

Training of facilitators is regarded as one of the characteristics of effective school-based sexuality interventions (Kirby et al, 1994). The SATZ training was mentioned by all educators as one of the most important factors that aided implementation. Results of an evaluation conducted immediately after the SATZ training are published elsewhere (Ahmed et al, 2006). The evaluation showed that the training impacted positively on the teachers' knowledge, attitudes and comfort levels regarding teaching sexuality education and HIV/AIDS. The trainer also received overwhelmingly positive feedback from the teachers (Ahmed et al, 2006). In this section I will present data from interviews and educator logs, which were gathered during and after implementation. The educators had by then put to practice the skills learnt in the training and could further reflect on the impact of the training on their experience of delivering the intervention.

All the educators said it would have been impossible or more challenging to implement the intervention without training. For some educators, this was their first training ever in delivering HIV/AIDS education and they had little experience having only taught LO for one or two years. A few of the teachers that implemented the

intervention were not qualified trained teachers. The educators that attended the two weekend training sessions felt that they were more advantaged than those that either did not attend any training or attended only the subsequent shorter training sessions. Being away from home and usual distractions, they were able to focus more effectively on the training. As one educator put it

*“you see, you fresh in the mornings, those things from three till five, or five till, don’t work. You’re tired when you finish here [school], I want to go to my kids when I come from here, go play with them rather, I don’t have time after 20 years still to go sit in, in workshops and things like that.”* [Male educator, school 12]

While most educators were enthusiastic and attended the training on their free will, some, particularly those with previous training on HIV/AIDS were doubtful that they would gain anything from it. Two teachers attended the training only because their principal insisted on it, but in retrospect, they too agreed that it was a worthwhile experience:

*“In the beginning I thought it was crazy....I didn’t want to go, I was very upset but I tell you, to sum everything up, for me the person that I was before going to Slanghoek (the location of training) and myself ending up at the end having done what I did this year and saying what I said, am very glad that I went to that training... this programme must be implemented countrywide and every white, black, pink school must get it”.* [Male educator, school 23]

Although most of the teachers had experience teaching LO, many said that using the learner workbooks and educator guides during the training made the training more relevant and increased their confidence. This was because they got to practice

facilitation of some of the participatory activities that they later used with their learners. Most of them felt that without the training “... *I definitely wouldn't have done justice to the program.*” [Female teacher school 4]

The condom demonstration activity was frequently mentioned as one that was made possible by the training. The educators that conducted this activity felt that the training gave them the confidence to do so.

*“Well the initial training, and the update, I think without that I would not have coped that well, because I would have thought this is nonsense, being old and cynical I wouldn't have tackled this. ...As I said at the time, I'm not going to show the children in front of a mixed [gender] class, how to put on a condoms, in the end it was no problem at all, I was blatant enough.”* [Male teacher, school 26]

However, many teachers still expressed discomfort regarding the condom lesson.

*“As a female standing in front of your class, to demonstrate that becomes very taxing...the boys started laughing, and girls started feeling uncomfortable, and it wasn't my intention to make them feel uncomfortable at all.”* [Female educator, school 18]

The educators who did not attend any of the training sessions acknowledged that they had more difficulties implementing the intervention. Support from the school principals and the SATZ team made implementation easier. Nevertheless, as illustrated in the discussion above, despite the educators' positive evaluation of the training, they still experienced many challenges in the implementation showing that a good training alone is no guarantee that implementation will be easy.

#### 4.2.4 Implementation strategies

The intervention contained various participatory activities such as role-plays and small group discussions. In this section I will present findings regarding the implementation of some of the intervention activities, namely role-plays, group discussions and homework activities.

##### (i) Role plays

Some of the difficulties experienced with role plays have been referred to earlier in this chapter. The intervention contained seven lessons (lessons 1, 5, 8, 9, 12, 13 & 15) that required role play activities. Four educators did not attempt a role play at all, either because they didn't want to, or because they thought the strategy would not work, or because of learners' shyness and large class sizes.

*Once again it failed, specifically the drama or role play in class, you will find that the learners are shy ... it took a lot of effort from the teacher to encourage them and all that, but still they didn't want to participate in that role play, they were very afraid to do it, they were shy. [Male teacher, school 22]*

Some learners agreed with this, and were especially hesitant to participate in role-plays that involved a romantic relationship as this may have undesirable consequences afterwards:

*they didn't want to be teased about who they chose so most people in my class didn't do that one [role-playing] and others were gossiping and so others are shy and not want to be talked about and they were afraid. [Learner, school 8]*

Another reason why role plays did not work so well was that the sexually inexperienced students had difficulties identifying with role plays depicting sexual

relationships. Some of the role-plays were designed to be conducted in single-sex groups but teachers did not implement this, mainly due to the large class sizes. Although the teachers had performed some of the role plays during the training, inexperience, poor preparation and lack of confidence were apparent and this strategy did not receive very good feedback.

*It was chaos, I mean it is great fun, they enjoy it, those who were actually doing it, it ends up being great fun for them, but, it's not viable really, it doesn't work. [Male teacher, school 26]*

At one school where I observed a role play, the educator was unable to facilitate the activity to convey the intended message and to control the learners. The role play went completely off topic while the rest of the class made so much noise it was almost impossible to hear the dialogue. At the end of the role play the educator did not discuss it with the learners hence the objective of the activity and its bearing on the lesson was lost. It was left open perhaps with the assumption that the learners, having enjoyed the activity, would put it into the context of the lesson under discussion. Some teachers preferred to stick to familiar teaching methods and had no intention of ever using this strategy as they were convinced that it was impossible to implement within the current contexts of their schools. The quote below is from a male educator with 20 years teaching experience, most of them in guidance/life skills education,

*Like I said to emphasize that role playing in our situation doesn't work. We can fake a role play lesson, when we know people is coming, and we ask the school, right we want a hour for this lesson, specific lesson, and prepare and that, but I mean that is not normal scenarios ...What works in our situation, is the kind of passion type of teaching methods where your kids sits and you*

*teach, and giving the information to the kids using your teaching skills. We use that type of teaching. To emphasize, role-playing in our situation doesn't work.* [Male teacher, school 12]

The teachers that attempted role-plays found them too time consuming. Most schools had periods between 45-50 minutes. This, as shown earlier in this chapter, was insufficient for any one of the SATZ lessons. Overcrowded classrooms were another important barrier to implementation of role-plays. At some schools, classes had up to 70 or more learners in a space designed to accommodate about 30 students. The learners shared chairs and desks barely leaving any room to move around. One educator resorted to conducting role plays outside the classroom with half the class and in the classroom with the other half. A few teachers successfully conducted role-plays. At two schools the teacher asked a few students to prepare the role-plays in advance. This saved time, but the dialogue was not spontaneous, and some students did not have an equal opportunity to participate in the role-play.

As shown in the discussion above, many of the teachers experienced personal and contextual difficulties with regard to using role-plays. Teachers' attitudes to role plays, self-efficacy to implement participatory strategies, and the expectation that this would be (un)successful all influenced whether or not they attempted role plays. There were no specific patterns of characteristics of educators who attempted to or successfully implemented role plays. While the educator quoted above for example was unable to implement role plays despite training and many years of teaching experience, others with less experience teaching LO used role plays successfully. Many educators said they might attempt role plays again in future, and felt that they would do better the second time around.

**(ii) Small group discussions**

Small group discussions were also difficult to implement. This was mainly due to large number of students and inadequate space in the classrooms. With up to 70 learners per class, it is challenging to expect that one teacher would be able to effectively manage several small group discussions or that there would be sufficient time for the teacher to engage with each group's discussion. The classrooms were also small, so that at some schools it was impossible for each small group to have sufficient space to hold their discussions. Most educators resorted to having a whole class rather than small group discussion. Some teachers also found it difficult to keep the groups focused on the discussion topic due to poor discipline. One teacher overcame this by pre-assigning students to groups to which they remained until the end of the intervention. This minimized the disruptions, but it limited students' interaction to only a few of their classmates. This however was one of the schools where I observed this strategy working well as the students were focused and the groups competed with each other.

The average age of the learners was 14.3 years. However, some schools had learners aged 20 years and above. In classes with older students the classroom dynamics were further complicated by the imbalance of both age and sexual experience. It was difficult to have small group discussions where older and sexually experienced students were mixed those that were younger and sexually inexperienced. Some teachers put older students into separate groups. Others got the sexually experienced students to assist with lessons such as the condom demonstration, while some tried to create a class atmosphere where the students did not feel embarrassed or judged because of their sexual (in) experience.

#### 4.2.4.1 Homework

The intervention contained three activities specifically designed as homework. This was unsuccessful at most schools. As it emerged from the group discussions with learners homework was almost a taboo word for them, not to be mentioned, better still, not to be done. Educators attributed this dislike for homework to laziness, disregard for LO and absent or disinterested parents/guardians. This was not unique to LO, but was a problem at most schools, across all subjects and in all the grades. It was however worse with LO because as a non-examination subject, learners considered it a *“fun easy subject, it’s a class where you talk all the time, it’s not a case of come in, sit down, shut up, take out your books, start doing exercise three, cause none of these activities are done like that, it’s discussed, ...we’re talking, it’s a easy non threatening subject, so, homework, is seen as something strange.”* [Male teacher, school 26]

The majority of the educators felt at a loss because they could not penalise learners for not having done homework, so they tried to cover all the activities in the classroom. Others set tests to encourage the learners to take LO more seriously. While most educators thought homework would save time spent in classroom discussions, one viewed it as infringing on the already short periods she had for LO as some of the time was spent checking why the homework was not done. Another teacher however viewed the problem as emanating from teachers who did not instill a sense of seriousness into homework:

*“For me, I think homework becomes a major problem when a teacher does not normally check the book. If you give them homework today, make it the point that you want it tomorrow, even if you are not going to read, you are just going to sign it, and then you still have another day to mark it, and go through*

*it, as long as they know that you give them homework today, you are not going to go back to it, they will tend to relax.” [Female teacher, school 11]*

#### **4.2.5 Parental involvement**

The intervention was designed for classroom implementation, but an attempt was made to involve parents early in the process. In lesson 1, the aims of the project were summarized as ‘the SATZ Story’. The students’ homework was to tell the story to their parents/guardians, answer any questions and record this interaction on a sheet in the workbook. Another activity required the learners to design a brief questionnaire regarding norms and values pertaining to sexuality and administer it to their parents/guardians, siblings, family or adults in the community. These exercises were unsuccessful as the majority of the students did not conduct them with any adults. Most of the students had not had any prior discussions with their parents or guardians around sexuality and were afraid of a possible negative reaction from parents which did happen in some instances as expressed in the quote below.

*The one boy his mother actually smacked him, the first day, the very first page, when you must ask your parents those questions they say now you busy now with that, and what are you talking about and don’t come to me. [Female educator school 6]*

Some of the teachers were of the opinion that many parents in their communities viewed discussions about sex and sexuality as something that should not happen between parents and children. This was attributed to parents’ inhibitions that emanated from customary traditions which in their opinion forbade such discussions. It was also attributed to the lack of education among this group of parents. However, the majority of the students also felt uncomfortable about initiating the discussion

with their parents. Others preferred to conduct the exercise with other adults in case their parents fearing that initiating such a discussion would make their parents think that they were having sex.

*some of them said, hi, I'm going to ask my neighbour, not my parents, they will kill me, huh, I can't, I can't talk about that, because they will say, you've become so silly now, why are you asking this thing.* [Female educator, school 11]

*I think also some parents if you have a good relationship, and you ask them like, they might assume like maybe you want to have sex, they will think something else.* [Learner, school 1]

Even though most learners did not undertake this exercise with their parents, they still viewed them as the most credible source of sexuality information

*"many times if you have older siblings, they too like to give you information, but one cannot always depend on their information as it is not always correct information that they give, therefore I think if you are in doubt about certain issues, the best source would be your parents as they would be most capable to give it to you"* [Learner school 23]

A few parents expressed their displeasure with the intervention, and some students did not take their workbooks home for fear of their parents' reactions. This was an interesting finding, as most parents had consented to their children's participation in the project. I did not establish whether those parents that objected to the intervention were among the few that had also declined consent for their children to participate in the evaluation study. Some learners also thought that in general, parents have a problem with their children receiving sex education.

*“not necessarily with this program in particular, but they just don't want their children to be taught anything about sex”.* [Learner school 23]

*“It's like they don't want you to grow up...they just want to keep you there”*  
[Learner school 26]

Only a few learners conducted these exercise with their parents or guardians. Some of them gave positive feedback

*“Ja, my mother is also glad because then I can also know, how to use safe sex and how to stay away from STD and things like that”* [Learner, School 2]

*“When I told my mother about this project, ... I think, when I go to her, she, is surprised that I use words that she doesn't even know of ... she is just interested in seeing that I progress in my learning.* [Learner, School 2]

Lack of parental/guardian involvement in their children's learning was viewed to be an important hindrance to homework. However, this was not unique to the SATZ programme. At some of the schools, teachers reported that parents were generally disinterested in anything that happened at the school. They don't fetch their children's examination results, and relinquish responsibility for their children to educators, going to the school only when there's trouble.

All the educators thought it was important to involve parents/guardians in their children's schooling, but thought that *“to involve the majority is going to be a heavy task”*. They offered various suggestions for increasing parental involvement such as first educating the parents about HIV/AIDS. Learners' suggestions for encouraging communication about sexuality between themselves and their parents included

presenting to the communities what they had learnt from the intervention through presentations and drama; and inviting parents to the school to learn about HIV/AIDS.

#### 4.2.6 Learners' experiences of the intervention

The focus group discussions with learners were aimed at obtaining insights into their experiences of the intervention. Overall, the learners reported having enjoyed the intervention, especially because it did not dwell much on well known facts around transmission and prevention of HIV/AIDS. They particularly enjoyed the lessons on values, self esteem, assertiveness, the reproductive system.

*in primary school there was a lot of intention brought upon pre-marital sex, and AIDS and all of that crap, but in this program, it also made us aware of the other side, like your values, and morals, like if your values and morals are in place then it will also assist you in your decision making". [Student, school 23]*

The lesson on values was mentioned in a few of the discussions as one that the students remembered most, probably because it was the first lesson. This however was also the lesson that most teachers struggled to teach. A few educators suggested that it should be omitted or moved later into the intervention, while others acknowledged the challenge, but viewed this lesson as the foundation of the intervention.

*I just feel that values might be difficult for any person to teach maybe, but it is something that comes from the soul, you must be willing to speak about certain things, you must relate to peoples belief systems, you must relate to peoples upbringing, and maybe it opens a can of worms with every child. This has never been part of their learning experience... those things were never spoken about, so I think the values is the essence of the program of sexuality... Its about being*

*objective all the time, you cannot, express your value system on another person, but you must allow them to be able to reflect, and express their value system, so that the child knows this is what a value is.”* [Female Educator, school 18]

The majority of students did not enjoy lectures as they were not participatory. Role-plays were the activity that the students enjoyed most, because they were fun and allowed them to express their opinions. From the questionnaire items on exposure, 81.2% (n=2266) of respondents indicated that their teachers encouraged them to express their opinions; and 84.9% (n=2266) indicated that they expressed their opinions to ‘some’ or to ‘a large’ extent. In the discussions, some students who did not have the opportunity to participate in role-plays said they felt neglected. At schools where teachers changed during implementation, the students also felt that they did not have sufficient time to forge a relationship with the teachers. At one school where some classes had 5 different teachers, the learners felt that they were receiving contradictory messages from each of the educators.

*“The one teacher taught us like one thing, and the other came told us another thing, it was bit confusing”* [Learner, school 1]

At most schools learners were generally satisfied with the way their educators implemented the intervention and acknowledged that as the programme progressed, it became increasingly easier and more comfortable to talk to their educators about sexuality, HIV/AIDS and other issues that concerned them. Some educators mentioned that more learners were approaching them with personal issues around sex and relationships since implementing the programme. In the questionnaire, 84% (n=1501) of students indicated that the intervention had made it ‘much more’ or ‘a little bit’ easier to talk to their friends about HIV/AIDS; 83% (n= 1471) said the

intervention made it ‘much more’ or ‘a little bit’ easier to talk with their friends about abstinence and condoms. Most learners nevertheless recognized that ultimately they too had a responsibility towards the decisions they made. The highlighted section of the quote below also indicates that the students did not only receive facts about HIV/AIDS but also some strategies for action and communication or negotiation skills.

*“Throughout the program, it was about choices, and decisions that you take, I thought it was very cool about this program, nobody forced you, to do this or that, because of the different cultures and many different people and as every person is different from one another, you were only **made aware of the facts and also of what you can do, or what you can say, and even although you may differ, but at the end of the day you will bear the consequences of your decisions,**”*  
[learner, school 23]

The learners’ main suggestions for improving the intervention were more pictures in the workbook, simpler language and no homework.

#### **4.2.6.1 Gender differentiated responses to the intervention**

It emerged from the group discussions with learners that the intervention was received differently by boys and girls, and their participation was also different. Both boys and girls agreed that girls were more mature in their reaction to the programme. Boys were reportedly “childish” and “immature”, they “giggled” during the lessons, ‘made jokes and thought it was funny’. Most educators corroborated these views, acknowledging that girls took the discussions more seriously compared to the boys who tended to be disruptive.

Although the boys agreed that the girls responded in a more mature fashion, in one discussion they also felt that the teachers were generally partial to girls and always gave them preference. One example that was used was in queuing to get into classrooms, the girls always got to go first and the boys were not allowed to question that. Girls were said to be taking advantage of this preference:

*Learner 1: like say now I bump into a girl, like an accident and then I say, sorry, and then, then she smacks me. This other boy, he was standing in the line, because this other boy pushed into him, he pushed the boy back, he knocked the girl behind him, he said sorry, so the girl said to him ajrrr, so she hit him*

*Learner 2: Ja, the girls are violent. [Learners, school 26]*

#### **4.2.7 Teachers' views on impact of the intervention**

The majority of educators thought the SATZ programme had some impact on their learners at various levels. Their belief in the potential benefits of the intervention was partly one of the factors that influenced the teachers' acceptance and implementation of the intervention. Many teachers felt that the programme had increased learner participation in class and boosted enthusiasm for LO among the students. Several educators reported that the learners enjoyed it so much that they wanted to use other subject periods for LO. Based on the classroom observations, though, this enthusiasm was not present at some schools. At one school, most students did not have their workbooks, while others faced the back of the class disinterested in the lesson. In a different class and with a different teacher at the same school, the students were attentive, had their workbooks and participated fully in the lesson. Although the teachers attributed this to the fact that one was English and the other an Afrikaans

medium class, these stark differences in the same school point to the role that the teacher-student relationship can have on the delivery of an intervention.

According to the teachers, the lesson that resonated most with the students was on substance use. Teachers were concerned that the intervention contained only one lesson on substance use because they saw this as a more immediate problem and the entry point to other risky behaviours in their communities. Within the vicinity of one school, there were 11 *shebeens* (informal pubs, some of which were operated from residential homes) and the only pleasure available according to the teachers was alcohol and drugs, which they linked to unprotected sexual activities. Nevertheless, most teachers were confident that the intervention would have an impact on sexual behaviours.

Asked what topics they would have liked to have more information about, the learners in most groups mentioned substance and drug use. The intervention contained only one lesson on substance use with regard to sexual decision-making. The suggestion for more information on substance use was coming from schools located in areas known to have high drug use, as well as those located in areas that are not known to have high drug use.

The intervention also had some probably unintended effects beyond the learners. One educator mentioned that as a result of implementing the intervention, she had started a diploma course on HIV/AIDS management in the workplace. Another educator had conducted a workshop on condom use for the rest of the staff at her school when she realized that few of them knew how to use a condom correctly, and intended to conduct further information sessions with the teachers. At the school level, many educators mentioned that the intervention had got them thinking about issues such as a

school HIV/AIDS policy, and possible measures for supporting learners living with HIV.

#### 4.2.8 Additional interventions

Various other activities at some schools interfered with the implementation of the SATZ intervention. These activities were not classroom-based, but some occurred during LO periods, further shortening the duration available for the intervention. It is also possible that the content of these activities may have complemented or contradicted that of the SATZ intervention. Some of the reported additional activities are summarized in the table below.

**Table 4.5 Additional interventions**

School	additional activities
01	Talk by a former student living with HIV
02 and 26	Talk by a person living with HIV
09	Frequent visits by HIV/AIDS facilitators from various NGOs
22	Whole school drug programme; peer counseling workshop for grade 11; HIV/AIDS play for grade 12

#### 4.3 What was done at the control schools?

In the previous sections I have presented process evaluation findings from the intervention schools. In this section I will present findings from interviews conducted with LO teachers at each of the control schools.

The objectives of collecting data at the control schools were:

- to provide contextual data regarding the control schools in order to assist in interpreting the observed behaviour outcomes

- to describe the interventions that were delivered at these schools during the SATZ implementation period
- To establish whether any of the control schools knew of or implemented any components of the SATZ intervention.

#### **4.3.1 The school contexts**

As with the intervention schools, the contextual circumstances of the intervention schools also differed in student demographics as well as socio-economic characteristics. Eight of the schools had predominantly coloured student populations; 4 had a majority black students, and one had a majority white student population. By virtue of South Africa's history, the school with a predominantly white student body was also much better resourced than the other schools in terms of infrastructure and number of trained teachers. The fees at this school were also substantially higher compared to the other schools. The class sizes also varied across the schools, ranging from 30 to 70 students per class. For example, in two schools which had a total of 400 grade 8 learners each, one had 11 classrooms, while the other had 6.

#### **4.3.2 The interventions implemented**

Teachers were asked what HIV/AIDS programmes they delivered during the SATZ intervention period. The interview guide (appendix E) also contained a list of topics and teachers were asked to indicate which of these topics they implemented, as well as the strategies employed and the amount of time spent on the intervention.

The control schools attempted to cover all the LO focus areas as required in the curriculum. They all did not use the same texts and materials as each school developed their lessons from various sources. The focus and presentation of the lessons therefore varied from school to school. It was difficult for most teachers to say

exactly how much time they spent on HIV/AIDS education, because they touched on it during the lessons covering other focus areas of LO. At one school for example, the teachers said they spent 1 hour and 15 minutes a week on LO, while at another, 2 hours and 30 minutes per week were spent on LO. The amount of reported time spent on HIV/AIDS education ranged from 1 lesson to about ten weeks during the entire school year. Many of the teachers also mentioned that they left the sexuality bit of LO for the later in the year because it was easier to talk about these topics when teachers and learners had got to know each other better.

Almost all the teachers said they covered most of the topics which were mentioned in the interview guide. The range of topics covered included Life skills, which addressed personal development, self esteem, assertiveness, and coping with peer pressure; Health; Violence; Substance use; Sex and sexuality, which included HIV/AIDS. Although all the teachers had implemented some HIV/AIDS education, it was difficult to establish the depth, scope or quality with which this was done because the teachers viewed it as part of the bigger picture in LO and not a separate topic. However, most teachers seemed to have dwelt more on the facts about HIV transmission and prevention, including abstinence and condom use. There were five schools at which the teachers said that they explicitly focussed on abstinence only because they felt that the learners were too young to deal with the responsibilities that come with being sexually active. Only two teachers had conducted a condom demonstration, while at a few of the schools this was done by nurses or facilitators from outside the school. Some of those who did not address the topic of condoms gave reasons such as being uncomfortable with the topic; not wanting to be seen as encouraging students to have sex; concerns that this would negatively affect their relationship with the students; concerns about negative parent reactions; and the view

that teaching about condoms was not their responsibility. The majority of the teachers preferred hierarchical messages that promoted abstinence, with condom use being a secondary message. Besides the LO curriculum delivered by teachers, various NGOs had implemented HIV/AIDS, substance use or sexuality education at most of the schools.

### **4.3.3 Implementation strategies**

Some of the strategies employed at the control schools were similar to those used in the SATZ intervention. These included role-plays; small group and whole class discussions; individual activities; boxes in which learners could anonymously post questions they were afraid to ask in class; and songs. Only one teacher mentioned that she mostly used *“the old teaching methods”*, which meant *“standing in front of the class and teaching”* with minimum student involvement. Group work was the most popular strategy among the teachers, because it was an opportunity for the learners interact more with each other and talk about things they were afraid to raise in front of the whole class. One teacher favoured this method because she saw it as a way for *“the weak ones to learn from the stronger ones”*. However, although small group work was a preferred method the large class sizes were mentioned as a challenge to using it effectively and frequently.

As with the intervention schools, control school teachers attempted role-plays but experienced difficulties due to lack of sufficient time and disciplinary problems.

*“Yes and role plays, especially that, they love that. But I can guarantee it takes for ever. You are limited to how you use it because the amount of time that goes in there. They first have to discuss this thing and get this play ready and then*

*they need to come and present it. In front of a class and most of the time you will find them still organizing while the play is on.*” [Female Educator, school 15]

#### **4.3.4 Knowledge of the SATZ intervention**

The interviews with control school teachers also sought to establish what, if anything, they knew about the content of the SATZ intervention. The findings indicated that the experimental conditions were not compromised as none of the teachers at the control schools had seen the intervention material or knew anything about its content. None of the control school teachers had communicated with any intervention school teachers. The extent of their knowledge of the project was therefore limited to their participation in the evaluation as control schools. Due to teacher turnover, some of the teachers only became aware of the project when contacted to participate in the interviews as they were not at the schools at the beginning of the project, or were not teaching LO in grade 8. Several teachers were unhappy about the fact that their schools were randomised to the control arm of the study because they felt that their learners would not benefit from having been part of the evaluation research. At one of the control schools, the principal was reluctant to participate because as he said, he was tired of researchers from various universities conducting research at the school which in his view did not benefit the students in any way. One of the teachers at another control school allocated insufficient time to the questionnaire administration, hence only 87 (2 classes) of the 250 grade eight students participated in the evaluation. Another teacher who was very upset at being in the control group acted out his discontent by refusing to allow the questionnaire to be administered to all the grade 8 classes and instead only allowing me to survey about a third of the students at his school. This particular teacher also expressed in detail his intention to leave the school as he was demoralised with the teaching profession and would have preferred

to be in the intervention group in the hope that this would have renewed his interest in teaching LO. The downside to this is in terms of the implementation was that because he was demoralised, the teacher may have performed less than optimally in his delivery of LO. In such a case a false positive conclusion could be reached because the control school teacher had not performed well in his implementation, but not because the experimental school teacher had performed better in comparison.

Once the study was complete (after the second follow-up), the comparison schools were supplied with the learner workbooks and teacher manuals. The grade 8 LO teachers were also trained by the same facilitator who trained the intervention school teachers. The control schools were however not offered continued support from the SATZ project thereafter.

So far I have presented findings from the process evaluation. In the following sections of this chapter, I will present analysis and results of the outcome evaluation.

#### **4.4 Outcome evaluation**

Outcome evaluation was conducted to assess the intervention effect on (i) abstinence/delay of sexual intercourse; (ii) consistent condom use. A self administered questionnaire was administered in both intervention and control schools at baseline, 6 months, and 14-15 months after the baseline.

##### **4.4.1 Study sample**

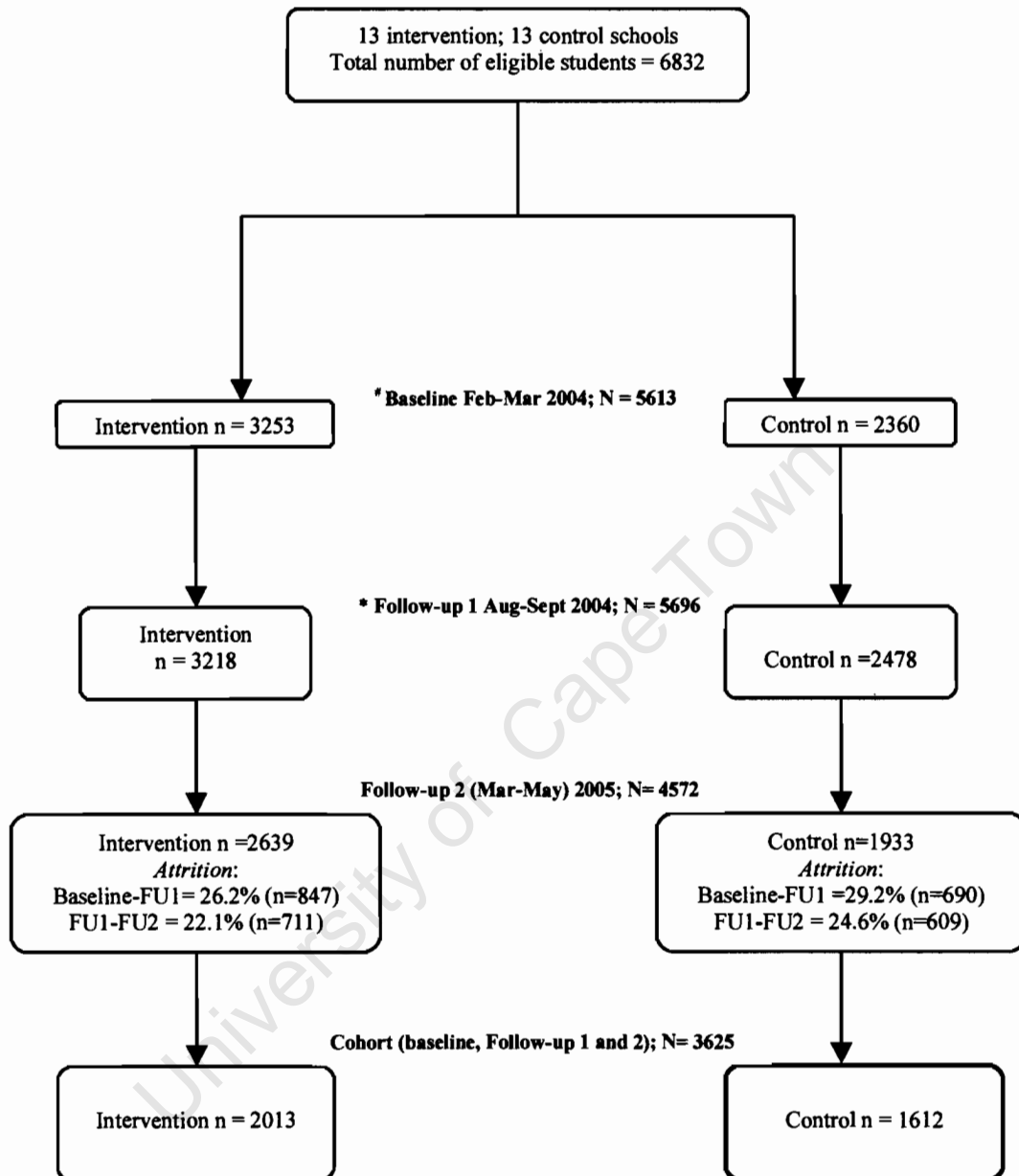
A total of 6364 students participated in the study; 5646 at baseline; 5696 at first follow-up; 4572 at second follow-up. The first follow-up sample was larger than the baseline sample because baseline data for one control school were lost due to a programming error in which the palm pilot software failed to recognize the data

format. This pair was excluded from the analyses presented in this thesis. Students that were absent from school at baseline were included at the first follow-up. Also, students whose parents did not give permission for them to participate at baseline but later informed me that their children could participate were also included at the first follow-up. All other students whose parents declined participation were excluded from the study. No new respondents were included at the second follow-up.

All the 13 intervention and 13 control schools participated at all points of measurement, but there was loss to follow-up at the individual level. The primary reasons for non-participation at baseline and follow-up were absenteeism, transfer to another school, truancy or dropout. Up to three visits were made to some schools for each of the follow up data collections so as to follow up on students that were absent at the previous data collection visits. Students that had dropped out of school were not followed up.

The analysis sample in this thesis was the cohort, defined as respondents from the 12 intervention and 12 control schools that completed all three surveys (N=3625). The students who did not have permission to participate as described earlier, as well as those that participated at the first follow-up and not the baseline were therefore excluded from the analysis sample. The study sample is described in Figure 4.1 below.

**Figure 4.1 Description of the study sample baseline to 15-months follow-up**



# 126 parents did not give permission

\* Students that had not completed the baseline survey were included at follow-up 1.

#### 4.4.1.1 Cleaning and coding the data

The data were downloaded from the PDAs in Excel format then converted into SPSS (Version 13) and cleaned appropriately. Data coding and cleaning decisions were

made together with other members of the SATZ project so that standardised procedures were employed. For the psychosocial variables, scale scores were obtained by summing up the items in the scale and computing a mean score. Each respondent needed to have answered a certain minimum number of questions for each scale in order to be included in the analysis. For example, on the scale for social norms regarding sex (Q56-Q60), respondents must have answered at least 3 questions).

For sexual behaviour data, analyses were conducted on single item responses. On sexual intercourse, the data were cleaned and recoded as follows. Missing values at baseline were recoded into not having had vaginal intercourse if the respondent reported to be a virgin at any of the follow-up data collections. The main reason for missing data was non-responses. Students who reported having had vaginal intercourse at baseline, but reported not to have had vaginal sex at one of the follow up data collections, were assumed to be virgins at baseline. This was based on the assumption that their follow-up reports were more likely to be valid, and that their baseline reports about having had vaginal intercourse could have been caused by lack of understanding of the question or a tendency to over-report sexual experiences. For example, at baseline, 9.9% (n=386) of the students answered 'yes' to the question 'have you ever had vaginal sex' but this was inconsistent with their responses at the follow-up surveys in which they reported not having had vaginal sex. In addition to cleaning these baseline responses based upon responses at the subsequent surveys, the questionnaire also contained questions on self reported pregnancy and sexually transmitted infections that were used to validate the self reported behavioural data. For example if a respondent had not had sex at follow-up but answered 'yes' to the question 'ever been pregnant', the data for pregnancy were appropriately recoded as 'never had sex'.

Those who reported at baseline or at first follow up that they had had vaginal intercourse, and when this was not contradicted by later reports, were assumed to have had vaginal intercourse at the second follow up occasion, and missing values were recoded accordingly. The questionnaire also contained a number of questions that allowed for cross checking of the accuracy of responses. All questionnaires that showed contradictory responses to key questions (e.g. if a respondent said that they had never had sex, but then responded positively to the question on whether they had used condoms the last time they had sex, or that they had ever been pregnant) were recoded appropriately either as missing or as having not engaged in the behaviour.

#### **4.4.2 Preliminary analyses**

As discussed in Chapter 3, the schools were matched pair-wise. Thus analyses were also conducted pair-wise. Preliminary analyses were conducted to assess baseline equivalence between the control and intervention groups. This was done pair-wise for all the psychosocial variables: knowledge of HIV/AIDS, attitude towards delay of sexual intercourse, attitude towards condoms, condom availability/ self-efficacy to obtain condoms, injunctive norm, outcome expectancy towards STDs/ pregnancy, perceived susceptibility to STD infection, self-efficacy to use condoms, self-efficacy to delay intercourse, social norms regarding condoms and social norms regarding sex. Pair-wise analyses were also performed for demographic variables (age, gender, family structure, language and socioeconomic status), as well as for the primary outcome variables (sexual intercourse (have you ever had vaginal sex) and condom use at last sexual intercourse). Further, I also conducted subgroup analyses on the outcome variables, for age, gender, home language and socioeconomic status (SES).

#### **4.5 Results of the outcome evaluation**

In the following sections, I will present results of the outcome evaluation. The intervention effects were assessed using weighted mean differences and confidence intervals for continuous variables; and odds ratios and confidence intervals for the dichotomous variables on sexual behaviour.

##### **4.5.1 Baseline comparisons between intervention and control schools**

I will first present the results of comparisons between the two groups (intervention and control) at baseline (BL) for sociodemographic characteristics, the theoretical constructs and sexual behaviour (sexual activity and condom use). This will be followed by the results comparing the behaviour outcomes at first follow-up (FU1) and second follow-up (FU2).

##### **4.5.1.1 Demographic characteristics at baseline**

Analyses for sociodemographic characteristics were conducted pair-wise. Weighted mean differences and confidence intervals were computed to compare age and socioeconomic status between the pairs. For all other demographic variables, odds ratios and confidence intervals were computed to determine differences between the pairs. There were some significant differences in some of the pairs as shown in Appendix I. However, there were no overall significant differences between the groups for all the demographic characteristics. Therefore, the summary of sociodemographic characteristics is presented in the Table 4.6 below. As shown in the table, the intervention and control samples were similar in age (mean 14.2 years intervention group; 14.3 years control group); both had higher proportions of female respondents (54.3% intervention; 53.6% control); and higher proportions of Afrikaans speaking students in both groups. The majority of the sample in both groups was

Christian and 64.4% intervention group and 64.9% control group students lived with both biological parents. The groups were well matched at baseline, thereby reducing the threat to internal validity.

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**Table 4.6 Sociodemographic characteristics of the study sample at baseline:****N=3625**

	<b>Intervention</b>	<b>Control</b>	<b>Total</b>
	<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>
<b>Age in years*</b>			
12	9 (0.4)	1 (0.1)	10 (0.3)
13	440 (21.9)	357 (22.1)	797 (22.0)
14	977 (48.5)	786 (48.8)	1763 (48.6)
15	357 (17.7)	240 (14.9)	597 (16.5)
=>16	222 (11.0)	224 (13.9)	446 (12.3)
Missing	8 (0.4)	4 (0.2)	12 (0.3)
<b>Sex</b>			
Male	920 (45.7)	748 (46.4)	1668 (46.0)
female	1093 (54.3)	864 (53.6)	1957 (54.0)
<b>Home language</b>			
Xhosa	779 (38.7)	550 (34.1)	1329 (36.7)
Afrikaans	721 (35.8)	597 (37.0)	1318 (36.4)
English	395 (19.6)	401 (24.9)	796 (22.0)
Other	58 (2.9)	34 (2.1)	92 (2.5)
Missing	60 (3.0)	30 (1.9)	90 (2.5)
<b>Religion</b>			
Christian Catholic	588 (29.2)	400 (24.8)	988 (27.3)
Christian other denomination	938 (46.6)	895 (55.5)	1833 (50.6)
Islam	235 (11.7)	160 (9.9)	395 (10.9)
Other	240 (11.9)	140 (8.7)	380 (10.5)
Missing	12 (0.6)	17 (1.1)	29 (0.8)
<b>Family structure</b>			
Live with mother	562 (27.9)	435 (27.0)	997 (27.5)
live with father	90 (4.5)	88 (5.5)	178 (4.9)
live with both parents	1181 (58.7)	967 (60.0)	2148 (59.3)
Missing	180 (8.9)	122 (7.6)	302 (8.3)
<b>Socioeconomic status</b>			
Low	691 (34.3)	541 (33.6)	1232 (34.0)
Middle	659 (32.7)	513 (31.8)	1172 (32.3)
high	663 (32.9)	558 (34.6)	1221 (33.7)

\* Approximation based on reported year of birth; # standardized sum score based on 7 variables (Q13A-13E; Q 15 and Q 16)

#### 4.5.1.2 Pair-wise comparison of theoretical constructs at baseline

Pair-wise comparisons were conducted for the 11 theoretical constructs included in the questionnaire. There were overall small differences between the intervention and control groups for the constructs knowledge of HIV/AIDS and perceived susceptibility to STDs. For all other theoretical constructs, there were overall no significant differences at baseline, but there were a few pairs for which there were differences between the control and intervention school in some of the pairs. Tables of the pair-wise comparison of theoretical constructs at BL, FU1 and FU2 are presented in Appendix J. In the table below, I present a summary of the overall weighted mean differences and confidence intervals for each of the constructs at baseline.

**Table 4.7 Theoretical constructs at baseline**

Construct	Intervention n	Control n	WMD	95% CI
Knowledge of HIV/AIDS	1999	1600	-0.23	[-0.40, -0.06]
Attitude towards delay of sexual intercourse	1983	1594	0.05	[-0.02, 0.11]
Attitude towards condoms	1985	1595	-0.03	[-0.08, 0.03]
Outcome expectancy towards STDs/ pregnancy	1992	1595	0.01	[-0.04, 0.05]
Perceived susceptibility to STD	1985	1593	-0.11	[-0.17, -0.06]
Social norms regarding sex	1989	1594	-0.02	[-0.07, 0.03]
Social norms regarding condoms	1985	1584	-0.03	[-0.07, 0.02]
Injunctive norm	1986	1589	-0.06	[-0.12, 0.01]
Self-efficacy to delay intercourse	1981	1586	-0.03	[-0.08, 0.02]
Self-efficacy to use condoms	1973	1580	-0.03	[-0.07, 0.02]
Condom availability/ self-efficacy to obtain condoms	1973	1586	- 0.01	[-0.07, 0.05]

Abbreviations: WMD: Weighted mean difference; CI: Confidence interval

#### **4.5.1.3 Sexual behaviour at baseline**

The two primary outcomes were delay of initiation of sexual intercourse and increase in condom use.

##### **(i) Outcome 1: Delay of sexual intercourse**

Three questions were asked regarding sexual intercourse:

Q103. Have you ever had vaginal sexual intercourse? This means intimate contact with someone during which the penis enters the vagina (female private parts)

Q104. Have you ever had oral sex? This means intimate contact during which the penis is in the mouth or mouth to anus or mouth to vagina

Q105. Have you ever had anal sex? This means sexual intercourse during which the penis enters the anus

The results are presented only for vaginal sexual intercourse because the majority of those that reported having had vaginal sex had also had anal sex. Also, it was easier to validate the responses to this question using subsequent questions as discussed earlier, such as the question on pregnancy, thereby increasing confidence in the reliability of these data. Sexually active is therefore defined as ever having had vaginal intercourse.

Table 4.8 below presents a comparison between the intervention and control group for students that were sexually active at baseline. As the odds ratios (0.89) and confidence intervals ([0.69 to 1.15]) show, there were no statistically significant differences in vaginal sexual intercourse between the two groups indicating that the groups were well matched at baseline.

**Table 4.8 Sexually active respondents at baseline: N=3625**

Pair	Intervention		Control		OR	95% CI
	Sexually active n (%)	n	Sexually active n (%)	n		
1.	2 (1.6)	129	6 (3.6)	165	0.42	[0.08, 2.10]
2.	17 (6.0)	283	4 (7.0)	57	0.85	[0.27, 2.62]
3.	3 (1.5)	195	4 (2.4)	169	0.64	[0.14, 2.92]
4.	13 (7.8)	167	7 (5.0)	140	1.60	[0.62, 4.14]
5.	0 (0.0)	12	1 (1.0)	99	2.63	[0.10, 68.03]
6.	22 (9.7)	227	44 (20.6)	214	0.41	[0.24, 0.72]
7.	27 (9.1)	296	9 (9.5)	95	0.96	[0.43, 2.12]
8.	30 (21.3)	141	31 (18.0)	172	1.23	[0.70, 2.15]
9.	5 (7.9)	63	6 (4.5)	133	1.82	[0.54, 6.22]
10.	20 (10.5)	190	13 (12.6)	103	0.81	[0.39, 1.71]
11.	9 (5.2)	173	1 (0.5)	208	11.36	[1.42, 90.58]
12.	1 (0.7)	137	2 (3.5)	57	0.20	[0.02, 2.28]
<b>Overall</b>	<b>149 (7.4)</b>	<b>2013</b>	<b>128 (7.9)</b>	<b>1612</b>	<b>0.89</b>	<b>[0.69, 1.15]</b>

Abbreviations: SD: Standard deviation; OR: Odds Ratio; CI: Confidence interval

In addition to the measure of having ever had sex, sexual activity was also measured by the number of lifetime sexual partners (Question 108). Some of the respondents entered figures as high as 90. In cleaning the data, I considered all responses of number of partners greater than 5 as invalid and recoded these into missing. The results comparing the mean number of lifetime sexual partners are presented in Table 4.9 below. Among the sexually active students at baseline, there was no significant difference in the mean number of lifetime sexual partners between the intervention and control groups.

**Table 4.9** Number of lifetime sexual partners at baseline

Pair	Intervention			Control			WMD	CI
	n <sup>#</sup>	Mean number of partners	SD	n <sup>#</sup>	Mean number of partners	SD		
3	2	3.0	1.4	3	3.0	2.0	0.00	[-2.98, 2.98]
4	3	3.3	1.5	3	2.3	1.2	1.00	[-1.17, 3.17]
6	13	1.9	1.1	31	2.4	1.3	-0.50	[-1.25, 0.25]
7	15	2.8	1.3	5	3.0	1.9	-0.20	[-1.99, 1.59]
8	18	3.0	1.5	26	2.4	1.3	0.60	[-0.25, 1.45]
9	2	2.5	0.7	2	2.5	0.7	0.00	[-1.37, 1.37]
10	12	2.3	1.2	6	2.3	1.0	0.00	[-1.05, 1.05]
<b>Overall</b>	<b>65</b>	<b>2.6</b>	<b>0.16</b>	<b>76</b>	<b>2.4</b>	<b>1.3</b>	<b>0.02</b>	<b>[-0.42, 0.46]</b>

Abbreviations: SD: Standard deviation; WMD = weighted mean difference; CI: confidence Interval; <sup>#</sup> number of sexually active learners who had ≤5 lifetime sexual partners

### (ii) Outcome 2: Condom use

For condom use, the outcome measure was condom use at last sex:

Q112. The last time you had sex did you use anything to prevent pregnancy or disease? Please mark more than one if necessary.

One of the response options for this question was the use of a condom.

At baseline, there were no differences between the intervention and control groups for the outcome condom use at last sex as presented in the table below.

**Table 4.10 Condom use at Baseline for sexually active students: N=256**

Pair*	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	N	Condom use at last sex n (%)	N		
1	1	2	3	6	1.00	[0.04, 24.55]
2	10	17	1	4	4.29	[0.37, 50.20]
3	2	3	2	4	2.00	[0.09, 44.35]
6	8	21	13	43	1.42	[0.48, 4.25]
7	11	27	5	9	0.55	[0.12, 2.52]
8	12	29	15	30	0.71	[0.25, 1.97]
9	1	4	2	6	0.67	[0.04, 11.29]
10	11	20	7	12	0.87	[0.21, 3.71]
11	5	9	1	1	0.41	[0.01, 12.64]
<b>Overall</b>	<b>62 (46.6)</b>	<b>133</b>	<b>49 (42.6)</b>	<b>115</b>	<b>0.96</b>	<b>[0.56, 1.65]</b>

Responses were missing for this item for pairs 4 & 5; pair 12 OR could not be estimated

Abbreviations: OR: Odds ratio; CI: confidence interval

In the section above I have presented baseline comparisons between the intervention and control schools for the theoretical construct and sexual behaviour. In the following sections I will present results for comparisons of theoretical constructs at first and second follow-up, as well as the intervention effects on sexual behaviour.

#### 4.5.2 Comparison of theoretical constructs at FU1 and FU2

The tables comparing the theoretical constructs for each pair at FU1 and FU2 are presented in Appendix J. In Tables 4.11 and 4.12 below, I present the overall WMD and CI for each of the theoretical constructs. At FU1, there was a small intervention effect for the constructs knowledge of HIV/AIDS; attitude towards condoms;

perceived susceptibility and injunctive norm. There were also differences between the intervention and control school for some of the pairs as shown in the pairwise comparison tables in appendix J.

**Table 4.11 Comparison of theoretical constructs at FU1: N=3625**

Construct	Intervention n	Control n	WMD	95% CI
Knowledge of HIV/AIDS	1999	1600	-0.23	[-0.40, -0.06]
Attitude towards delay of sexual intercourse	1983	1594	0.02	[-0.05, 0.08]
Attitude towards condoms	1985	1595	-0.08	[-0.13, -0.02]
Outcome expectancy towards STDs/ pregnancy	1993	1598	-0.01	[-0.06, 0.03]
Perceived susceptibility to STD	1985	1593	-0.11	[-0.17, -0.06]
Social norms regarding sex	1989	1594	-0.02	[-0.07, 0.03]
Social norms regarding condoms	1985	1584	-0.03	[-0.07, 0.02]
Injunctive norm	1986	1589	-0.06	[-0.12, -0.01]
Self-efficacy to delay intercourse	1981	1586	-0.03	[-0.08, 0.02]
Self-efficacy to use condoms	1973	1580	-0.03	[-0.07, 0.02]
Condom availability/ self-efficacy to obtain condoms	1973	1586	-0.01	[-0.07, 0.05]

Abbreviations: WMD = weighted mean difference; CI: confidence Interval

The positive intervention effects observed for some of the theoretical constructs at FU1 were not evident at FU2 as shown in the table below. There were no differences between the intervention and control groups.

**Table 4.12 Comparison of theoretical constructs at FU2: N=3625**

Construct	Intervention	Control	WMD	95% CI
	n	n		
Knowledge of HIV/AIDS	1986	1601	0.04	[-0.12, 0.20]
Attitude towards delay of sexual intercourse	1972	1596	0.09	[0.02, 0.15]
Attitude towards condoms	1966	1595	0.00	[-0.05, 0.06]
Outcome expectancy towards STDs/ pregnancy	1971	1602	0.01	[-0.04, 0.06]
Perceived susceptibility to STD	1958	1593	-0.02	[-0.08, 0.04]
Social norms regarding sex	1961	1590	0.03	[-0.02, 0.09]
Social norms regarding condoms	1951	1583	0.02	[-0.03, 0.07]
Injunctive norm	1950	1582	0.00	[-0.06, 0.06]
Self-efficacy to delay intercourse	1957	1567	0.05	[0.00, 0.10]
Self-efficacy to use condoms	1923	1565	0.02	[-0.03, 0.07]
Condom availability/ self-efficacy to obtain	1943	1566	0.01	[-0.05, 0.08]

Abbreviations: WMD = weighted mean difference; CI: confidence Interval

### 4.5.3 Intervention effects on sexual intercourse

In the sections below I will present comparisons of the sexual activity and condom use at FU1 and FU2.

### 4.5.4 Sexual intercourse at first follow-up

The table below presents results for sexual activity at FU1. There were no significant differences between the groups in sexual behaviour at FU1 (OR= 0.88; CI [0.73 to 1.08]).

**Table 4.13 Sexual activity at FU1: N=3625**

Pair	Intervention		Control			
	Sexually active n (%)	N	Sexually active n (%)	N	OR	95% CI
1.	7 (5.4)	129	14(8.5)	165	0.62	[0.24, 1.58]
2.	36 (12.7)	283	9(15.8)	57	0.78	[0.35, 1.72]
3.	13 (6.7)	195	4 (2.4)	169	2.95	[0.94, 9.22]
4.	26 (15.6)	167	14 (10.0)	140	1.66	[0.83, 3.32]
5.	0 (0.0)	12	6 (6.1)	99	0.58	[0.03, 10.84]
6.	45 (19.8)	227	67(31.3)	214	0.54	[0.35, 0.84]
7.	50 (16.9)	296	24(25.3)	95	0.60	[0.35, 1.05]
8.	47(33.3)	141	57(33.1)	172	1.01	[0.63, 1.62]
9.	8(12.7)	63	12(9.0)	133	1.47	[0.57, 3.79]
10.	31(16.3)	190	25 (24.3)	103	0.61	[0.34, 1.10]
11.	17(9.8)	173	5 (2.4)	208	4.42	[1.60, 12.25]
12.	7(5.1)	137	4 (7.0)	57	0.71	[0.20, 2.54]
<b>Overall</b>	<b>287 (14.3)</b>	<b>2013</b>	<b>241 (15.0)</b>	<b>1612</b>	<b>0.88</b>	<b>[0.73, 1.08]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.4.1 Sexual activity at second follow-up

At second follow-up, slightly more intervention students (25.6%) were sexually active compared to control group students (24.6%) as shown in the table below. The differences were not statistically significant as shown below (OR = 1.00; CI [0.85 to 1.18]).

**Table 4.14 Sexual activity at second follow-up: N=3625**

Pair	Intervention		Control		OR	95% CI
	Sexually active n (%)	N	Sexually active n (%)	N		
1.	17 (13.2)	129	26 (15.8)	165	0.81	[0.42, 1.57]
2.	66 (23.3)	283	15 (26.3)	57	0.85	[0.44, 1.63]
3.	24 (12.3)	195	12 (7.1)	169	1.84	[0.89, 3.80]
4.	33 (19.8)	167	25 (17.9)	140	1.13	[0.64, 2.02]
5.	4 (33.3)	12	15 (15.2)	99	2.80	[0.75, 10.48]
6.	83 (36.6)	227	93 (43.5)	214	0.75	[0.51, 1.10]
7.	90 (30.4)	296	37 (38.9)	95	0.68	[0.42, 1.11]
8.	76 (53.9)	141	87 (50.6)	172	1.14	[0.73, 1.78]
9.	15 (23.8)	63	26(19.5)	133	1.29	[0.63, 2.64]
10.	63 (33.2)	190	43 (41.7)	103	0.69	[0.42, 1.14]
11.	30 (17.3)	173	11 (5.3)	208	3.76	[1.82, 7.75]
12.	14 (10.2)	137	7 (12.3)	57	0.81	[0.31, 2.13]
<b>Overall</b>	<b>515 (25.6)</b>	<b>2013</b>	<b>397 (24.6)</b>	<b>1612</b>	<b>1.00</b>	<b>[0.85, 1.18]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.4.2 Transition to sexual intercourse between BL and FU2

In this section, I will present results on sexual activity amongst the learners that became sexually active between baseline and the second follow-up.

At baseline, 1319 (81.0%) students intervention group and 1074 (83.3%) of students in the control group reported having never had vaginal intercourse. Between BL and FU2 525 students became sexually active; 309 (19.0%) in the intervention group; and 216 (16.7%) in the control group. The differences were not statistically significant

(OR = 1.05; CI [0.85 to 1.29]). The transition to vaginal intercourse was reported by 123 (12.4%; n=993) girls in the intervention group and 80 girls (10.3%; n=773) in the control group with no statistically significant difference between the groups (OR= 1.04; CI [0.76 to 1.42]). Among the intervention boys, 186 (29.3%; n=635) became sexually active between BL-FU2, compared to 136 (26.3%; n=517) control group boys. The differences were not statistically significant (OR = 1.06; 95% CI [0.79 to 1.42]). The table below presents the transition to vaginal sexual intercourse between BL-FU2 for the intervention and control groups.

**Table 4.15 Transition to sexual intercourse BL to FU2 : N=2918**

Pair	Intervention		Control		OR	95% CI
	Sexually active n (%)	N	Sexually active n (%)	N		
1.	14 (11.5)	122	19(12.2)	156	0.93	[0.45, 1.95]
2.	44(19.1)	230	11 (24.4)	45	0.73	[0.34, 1.56]
3.	21 (11.4)	185	7(4.5)	157	2.74	[1.13, 6.64]
4.	20(14.7)	136	12(10.3)	117	1.51	[0.70, 3.23]
5.	2(20.0)	10	13(15.1)	86	1.40	[0.27, 7.37]
6.	50(30.1)	166	37 (29.6)	125	1.03	[0.62, 1.70]
7.	53(23.7)	224	21(31.8)	66	0.66	[0.36, 1.21]
8.	27(35.5)	76	41(44.6)	92	0.69	[0.37, 1.28]
9.	10 (21.3)	47	16 (14.0)	114	1.66	[0.69, 3.97]
10.	36(23.2)	155	25(32.5)	77	0.63	[0.34, 1.15]
11.	19(12.8)	117	9 (4.5)	201	3.12	[1.37, 7.11]
12.	13 (10.2)	128	5 (9.3)	54	1.11	[0.37, 3.28]
<b>Overall</b>	<b>309 (19.0)</b>	<b>1628</b>	<b>216 (16.7)</b>	<b>1290</b>	<b>1.05</b>	<b>[0.85, 1.29]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.4.3 Subgroup analysis on the outcome sexual intercourse

I conducted sub-group analysis on sexual activity by gender, home language and socio-economic status. The results of the subgroup analyses for sexual activity at FU2 are presented in the tables below. The intervention had no effect on sexual behaviour for either boys (OR = 1.17; CI [0.93 to 1.46]) or girls (OR = 0.87; CI [0.66 to 1.14]).

##### (i) Comparison of sexual activity by gender

**Table 4.16 Sexual activity among boys at FU2: N=1668**

Pair	Intervention		Control		OR	95% CI
	Sexually active n (%)	N	Sexually active n (%)	N		
1.	10 (18.9)	53	23 (30.3)	76	0.54	[0.23, 1.25]
2.	47 (37.3)	126	9 (36.0)	25	1.06	[0.43, 2.58]
3.	15 (15.3)	98	9 (11.7)	77	1.37	[0.56, 3.31]
4.	30 (38.0)	79	21 (32.8)	64	1.25	[0.63, 2.50]
5.	4 (66.7)	6	11 (28.9)	38	4.91	[0.78, 30.80]
6.	48 (49.5)	97	54 (51.4)	105	0.93	[0.53, 1.61]
7.	74 (49.7)	149	20 (43.5)	46	1.28	[0.66, 2.50]
8.	50 (64.1)	78	63 (56.3)	112	1.39	[0.77, 2.52]
9.	9 (32.1)	28	19 (35.8)	53	0.85	[0.32, 2.24]
10.	45 (67.2)	67	31 (68.9)	45	0.92	[0.41, 2.08]
11.	20 (27.0)	74	6 (7.4)	81	4.63	[1.74, 12.30]
12.	7 (10.8)	65	5 (19.2)	26	0.51	[0.15, 1.77]
<b>Overall</b>	<b>359 (39.0)</b>	<b>920</b>	<b>271 (36.2)</b>	<b>748</b>	<b>1.17</b>	<b>[0.93, 1.46]</b>

**Table 4.17 Sexual activity among girls at FU2: N=1957**

Pair	Intervention		Control		OR	95% CI
	Sexually active n (%)	N	Sexually active n (%)	N		
1.	7 (9.2)	76	3 (3.4)	89	2.91	[0.73, 11.67]
2.	19 (12.1)	157	6 (18.8)	32	0.60	[0.22, 1.64]
3.	9 (9.3)	97	3 (3.3)	92	3.03	[0.79, 11.58]
4.	3 (3.4)	88	4 (5.3)	76	0.64	[0.14, 2.93]
5.	0 (0.0)	6	4 (6.6)	61	0.98	[0.05, 20.39]
6.	35 (26.9)	130	39 (35.8)	109	0.66	[0.38, 1.15]
7.	16 (10.9)	147	17 (34.7)	49	0.23	[0.10, 0.50]
8.	26 (41.3)	63	24 (40.0)	60	1.05	[0.51, 2.17]
9.	6 (17.1)	35	7 (8.8)	80	2.16	[0.67, 6.97]
10.	18 (14.6)	123	12 (20.7)	58	0.66	[0.29, 1.47]
11.	10 (10.1)	99	5 (3.9)	127	2.74	[0.91, 8.30]
12.	7 (9.7)	72	2 (6.5)	31	1.56	[0.31, 7.98]
<b>Overall</b>	<b>156 (14.3)</b>	<b>1093</b>	<b>126 (14.6)</b>	<b>864</b>	<b>0.87</b>	<b>[0.66, 1.14]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

### (ii) Comparison of sexual activity within home language groups

I compared sexual activity between the intervention and control groups for each language group. There were no differences between the groups for either language as shown in the table below.

**Table 4.18 Comparison of sexual activity by home language at FU2**

Home language	Intervention		Control		OR	95% CI
	Sexually active n (%)	N	Sexually active n (%)	N		
Xhosa	279 (35.8)	773	244 (44.4)	549	0.77	[0.61, 0.97]
Afrikaans	144 (20.0)	719	91 (15.2)	596	1.32	[0.96, 1.80]
English	50 (12.7)	395	42 (10.5)	401	1.26	[0.78, 2.04]

Abbreviations: OR: Odds ratio; CI: confidence interval

### (iii) Comparison of sexual activity across socio-economic status

The sum score of questions 13A-13E made up one scale based upon number of assets in the home. The variable socio-economic status (SES) was a standardized sum score based on the assets variable (Q13A-13E); question 15 (the number of people sleeping in the same room) (reversed); and a subjective assessment of the material situation of the family (Q16). The standardized SES variable was then categorized into low, middle and high. Levels of sexual activity were compared within each of these SES categories. As with the previous variables, there were no differences between the groups for each of the SES categories. The results are presented in Tables 4.19 to Table 4.21 below.

**Table 4.19 Comparison of sexual activity in the low SES category: N=1245**

Pair#	Intervention		Control		OR	95%CI
	Sexually active in low SES n (%)	n*	Sexually active in low SES n(%)	n*		
1	4 (30.7)	13	2 (15.4)	13	2.44	[0.36, 16.55]
2	10 (26.3)	38	4 (44.4)	9	0.45	[0.10, 2.00]
3	0 (0.0)	2	4 (30.8)	13	0.42	[0.02, 10.75]
4	13 (28.3)	46	6 (17.1)	35	1.90	[0.64, 5.65]
5	2 (28.6)	7	2 (18.2)	11	1.80	[0.19, 16.98]
6	55 (34.8)	158	67 (42.7)	157	0.72	[0.46, 1.13]
7	55 (30.7)	179	31 (47.0)	66	0.50	[0.28, 0.89]
8	62 (53.0)	117	54 (48.2)	112	1.21	[0.72, 2.03]
9	7 (30.4)	23	12 (20.7)	58	1.68	[0.56, 5.00]
10	29 (31.2)	93	26 (37.1)	70	0.77	[0.40, 1.47]
11	2 (15.4)	13	0 (0.0)	9	4.13	[0.18, 96.93]
<b>Overall</b>	<b>239 (34.6)</b>	<b>691</b>	<b>208 (37.6)</b>	<b>554</b>	<b>0.87</b>	<b>[0.68, 1.10]</b>

#Pair 12 excluded as there were no students in this SES category at either the intervention or control school; \*Total number of students in the low SES category; Abbreviations: OR: Odds ratio; CI: confidence interval

**Table 4.20 Comparison of sexual activity in the middle SES category: N=1188**

Pair	Intervention		Control		OR	95%CI
	Sexually active in middle SES n (%)	n*	Sexually active in middle SES n (%)	n*		
1.	2 (6.5)	31	9 (13.2)	68	0.45	[0.09, 2.23]
2.	37 (28.9)	128	5 (17.9)	28	1.87	[0.66, 5.29]
3.	0 (0.0)	18	2 (6.5)	31	0.32	[0.01, 7.02]
4.	10 (12.0)	83	10(15.4)	65	0.75	[0.29, 1.94]
5.	1 (25.0)	4	5 (10.4)	48	2.87	[0.25, 33.06]
6.	27 (41.5)	65	23 (46.9)	49	0.80	[0.38, 1.70]
7.	29 (28.7)	101	6 (21.4)	28	1.48	[0.54, 4.02]
8.	14 (63.6)	22	27 (52.9)	51	1.56	[0.56, 4.35]
9.	3 (11.5)	26	10 (18.9)	53	0.56	[0.14, 2.24]
10.	29 (31.9)	91	13 (46.4)	28	0.54	[0.23, 1.28]
11.	11 (14.9)	74	5 (6.9)	72	2.34	[0.77, 7.11]
12.	1 (6.3)	16	1 (12.5)	8	0.47	[0.03, 8.60]
<b>Overall</b>	<b>164 (24.9)</b>	<b>659</b>	<b>116 (21.9)</b>	<b>529</b>	<b>0.99</b>	<b>[0.72, 1.36]</b>

\* total number of students in the middle SES category; Abbreviations: OR: Odds ratio; CI: confidence interval

**Table 4.21 Comparison of sexual activity in the high SES category: N=1152**

Pair	Intervention		Control		OR	95%CI
	Sexually active in high SES n (%)	n*	Sexually active in high SES n (%)	n*		
1.	11 (12.9)	85	15 (17.9)	84	0.68	[0.29, 1.59]
2.	19 (16.2)	117	6 (30.0)	20	0.45	[0.15, 1.33]
3.	24 (13.7)	175	11 (12.9)	85	1.07	[0.50, 2.30]
4.	10 (26.3)	38	9 (22.5)	40	1.23	[0.44, 3.46]
5.	1 (100.0)	1	8 (20.0)	40	11.47	[0.43, 307.43]
6.	1 (25.0)	4	3 (37.5)	8	0.56	[0.04, 8.09]
7.	6 (37.5)	16	0 (0.0)	1	1.86	[0.07, 52.76]
8.	0 (0.0)	2	6 (66.7)	9	0.11	[0.00, 2.93]
9.	5 (35.7)	14	4 (18.2)	22	2.50	[0.54, 11.65]
10.	5 (83.3)	6	4 (80.0)	5	1.25	[0.06, 26.87]
11.	17 (19.8)	86	6 (4.7)	127	4.97	[1.87, 13.19]
12.	13 (10.9)	119	6 (12.5)	48	0.86	[0.31, 2.41]
<b>Overall</b>	<b>112 (16.9)</b>	<b>663</b>	<b>78 (16.0)</b>	<b>489</b>	<b>1.18</b>	<b>0.83, 1.66]</b>

\* total number of students in the high SES category; Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.5 Intervention effects on condom use

##### 4.5.5.1 Condom use at last sex: first follow-up

At first follow-up, there were no intervention effects in any of the pairs and overall between the intervention and control groups for condom use at last sex. These results are presented in the table below.

**Table 4.22 Condom use at last sex FU1: N=521**

Pair*	Intervention		Control		OR	95% CI
	Condom use at last sex n(%)	N	Condom use at last sex n(%)	N		
1	4 (57.1)	7	11 (78.6)	14	0.36	[0.05, 2.60]
2	19 (54.3)	35	2 (22.2)	9	4.16	[0.75, 22.90]
3	7 (63.6)	11	2 (40.0)	5	2.63	[0.30, 23.00]
4	12 (48.0)	25	8 (53.3)	15	0.81	[0.22, 2.91]
6	25 (54.3)	46	20 (30.3)	66	2.74	[1.25, 5.99]
7	24 (49.0)	49	8 (33.3)	24	1.92	[0.69, 5.31]
8	13 (28.3)	46	28 (50.0)	56	0.39	[0.17, 0.90]
9	2 (28.6)	7	4 (33.3)	12	0.80	[0.10, 6.10]
10	15 (48.4)	31	12 (52.2)	23	0.86	[0.29, 2.53]
11	8 (44.4)	18	4 (80.0)	5	0.20	[0.02, 2.16]
12	5 (71.4)	7	2 (50.0)	4	2.50	[0.19, 32.19]
<b>Overall</b>	<b>134 (47.5)</b>	<b>282</b>	<b>101 (43.3)</b>	<b>233</b>	<b>1.13</b>	<b>[0.79, 1.62]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval; \* Pair 5 excluded because there were no responses in intervention school

#### 4.5.5.2 Condom use at last sex: second follow-up

At FU2, there was also no intervention effect on the outcome condom use at last sex as shown in the table below (OR = 1.21; CI [0.92 to 1.59]). Of students that reported having had sexual intercourse at second follow-up, 50.2% of the intervention group and 44.9% in the control group reported having used a condom at the last sexual intercourse.

**Table 4.23 Condom use at last sex FU2: N=884**

Pair	Intervention		Control		OR	95% CI
	Condom use at last sex n(%)	N	Condom use at last sex n(%)	N		
1.	11 (64.7)	17	16 (64.0)	25	1.03	[0.28, 3.74]
2.	27 (47.4)	57	8 (53.3)	15	0.79	[0.25, 2.46]
3.	12 (54.5)	22	6 (42.9)	14	1.60	[0.41, 6.18]
4.	12 (42.9)	28	15 (55.6)	27	0.60	[0.21, 1.74]
5.	2 (50.0)	4	8 (50.0)	16	1.00	[0.11, 8.95]
6.	37 (45.1)	82	39 (42.9)	91	1.10	[0.60, 2.00]
7.	53 (58.9)	90	9 (24.3)	37	4.46	[1.89, 10.54]
8.	30 (41.1)	73	38 (43.7)	87	0.90	[0.48, 1.69]
9.	9 (50.0)	18	8 (34.8)	23	1.88	[0.53, 6.62]
10.	28 (46.7)	60	20 (50.0)	40	0.88	[0.39, 1.95]
11.	19 (67.9)	28	5 (45.5)	11	2.53	[0.61, 10.56]
12.	7 (53.8)	13	4 (66.7)	6	0.58	[0.08, 4.39]
<b>Overall</b>	<b>247 (50.2)</b>	<b>492</b>	<b>176 (44.9)</b>	<b>392</b>	<b>1.21</b>	<b>[0.92, 1.59]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.6 Subgroup analysis for the outcome condom use

In the following tables, I present subgroup analyses on the outcome condom use for gender, home language and socioeconomic status at second follow-up.

**(i) Condom use by gender**

Among boys that reported having been sexually active by the second follow-up, there was no intervention effect on condom use at last sex as shown below. There was also no intervention effect among sexually active girls for this outcome as presented in the Table 4.25.

**Table 4.24 Condom use at last sex among boys at FU2:N=606**

Pair	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	N	Condom use at last sex n (%)	N		
1	6 (60.0)	10	15 (68.2)	22	0.70	[0.15, 3.30]
2	22 (55.0)	39	5 (55.6)	9	1.04	[0.24, 4.45]
3	6 (46.2)	13	3 (30.0)	10	1.71	[0.29, 10.00]
4	10 (45.0)	21	12 (52.2)	23	0.66	[0.19, 2.31]
5	2 (50.0)	4	6 (60.0)	10	0.50	[0.05, 5.51]
6	22 (46.8)	46	21 (38.9)	54	1.44	[0.65, 3.19]
7	46 (61.3)	74	4 (20.0)	20	6.16	[1.86, 20.43]
8	21(44.7)	47	28 (43.1)	65	0.98	[0.46, 2.10]
9	6 (50.0)	9	7 (43.8)	16	2.57	[0.47, 14.10]
10	21 (48.8)	43	15 (51.7)	29	0.89	[0.35, 2.29]
11	12 (63.2)	19	4 (66.7)	6	0.86	[0.12, 5.94]
12	4 (66.7)	6	3 (75.0)	4	0.67	[0.04, 11.29]
<b>Overall</b>	<b>178 (52.6)</b>	<b>338</b>	<b>123 (45.9)</b>	<b>268</b>	<b>1.26</b>	<b>[0.89, 1.78]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

**Table 4.25 Condom use at last sex among sexually active girls at FU2: N=278**

Pair <sup>5</sup>	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	N	Condom use at last sex n (%)	N		
1	5 (83.3)	6	1 (33.3)	3	10.00	[0.40, 250.42]
2	5 (31.3)	16	3 (50.0)	6	0.45	[0.07, 3.09]
3	6 (66.7)	9	2 (66.7)	3	1.00	[0.06, 15.99]
4	2 (66.7)	3	3 (75.0)	4	0.67	[0.02, 18.06]
6	15 (42.9)	35	18 (48.6)	37	0.79	[0.31, 2.01]
7	7 (46.7)	15	5 (29.4)	17	2.10	[0.49, 9.00]
8	9 (34.6)	26	10 (45.5)	22	0.64	[0.20, 2.04]
9	3 (60.0)	5	1 (14.3)	7	9.00	[0.56, 143.89]
10	7 (41.2)	17	5 (45.5)	11	0.84	[0.18, 3.88]
11	7 (77.8)	9	1 (20.0)	5	14.00	[0.94, 207.60]
12	3 (42.9)	7	1 (50.0)	2	0.75	[0.03, 17.51]
<b>Overall</b>	<b>69 (46.6)</b>	<b>148</b>	<b>50 (42.7)</b>	<b>117</b>	<b>1.13</b>	<b>[0.69, 1.84]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval; <sup>5</sup> Pair 5: no sexually active girls in intervention school

### (ii) Condom use by home language

The table below compares condom use amongst sexually active intervention and control group students for each home language. As with sexual activity, there were no differences between the groups for either language group.

**Table 4.26 Comparison of condom use amongst sexually active students for each language group**

Home language	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	N	Condom use at last sex n (%)	N		
Xhosa	132	272	96	236	1.31	[0.92, 1.87]
Afrikaans	62	127	42	90	1.12	[0.63, 1.99]
English	31	43	18	33	1.84	[0.69, 4.92]

Abbreviations: OR: Odds ratio; CI: confidence interval

### (iii) Condom use by socio-economic status

I conducted comparisons for condom use among sexually active respondents in each of the SES categories. The results presented in the following three tables show that there were no intervention effects for condom use in any of the SES categories.

**Table 4.27 Comparison of condom use among learners in the low SES category**

Pair*	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	Number of sexually active students in low SES	Condom use at last sex n (%)	Number of sexually active students in low SES		
1	2 (50.0)	4	2 (100.0)	2	0.20	[0.01, 6.66]
2	3 (33.3)	9	1 (25.0)	4	0.75	[0.08, 7.21]
4	3 (33.3)	9	2 (40.0)	5	0.33	[0.01, 12.82]
5	0 (0.0)	2	1 (33.3)	3	0.78	[0.37, 1.63]
6	20 (35.7)	56	27 (41.5)	65	3.57	[1.36, 9.33]
7	31 (55.4)	56	8 (25.8)	31	1.30	[0.60, 2.83]
8	25 (51.0)	49	24 (44.4)	54	2.70	[0.33, 21.98]
9	3 (37.5)	8	2 (18.2)	11	0.75	[0.25, 2.24]
10	12 (42.9)	28	12 (50.0)	24	1.50	[0.11, 21.31]
<b>Overall</b>	<b>100 (45.2)</b>	<b>221</b>	<b>79</b>	<b>199 (22.6)</b>	<b>1.21</b>	<b>[0.82, 1.79]</b>

\*Excluded pairs had zero prevalence of sexual activity; Abbreviations: OR: Odds ratio; CI: confidence interval

**Table 4.28 Comparison of condom use amongst sexually active learners in middle SES category**

Pair*	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	Number of sexually active students in middle SES	Condom use at last sex n (%)	Number of sexually active students in middle SES		
1	2	3	3	8	3.33	[0.20, 54.53]
2	18	34	3	5	0.80	[0.14, 4.53]
4	4	9	6	12	5.40	[0.15, 188.83]
5	1	1	2	6	1.95	[0.60, 6.29]
6	17	25	12	23	9.50	[0.97, 92.83]
7	19	29	1	6	0.28	[0.08, 0.98]
8	5	24	13	27	1.00	[0.13, 7.57]
9	3	6	5	10	0.80	[0.20, 3.13]
10	12	27	6	12	0.80	[0.20, 3.13]
11	6	10	3	5	1.00	[0.11, 8.95]
12	0	1	1	1	0.11	[0.00, 10.27]
<b>Overall</b>	<b>87 (51.4)</b>	<b>169</b>	<b>55 (47.8)</b>	<b>115</b>	<b>1.04</b>	<b>[0.63, 1.72]</b>

\*Pair 3 excluded because there was zero prevalence of sexual activity in the middle SES category; Abbreviations: OR: Odds ratio; CI: confidence interval

**Table 4.29 Comparison of condom use among sexually active learners in the high SES category**

Pair*	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	Number of sexually active students in high SES	Condom use at last sex n (%)	Number of sexually active students in high SES		
1	7	10	11	15	0.85	[0.14, 4.99]
2	6	14	4	6	0.38	[0.05, 2.77]
3	12	22	5	11	1.44	[0.34, 6.16]
4	5	10	7	10	0.43	[0.07, 2.68]
5	1	1	5	7	1.36	[0.04, 46.65]
9	3	4	1	2	3.00	[0.08, 107.45]
10	4	5	2	4	4.00	[0.21, 75.66]
11	12	16	2	6	6.00	[0.78, 46.14]
12	7	12	3	5	0.93	[0.11, 7.82]
<b>Overall</b>	<b>63 (63.0)</b>	<b>100</b>	<b>41 (54.7)</b>	<b>75</b>	<b>1.16</b>	<b>[0.60, 2.26]</b>

\*Excluded pairs (6, 7 and 8) had zero prevalence in condom use in either the intervention or control school; Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.7 Intervention effects on secondary outcomes

The secondary outcomes were: number of lifetime sexual partners; and consistent condom use.

#### 4.5.7.1 Number of lifetime sexual partners at FU2

Among the sexually active learners, 44.6% (n=115) in the intervention group and 37.7% (n=86) in the control group reported having had only one sexual partner.

The results indicated a significant difference in the mean number of lifetime sexual partners between the groups as shown in the table below (OR = -0.24; CI [-0.47 to -0.02]). The control group learners had more sexual partners compared to the intervention group learners. There was no difference between the groups at baseline for this outcome.

**Table 4.30** Number of lifetime sexual partners

Pair*	Intervention			Control			WMD	CI
	N#	Mean number of partners	SD	N#	Mean number of partners	SD		
1	8	1.5	0.8	13	2.2	1.3	-0.70	[-1.60, 0.20]
2	28	1.9	1.1	8	1.5	0.8	0.40	[-0.29, 1.09]
3	13	2.0	0.8	6	3.5	1.5	-1.50	[-2.78, -0.22]
4	14	2.5	1.7	16	2.4	1.2	0.10	[-0.97, 1.17]
6	42	1.9	1.0	62	2.3	1.4	-0.40	[-0.86, 0.06]
7	44	2.5	1.4	25	2.5	1.4	0.00	[-0.69, 0.69]
8	45	2.0	1.2	51	2.3	1.4	-0.30	[-0.82, 0.22]
9	7	1.7	1.3	10	1.6	1.1	0.10	[-1.08, 1.28]
10	28	2.1	1.3	24	2.2	1.3	-0.10	[-0.81, 0.61]
11	19	2.0	1.3	9	2.4	1.2	-0.40	[-1.38, 0.58]

12	10	1.7	1.0	4	2.5	1.3	-0.80	[-2.22, 0.62]
<b>Overall</b>	<b>258</b>	<b>2.1</b>	<b>1.2</b>	<b>228</b>	<b>2.3</b>	<b>1.3</b>	<b>-0.24</b>	<b>[-0.47, -0.02]</b>

Abbreviations: WMD = weighted mean difference; CI: Confidence interval; # number of sexually active learners who had  $\leq 5$  lifetime sexual partners; \* Pair 5 omitted as there was only intervention school n was 1.

#### 4.5.7.2 Condom use at first sex

The table below presents results of condom use at first sex among students that became sexually active between BL and FU2. As with previous results on condom use, there was no intervention effect on this outcome (OR = 0.77; CI [0.51 to 1.18]).

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**Table 4.31 Condom use at first sex among students that became sexually active between BL and FU2: N=438**

Pair	Intervention		Control		OR	95% CI
	Condom use at last sex n (%)	N	Condom use at last sex n (%)	N		
1	10 (90.9)	11	13 (76.5)	17	3.08	[0.30, 31.98]
2	20 (60.6)	33	6 (75.0)	8	0.51	[0.09, 2.94]
3	14 (87.5)	16	2 (100.0)	2	1.16	[0.04, 32.08]
4	7 (58.3)	12	4 (44.4)	9	1.75	[0.31, 10.02]
5	1 (50.0)	2	6 (60.0)	10	0.67	[0.03, 14.03]
6	25 (54.3)	46	22 (68.8)	32	0.54	[0.21, 1.39]
7	20 (40.8)	49	9 (47.4)	19	0.77	[0.26, 2.22]
8	14 (58.3)	24	21 (58.3)	36	1.00	[0.35, 2.85]
9	5 (62.5)	8	5 (55.6)	9	1.33	[0.19, 9.31]
10	20 (60.6)	33	14 (66.7)	21	0.77	[0.24, 2.42]
11	10 (62.5)	16	7 (87.5)	8	0.24	[0.02, 2.44]
12	9 (75.0)	12	5 (100.0)	5	0.25	[0.01, 5.72]
<b>Overall</b>	<b>155</b>	<b>262</b>	<b>114</b>	<b>176</b>	<b>0.77</b>	<b>[0.51, 1.18]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.5.7.3 Consistent condom use among sexually active students at second follow-up

The questionnaire also assessed consistency of condom use. For girls, question 115 was 'Have you ever had sex without your partner using a condom?'. For boys the question was "Have you ever had sex without using a condom?" One of the response options was 'My partner has always used a condom (girls)' and 'I have always used a

condom (boys)'. The table below presents results for consistent condom use at FU2 which indicate that there were no differences between the groups.

**Table 4.32 Consistent condom use at FU2: N=850**

Pair	Intervention		Control		OR	95% CI
	Condom use at last sex n(%)	N	Condom use at last sex n(%)	N		
1	8 (47.1)	17	11 (47.8)	23	0.97	[0.28, 3.40]
2	21 (38.9)	54	6 (40.0)	15	0.95	[0.30, 3.07]
3	8 (34.8)	23	4 (36.4)	11	0.93	[0.21, 4.18]
4	8 (34.8)	23	9 (42.9)	21	0.71	[0.21, 2.40]
5	0 (0.0)	4	6 (42.9)	14	0.15	[0.01, 3.21]
6	24 (30.0)	80	26 (28.9)	90	1.05	[0.54, 2.04]
7	36 (40.4)	89	10 (27.8)	36	1.77	[0.76, 4.10]
8	24 (32.9)	73	28 (33.7)	83	0.96	[0.49, 1.88]
9	2 (15.4)	13	7 (28.0)	25	0.47	[0.08, 2.67]
10	15 (25.4)	59	14 (35.0)	40	0.63	[0.26, 1.52]
11	11 (39.3)	28	5 (50.0)	10	0.65	[0.15, 2.77]
12	7 (50.0)	14	2 (40.0)	5	1.50	[0.19, 11.93]
<b>Overall</b>	<b>164 (34.4)</b>	<b>477</b>	<b>128 (34.3)</b>	<b>373</b>	<b>0.94</b>	<b>[0.69, 1.26]</b>

Abbreviations: OR: Odds ratio; CI: confidence interval

#### 4.6 Regression analysis

Regression analyses were conducted using STATA (Version 7.0). The data were adjusted for age, gender and socioeconomic status, for the primary outcomes sexual

intercourse and condom use. As shown in Appendix M, there were no intervention effects on the outcome delay of sexual intercourse and condom use even after adjusting for these variables.

#### **4.7 Conclusion**

In this chapter, I have presented results from the process and outcome evaluations. As the process evaluation findings show, there were considerable differences in the school contexts in as far as infrastructure, student demographics and socio-economic status, presence of trained teachers and teacher stability among other factors. There were therefore differences in the quality and fidelity of intervention implementation due to these individual and contextual factors. The intervention development as described in chapter 1, and the implementation integrity data presented in this chapter assisted in identifying components of the intervention that were properly implemented and those that were not, and to establish reasons why this was the case. Thus, the process evaluation also helped to interpret whether the non-significant results were due to a poorly designed intervention or to the poor delivery of the intervention.

As shown in the results of the outcome evaluation, the intervention did not have an effect on any of the primary and secondary outcomes (except number of lifetime partners), or on the psychosocial constructs, including knowledge which is often a construct that results in some increase in most interventions. In the following chapter, I will discuss these results in greater detail.

## **Chapter 5: Discussion**

### **5.1 Introduction**

In this concluding chapter, I will discuss the process and outcome evaluation findings by drawing together the discussions presented in the previous chapters. I will do this mainly by linking the process and outcome data. In chapter 2, I presented two systematic reviews of evaluation studies conducted internationally and in South Africa. I will situate the discussion in this chapter within the context of these studies and other literature on effectiveness of school-based HIV/AIDS and sexuality interventions. In interpreting these findings, I will discuss the intervention, its implementation, as well as the evaluation research. I will conclude this chapter by providing some recommendations for future design, implementation and evaluation of school-based HIV/AIDS interventions. Before presenting the discussion and recommendations I will recap the objectives of the research and present its strengths and weaknesses.

The research was a cluster RCT that evaluated the SATZ intervention, a school-based HIV/AIDS programme aimed at postponing sexual intercourse and increasing condom use among grade 8 students in Cape Town. I conducted both process and outcome evaluations. The objectives of the research were: (i) to conduct a systematic review of international and South African evaluations of school-based interventions addressing the outcomes delay of sexual intercourse and condom use; (ii) to document the implementation of the SATZ intervention through a process evaluation; (iii) to determine, through outcome evaluation, the effectiveness of the intervention in delaying sexual intercourse; and increasing consistent condom use. Process evaluation was conducted using interviews, focus group discussions, educator lesson logs and

interviews with educators. Outcome evaluation was conducted using a self administered electronic questionnaire. The development of the evaluation questionnaire and its psychometric properties were discussed in detail in chapter 3. The study was conducted over a 15 month period with twenty six schools, 13 in the intervention and 13 in the control group. A total of 6364 students participated in the trial, and a further 449 participated in the pilot and test-retest phases of the research. Results of the outcome evaluation were analysed only for the cohort of students (N=3625) who completed the questionnaire at baseline, first and second follow-ups.

The primary reasons for non-participation at baseline and follow-up were absenteeism, transfer to another school, truancy or dropout.

## **5.2 Strengths of the study**

There is a dearth of evaluations of school-based HIV prevention interventions as evident in the reviews presented in Chapter 2. This research contributed to the small body of evidence of the feasibility of conducting RCTs in South African schools; the complexities of the school as an intervention setting; and the effectiveness of school-based HIV prevention programmes in delaying sexual intercourse and increasing condom use. The research addressed many of the evaluation quality, design, methodological and analytic flaws identified in the systematic review of studies in Chapter 2.

In the sections below, I will discuss each of the key strengths of the study. These are:

(1) the use of an RCT design; (2) questionnaire development and psychometric properties; (3) combining process and outcome evaluations; (4) methodological triangulation; and (5) the use of electronic questionnaires on PDAs.

Farrington (2003) suggests that methodological quality for evaluation research should be assessed on the basis of: internal validity; descriptive validity; statistical conclusion validity; construct validity; and external validity. The methodological literature attaches various labels to describe validity. In this chapter I will use the labels as described by Farrington (2003).

### **5.2.1 Use of RCT design**

One of the main strengths of the research was the use of a cluster RCT design. As discussed in Chapter 2, the use of RCTs in social interventions has been debated extensively with arguments from both proponents and opponents (Van de Ven and Aggleton, 1999; Cook, 2003; Macintyre and Petticrew, 2000; Mukoma and Flisher, 2004; Nutbeam, 1998; Oakley et al, 1995; Oakley & Fullerton, 1996; Oakley, 1998; Speller et al, 1997; Stephenson, 1999; Stephenson & Imrie, 1998; Victoria et al, 2004). Regardless of which side of this argument one finds most compelling, a point of consensus is the need for evidence-based interventions in the area of HIV/AIDS prevention. While some evidence can be obtained using study designs such as observational studies or quasi-experimental designs, the RCT design remains the gold standard for providing more conclusive evidence of intervention effect. However, there are two issues in the debates regarding the use of RCTs to evaluate social interventions, which I will discuss briefly below as they were relevant for the current research. These are issues of randomisation and feasibility.

One of the concerns about the use of an RCT design to evaluate health promotion interventions regards the ethics of randomisation and denying an intervention to a control group in order to measure effectiveness (Oakley et al, 2003; Thomson et al, 2004; Cook, 2005). This is a particularly important issue in the South African context where the HIV prevalence rates are high and more intensive prevention efforts are

urgently required. It would be unethical in this situation to deny an intervention to the comparison schools. Within this context however, it would be even more unethical to implement and disseminate an intervention whose impact was unknown and therefore potentially negative or ineffective (as in the case of the SATZ intervention as shown in the results chapter), than it would be to apply RCT designs to establish intervention effectiveness. The participating control schools therefore continued to implement their planned HIV/AIDS interventions as part of the LO curriculum and any other additional interventions. They were also offered the SATZ intervention and teacher training after completion of the research. This was done prior to obtaining the results of the outcome evaluation.

The second concern regards the feasibility of conducting RCTs with social units such as schools or communities. This study demonstrated that while there are some challenges in employing a RCT design in evaluating school-based interventions, such as financial costs and the non-static nature of schools, the design is not impossible to employ in South African schools. As discussed in chapter 3, the study design was acceptable to the schools and parents of the participating children. The scientific, ethical and feasibility arguments against the use of RCT designs to evaluate social interventions were therefore amply dealt with. Thus, the research demonstrated that it is possible to achieve a balance where scientific advancements in research design and action to combat HIV/AIDS were simultaneously achieved.

Addressing these two concerns in the present research contributed to the strength of the study. Given the scarcity of rigorous South African evaluation studies, the use of a RCT design not only increased confidence in the results, but also contributed to

evidence about the feasibility of the design to evaluate school-based interventions in a variety of South African schools.

### **5.2.2 Questionnaire development and psychometric properties**

Like most outcome evaluation studies of school-based HIV prevention interventions, the research relied on the use of a self administered questionnaire. The process of developing the evaluation questionnaire was one of the main strengths of this study. This process is described in detail in chapter 2. It involved piloting the questionnaire, a careful translation protocol and two test-retest reliability studies. Face and content validity were addressed during the development of the questionnaire.

#### **(i) Validity**

As discussed in chapter 3, face validity was addressed by drawing on data from the needs assessment, discussing the questionnaire with researchers in the SATZ team, the project advisory board, teachers as well as students participating in the piloting of the instrument. Face validity relies a lot on words, terminology and expressions. Thus, during the group discussions with in the pilot phase the students provided their interpretations of the questions, comments on the questions, the response options and the instructions. They also suggested alternative terminologies which were incorporated into the revised questionnaire.

Content validity was established in various ways. To start off, an initial questionnaire was compiled using questions from various relevant questionnaires employed in previous studies with adolescents, particularly in the sub-Saharan region. Questions that were linked to the objectives of the SATZ intervention were also developed. These were informed by the needs analysis data collected prior to intervention development and the theoretical framework employed. The questionnaire was then

discussed with learners participating in the pilot phase. In addition, to ensure that the instrument measured what was intended in all three languages, a translation and back-translation procedure was employed. The back-translated versions were discussed with researchers experienced in sexual behaviour research using self-administered questionnaires with adolescents, and language experts, to further ensure that the different language questionnaires measured the same constructs for each question.

The multi-stage sampling strategy employed in the study ensured that the sample was representative of grade 8 students in Cape Town. In practice, RCTs have the highest possible internal validity because they rule out threats to internal validity, such as pre-existing differences between the experimental and control conditions (Farrington, 2003). Randomisation was successful as evident in the equivalence of the groups at baseline (see chapter 4). Pre-existing differences between the groups would have been a threat to the internal validity of the study.

As discussed in 5.2.6 below, the majority of students participating in the test-retest studies indicated that they would be more inclined to provide truthful responses to questions about sex using when using PDAs rather than paper questionnaires. In addition, I attempted to enhance validity by ensuring that teachers were not present at data collection and all efforts were made to ensure that the sitting arrangements while completing the questionnaire guaranteed each student some privacy. Furthermore, the students were assured of anonymity and confidentiality through a questionnaire linking method that has been successfully employed in previous studies.

One of the threats to statistical conclusion validity is insufficient statistical power to detect effect due to a small sample size (Farrington, 2003). Although I presented only results from the cohort of students that completed the questionnaire at the three points

of measurement, dropout from the study did not affect the statistical conclusion validity as the cohort was sufficiently large to allay these concerns. The analytical approach that I employed addressed various limitations identified in the review of RCTs presented in chapter 2. For instance in some of the studies there was a mismatch between the unit of allocation (cluster) and the unit of analysis (individual). Conducting appropriate pair-wise analysis in this study ensured that the sampling strategy was taken into consideration hence avoiding many of the limitations associated with the analysis of cluster RCTs in previous studies. Pair-wise and overall measures of the effect size were reported in chapter 4 together with their associated confidence intervals.

In reporting the results, this study met the relevant standards for quality reporting of cluster RCTs as outlined in the CONSORT criteria. These include clear description of the sample, baseline data, statistical analysis, numbers analysed and primary outcomes (Campbell et al, 2004). In chapter 1, I also described in detail the intervention and the process through which it was designed. Further, the process evaluation findings in chapter 4 provided detailed descriptive data about the school contexts, the implementation process, and insights into the characteristics of the intervention and the teachers that implemented it. These factors enhanced the descriptive validity of the study.

#### **(iv) Reliability**

One of the challenges with self reported data is ensuring that the instrument is reliable and the data obtained are valid. Reliability and validity are two of the criteria often used to assess research methodological and instrument quality. Reliability is a necessary prerequisite for validity. In the absence of reliability, validity is impossible

to attain. The reliability issues associated with adolescent self reported sexual behaviour data were discussed at length in Chapter 2. Many studies have shown that adolescents provide reliable self reported sexual behaviour data (Flisher et al, 2004, in press; Hearn et al, 2003; Klepp et al, 1994; Lintonen et al, 2004; Sheeran & Abraham, 1994). The two test-retest reliability studies that were conducted were described in detail in chapter 3. The instrument had good test-retest reliability on the psychosocial scales, as indicated in the ICC > 0.5 for nine of the ten scales. Landis and Koch (1977) categorise Kappa values as <0, poor; 0-20%, slight; 21-40% fair; 41-60%, moderate; 61-80%, substantial; 81-100%, almost perfect. The test-retest agreement for the sexual behaviour variables was slight for 'ever had oral sex' ( $\kappa = .37$ ) and fair for 'ever had anal sex' ( $\kappa = .44$ ). Moderate test-retest agreement was found for the item 'ever had vaginal sex' ( $\kappa = 0.69$ ). The test-retest reliability levels of the current study were good but slightly lower on the item 'ever had vaginal sexual intercourse' compared to those of a previous test-retest sexual behaviour study conducted among high school students in Cape Town by Flisher et al, (2003). The authors reported kappa statistics greater than 0.80 for the item 'ever had vaginal sexual intercourse'. The study was however conducted among grade 11 learners who are likely to have had higher literacy levels and therefore comprehension of the questionnaire compared to younger grade 8 learners amongst whom the current study was conducted. The current study however also reported good test-retest reliability for this item. These questionnaire development processes and the assessment of psychometric properties of the instrument were important strengths of the study.

### **5.2.3 Use of two evaluation approaches**

The combination of process and outcome evaluations was another key strength of this study. Each of these was an independent evaluation approach in its own right that

sought to answer a different set of questions. While the outcome evaluation measured the intervention effectiveness, the process evaluation gave greater attention to nuance and setting, interdependencies and complexities within the school context. It allowed for in-depth exploration to provide information that was important in understanding and interpreting the outcomes of the intervention. The process evaluation component was particularly important in the South African context as understanding the schools as intervention settings for preventing HIV has important lessons for the development and dissemination of future interventions. Evidence from the outcome evaluation only would have been insufficient as it would not have provided detailed information about how and why things occurred as they did during the implementation of the intervention. Therefore, by conducting process evaluation, the study also dealt with the common debate on tradeoffs between depth vs. scope in qualitative and quantitative research (Patton, 1987). The process evaluation provided the in-depth data while the outcome evaluation provided the breadth by obtaining data from a large sample of adolescents. Both evaluation approaches therefore have their strengths and limitations. Process evaluation findings are rarely available in published outcome evaluations as demonstrated in Chapter 2. Thus one of the main strengths of the study was combining the outcome evaluation with the presence of good contextual data from the process evaluation. This made the linkages between contexts and outcomes by helping to understand the larger institutional context in which the intervention took place, as well as the effectiveness of the intervention.

#### **5.2.4 Methodological triangulation**

A further strength of this study lies in the multi-method approach to the evaluation. The review of RCTs in chapter 2 showed that most previous evaluations only employed a quantitative approach using self administered questionnaires. Only a few

of the reviewed studies employed qualitative methods. Given the complexities of the school as an intervention setting, qualitative evaluation methodologies employed in the current study helped to better understand the implementation process, school contexts and the dynamics therein. The combination of educator lesson logs, interviews, classroom observations and FGDs allowed for probing and further exploration of the data while the questionnaire made it possible to measure the outcomes and make statistical comparisons. The two approaches resulted in a rich set of complementary process and outcome evaluation data and demonstrated the interrelationship between qualitative and quantitative methods for evaluation.

#### **5.2.5 The use of PDAs**

One of the important contributions that this study made to school-based evaluation research was the use of electronic questionnaires. To my knowledge, this was the first research project to use PDAs to collect self-reported data from a large sample of South African school-going adolescents. I did not find published studies from elsewhere in the world that have used self administered questionnaires on PDAs in school-based studies. The use of PDAs may become the preferred means of collecting research data in future. The electronic questionnaire has several practical and cost advantages over paper-pencil questionnaires as discussed in chapter 3. It does not require the respondents to have previous experience in using computer technology and students quickly learn how to use the PDAs. The use of PDAs was particularly important in enhancing validity. The students found it more confidential and likely to elicit truthful responses compared to paper questionnaires as shown in the paper versus PDA comparisons presented in chapter 3. The data were also available in a spreadsheet immediately on completion of the questionnaires, hence shortening the period between data collection and analysis. Compared to a paper questionnaire, using

the PDAs was also an enjoyable exercise for the majority of students who had never used a computerised electronic gadget before. There were some practical challenges such as theft of the PDAs and the extra time required to explain how to use them. However, the experience of using PDAs in this study was one that future research projects can draw upon and improve.

While it had many strengths, this research also had some limitations which I will discuss in the following section.

### **5.3 Limitations of the study**

#### **5.3.1 Reliance on self reported data**

This study did not have biological markers which could be used to verify the self reported data. Thus, it is possible that information bias could have occurred, where for example respondents may have provided what they considered desirable responses. Hence the assumption cleaning the sexual behaviour data was that some respondents may have exaggerated their sexual experience at baseline.

#### **5.3.2 Follow-up of dropouts**

Up to three visits were made to some schools for each of the follow-up data collections so as to include the students that were absent at the previous data collection sessions. I did not follow-up on the students that dropped out of school and those that were absent at the final data collection day at each school. Drop out is often not a one-time event but starts with regular absenteeism. The analysis therefore also excluded these students. Following up on school dropouts may have provided the opportunity to assess risk behaviour within this category of adolescents and enabled comparisons with those students that stayed in school.

As discussed in chapter 2, dropout from a study has implications for data analysis as it may bias the results. One of the threats to internal validity is differential attrition between intervention and control groups. If differential attrition rates exist between the intervention and control groups, intention-to-treat analysis should be conducted to assess the potential effect of drop out. In this study, I did not conduct intention-to-treat analysis. The analyses were conducted only for data from the cohort of students that completed the questionnaire at the 3 points of measurement, thus the issue of dropouts was less relevant. The attrition rates were 18.4% and 18.1% in the intervention and control groups respectively between baseline and FU2.

Besides the implications on data analysis, school dropout also has implications for the prevention of risky behaviours. Students that drop out of school are more likely to engage in risky behaviour and therefore more in need of interventions (Odum and Drolet, 1997; Upchurch and McCarthy, 1990; Townsend et al, 2004; Walker et al, 1998). Townsend et al (2004) in a study amongst grade 8 student in Cape Town found higher rates of having engaged in intercourse and risky sexual behaviour among dropouts than their counterparts who had remained in school. Having engaged in sexual intercourse was also found to be a predictor of dropping out of school. In another study, Simbayi et al (2005) found that fewer years of education were associated with HIV risk factors for young men in Cape Town.

In the process evaluation conducted in the current study, the teachers indicated that the dropout rate between grades 8 and 9 was particularly high. This was not surprising as South Africa has a high rate of school dropout. It is estimated that only 40% of students that enroll in grade 1 complete their schooling to grade 8 (Department of Education, 2003). Dropout from the study was mainly due to dropping out of school,

absenteeism and skipping LO lessons. By limiting my analysis to the cohort, the possibility of any systematic differences between the control and intervention students that stayed in school was minimised. However, it is not possible to tell whether there were any systematic differences between the control and intervention schools in terms of numbers of dropouts and reasons for dropout. The students that stayed in school may also have been a systematically different sample compared to those that dropped out. Given the disregard for LO amongst the students and the high rates of school absenteeism, those that dropped out might already have had a history of being absent from school and particularly of skipping LO periods. Absenteeism is often a symptom of underlying problems which may include risky behaviour. Further analyses using the whole sample data would be required to establish if there were such systematic differences, and the effect on the outcomes.

In addition to not following up on the dropouts, one of the weaknesses of this study was the lack of good record keeping that would have enabled the differentiation between the students that were absent and those that dropped out of school. Attempts were made to record these separately but frequent changes in teachers, absence of class registers at some schools, lack of information from either the students or teachers as to whether absent students had dropped out, gone to other schools or were just regular absentees, and sometimes the allocation of insufficient questionnaire administration time made this an impossible task.

#### **(ii) Possible contamination of treatment conditions**

One way by which contamination of experimental conditions can occur is if students change conditions during the study. During data collection, we did not come across any students that had transferred from the intervention schools to control schools or

vice versa. Only a small proportion of students who changed schools during the intervention joined other schools. The majority of them dropped out of school altogether. However, the students in the matched pairs of intervention and control schools lived in the same communities, which created the potential for possible interaction between the intervention and control students within the communities. The study did not assess whether the control group students were exposed to the intervention through such interaction. It is unlikely however that such contamination impacted on the intervention outcomes.

### **5.3.3 Absence of good measures of student attendance**

In addition to the dropout issue discussed above, a shortcoming of this study was the absence of good measures of student exposure to the intervention. The questionnaire contained a question on the number of days that a student was absent from school (Q18). At the second follow-up, 10.4% and 8.3% of control and intervention students respectively reported having been absent for more than 5 days during the last school quarter. This question however provided data for school attendance and not specifically for attending the intervention periods. Although 55.9% of the students reported having received 10 or more lessons, in retrospect, a better measure of intervention exposure would have been asking the question for each lesson. In many of the schools, it was common for students to skip lessons, particularly LO lessons, while still within the school premises. Thus, even for the the cohort sample included in the analysis who may have had higher school attendance compared to the remainder of the students, the absence of a good measure of attendance of LO periods limited the extent to which sub-group analysis could be conducted based upon exposure to the intervention.

#### **5.3.4 Data from control schools**

Even though none of the teachers at the control schools were aware of the content of the SATZ intervention, the findings in chapter 4, suggest that the LO lessons they implemented had some elements similar to those of the SATZ intervention. This may have diluted the differences between the experimental and control groups, and therefore reduced the ability to identify programme effects. The SATZ intervention did not result in better outcomes compared to the interventions implemented at the control schools. One of the shortcomings of this research was that the qualitative research conducted at the control schools did not investigate in detail the specific intervention implemented at each control school. It was clear from the findings that they all did not use the same materials or implement the same intervention. It was therefore difficult to assess exactly what the SATZ intervention was compared to. The intervention and control groups were well matched at baseline, with no differences in sexual behaviour. Thus, in addition to the similarity in content, the lack of intervention effect may also have to do with the intensity and quality of delivery of the interventions at the control schools.

In the preceding sections, I have presented the strengths and weaknesses of the study. In the following section, I will discuss the findings of the process and outcome evaluations.

#### **5.4 Discussion of findings**

This study evaluated a school-based HIV prevention intervention aimed at delaying sexual intercourse and promoting increased condom use among adolescents. The intervention was delivered over a six-month period. The evaluation was conducted over a 15-month period, with data collection at baseline, 6- and 15-months. The

findings of the outcome evaluation showed that the intervention had no positive effect on the primary outcomes delay of sexual intercourse or condom use as there were no observed differences at either follow-up between the intervention and control schools. There were also no differences between the intervention and control schools in any of the psychosocial constructs that were measured. The only positive intervention effect was on the secondary outcome number of lifetime sexual partners. However, the intervention also did not have any negative effects, which would have been a more worrisome outcome. The process evaluation showed that the intervention was not successfully implemented at many schools due to various individual and school level factors. Even in schools where implementation was comparatively better, the pairwise analysis did not produce positive effects. This can partly be explained by the likelihood that the control schools may have implemented content similar to that of the SATZ intervention. It could however also be due to poor uptake of the intervention at the schools that had higher fidelity of implementation. The findings also showed that the intervention was evaluated favourably by both teacher and students, and achieved some positive results such as teacher attitudinal changes and increase in students' interest in Life Orientation.

The findings of the process and outcome evaluations were reported in detail in chapter 4. In the following sections, I will discuss the process and outcome evaluation findings further. I will situate the discussion and therefore interpretations of the findings within the context of existing literature on the evaluation of school-based HIV prevention interventions. I will discuss these findings by addressing the implementation of the intervention, the intervention itself, as well as the evaluation issues. I am therefore making a conceptual distinction between the intervention and its implementation for ease of presentation, although the two are linked.

#### **5.4.1 Implementation issues**

##### **(i) Factors that facilitated adoption and implementation of the intervention**

Several factors within the project facilitated the teachers' adoption and implementation of the intervention, even though the latter did not occur successfully at all schools. Firstly, the intervention was compliant with the outcomes-based education (OBE) philosophy. This was an important enabling factor and one of the reasons why teachers embraced the intervention. Outcomes-based education was introduced into South African schools as part of Curriculum 2005 (C2005). C2005 was introduced in 1997 as part of transformations in the education sector. It was a starting point for removing apartheid from schools and curricula, and a platform for developing a new sense of identity based on dignity and respect for all people, rather than on racial, gender and class division. It encourages teachers to be open to views and opinions of learners, which may be different from their own (Department of Education, 2002). C2005 has now been replaced with the Revised National Curriculum Statement (NCS) Life Orientation policy (Department of Education, 2002). The teaching approach within the curriculum is outcomes-based education (OBE). The outcomes-based approach is a learner-centered process that is developmental, activity-based and considers the process of learning as important as what is learnt (Department of Education, 2002). The philosophy of OBE therefore encompasses some of the characteristics that have been recognized as prerequisites for successful sexual behaviour interventions with adolescents. Aligning the SATZ curriculum with OBE made it more appealing to the teachers as it did not require a major departure from what was expected of them in teaching LO, particularly as far as assessments of the lessons and learner involvement was concerned.

Secondly, the training was probably the most important factor that facilitated the teachers' adoption and implementation of the intervention. Prior to the training, many of the teachers felt inadequately prepared to implement LO or to apply OBE effectively as they had not received any training. Similar findings were reported by Chrisholm (2005) in a review of OBE. Factors such as inadequate training and development of teachers, unavailable or insufficiently used material and shortage of resources hindered the implementation of the new curriculum. Thus, the educators' motivation to take up the SATZ intervention was the training opportunity that was offered.

Previous literature has found aspects such as teachers' knowledge, self-confidence, comfort, self-efficacy, attitudinal and moral beliefs about sex as well as views about the feasibility of the programme in the classroom to be important in the adoption and implementation of school-based interventions (Boscarino and Diclemente, 1996; Mathews et al, 2003; Paulussen et al, 1994; Paulussen et al, 1995). Training that addresses these factors is one of the most important determinants of the successful implementation of sexuality interventions (Levenson-Gingiss and Hamilton, 1989; Levenson-Gingiss and Basen-Engquist, 1994; Mathews et al, 2005). As reported by Ahmed et al (2006), the SATZ training increased the teachers' confidence to implement the intervention, their knowledge of HIV/AIDS and skills in participatory teaching. One of the important aspects of the training was the recognition that the teachers were not a homogenous category. They came from different backgrounds and had diverse histories, identities and experiences, as well as diverse views regarding sexuality and HIV/AIDS prevention. There were teachers that were strongly pro-abstinence and others who were more accepting of both abstinence and condom promotion. These differences were taken into account in the training through

discussions of the teachers' feelings, beliefs and attitudes towards sexuality education, as well as the underlying personal and social morals and values (Ahmed et al, 2006). This approach to the training was important in getting further buy-in into the programme from the teachers. By the end of the training, the majority of the teachers were more accepting of the intervention approach which promoted both postponement of intercourse and condom use and one where the teachers maintained relative neutrality. A few teachers however still felt strongly about promoting abstinence over condom use and did so in the implementation as shown in the process evaluation findings such.

Thirdly, the teachers did not need to put in extra time and effort searching for information or teaching material. It would be difficult to get teachers to readily embrace an intervention that requires them to put in extra time and effort in research, teaching or assessments. The absence of a prescribed text indirectly facilitated the teachers' adoption of the SATZ intervention because all the required teaching materials were provided in a comprehensive learner workbook and educator manual. The teachers therefore did not have to put together a curriculum from various sources as had been the case prior to their participation in the project.

Finally, involving educators in the process of developing the programme and piloting the intervention was another factor that facilitated its adoption and implementation. The teachers from the 13 intervention schools were not involved in the pilot to avoid exposing the students to the intervention before the evaluation research had begun. Four teachers from different schools were invited to be in the teacher expert panel that participated in the development of the intervention and piloting of some of the lessons. The pilot facilitated the teachers' input into the intervention design so as to

shape it to local circumstances based on their experiences of testing it in the classroom. It provided the intervention developers with some feedback that could be used to assess the feasibility of the intervention. As will be discussed later in this chapter, piloting of an intervention is crucial to establish its practical implementation in the classroom. It also has implications for sustainability of the intervention. The feedback and experiences from the pilot were shared with the other teachers at the training, as examples of how the lessons could be implemented. By the end of the training, the majority of the teachers felt confident that they could implement the intervention and the participatory strategies. The pilot teachers were also involved in reviewing the evaluation questionnaire. This was particularly important as the schools are often inundated with requests to participate in research, results of which they rarely received. Thus, while they welcomed the opportunity for interventions, the schools generally viewed research as a disruptive intrusion with little benefit to the schools. This process and discussions between the teachers and the researchers at the beginning of the project facilitated teachers' buy-in into the benefits of the research.

Even with these enabling factors, the intervention was not successfully implemented at all the schools. It also failed to have an effect on the two behavioural outcomes of interest as well as the secondary outcomes and psychosocial constructs. There were several issues regarding the intervention as well as its implementation which may explain the lack of effect on sexual behaviours. I will first discuss the factors to do with the implementation.

### **(ii) Implementation fidelity**

Overall, the intervention implementation was less than optimal at most schools. The implementation also varied considerably across and within schools, with some

teachers delivering the intervention with more fidelity than others. Hence, there were also variations in the students' exposure to the intervention both in the content and intensity. As discussed in chapter 4, this was influenced by rates of student absenteeism, individual teacher characteristics, as well as institutional factors. For example, any unplanned activities that needed to happen at the school were allocated the LO period because it was not viewed as equally important as other subjects. This concurs with findings by Rooth (2005) who reported that due to its low status compared to other subjects, LO was often used as a free period or to catch up on more important subjects like mathematics. Other studies have also reported an association between personal characteristics and teachers' (non)adoption of sex education programmes (Kinsman et al, 1999; Paulussen et al, 1995; Oakley et al, 2004; Visser et al, 2004). Sexuality or HIV/AIDS education is a sensitive and value-laden topic and educators are cautious of what and how they teach in case they experience negative reactions from parents and the community (Buston and Wight, 2001; Gallant and Maticka-Tyndale, 2003; Kaaya et al, 2002; Kinsman et al, 2001; Klepp et al, 1994; Reddy et al, 2003). When uncomfortable with certain topics, for example, or if they feel that the topics contradict their personal values, some teachers employ selective teaching (Boler et al, 2003; Kinsman et al, 2001; Kuhn et al, 1994; Reddy et al, 2003; Visser et al, 2004). With HIV/AIDS, this often means delivering the scientific facts only. This selective teaching was evident in the SATZ intervention lesson on condom use, where non-implementation was mainly influenced by individual teachers' beliefs regarding condom use and beliefs about their learners' sexual behaviour. Teachers' attachment of their own value judgements to the content of what they teach is therefore an issue of concern (Buston et al, 2001).

As emerged during the training and from the process evaluation, some of the intervention teachers had concerns regarding teaching about sex whilst maintaining a pedagogical relationship with their learners. They were concerned about losing respect with the learners and this may have influenced what they did or did not deliver. A study amongst Dutch teachers also found that anticipated student response was a more important factor in teachers' adoption of an AIDS curriculum than the expected outcomes (Paulussen et al, 1995). It would be discriminatory to deny students that are sexually active information about condoms to due to a teachers' discomfort with the subject. The majority of the teachers implemented the lesson on condoms, even though some felt that it conflicted with their personal values. They were able, as presented in chapter 4, to separate their own preferences from what they viewed as useful information to meet the HIV prevention needs of their learners. Before the SATZ training, many of the teachers expressed concerns about their confidence to implement the skills-based participatory activities, but improvements in self efficacy to facilitate these activities were reported after the training (Ahmed et al, 2006). This however did not materialize into all the teachers implementing the intervention as expected.

Clearly, a high quality training and positive training outcomes were no guarantee that the intervention would be implemented as planned. In recognition of this, and of the concerns expressed in the needs assessment study regarding the lack of support for LO teachers from schools and the Department of Education (Ahmed et al, unpublished), the intervention teachers were also provided with ongoing support by the project staff according to their needs during implementation. Visser et al (2004) in their process evaluation study in South Africa reported that the lack of support from principals, school management, fellow teachers and the Education Department were

some of the most important factors that hindered implementation of HIV/AIDS education nationally. The kind of support that the SATZ implementing teachers received was beyond what they would ordinarily get under normal circumstances. Even with this continued support however, the teachers struggled with and some were still averse to participatory strategies. This was not altogether a surprising finding as the participatory approach was new to many of the teachers. Their background training and current practice was in a didactic approach that has repeatedly been found wanting in teaching HIV/AIDS or lifeskills education as it does not emphasise participatory learning activities (Rooth, 2005). Yet, the OBE approach also required the teachers to apply participatory strategies in teaching LO.

The challenges experienced with the skills-based activities such as role plays were not unique to the SATZ intervention teachers. Teachers' discomfort and difficulties with participatory activities are well documented in the literature (Boscarino and DiClemente, 1996; Buston et al, 2002; Gyarmathy et al, 2002; Haignere et al, 1996; Hammonds and Schultz 1984; Kinsman et al, 1999; Paulussen et al, 1994; Wight and Abraham 2000). What was interesting with the SATZ intervention was that most of the teachers were not fundamentally opposed to participatory learning and those that attempted role plays, small group discussions and other activities did so in the most unsuitable of classroom conditions and a background teacher training that is not based on this approach. It was reasonable therefore to expect that some of them would adapt bits of the intervention to suit their personal characteristics like moral beliefs about sex and condoms and the contextual realities such as large class sizes. While in most adaptations they attempted to maintain the core aims of the activities, more drastic modifications like substituting role-plays for a written activity reflected the teachers' lack of understanding of the theoretical underpinnings of learning through

observation, practice and social modelling (Bandura, 1986, 1994). Activities such as role plays are meaningful only if well facilitated to meet the objective of the lesson and allow learners to practice the intended skills. Tailoring the intervention to suit the circumstances however was a better compromise from the teachers than not implementing the lessons at all. In the real world, intervention developers have to anticipate that such changes will occur and plan for ways of working with the teachers to make the changes and retaining the activities that can be implemented within the constraints of the school, and maintain the behavioural outcome objectives of the activities. Allowing for such adaptation increases the chances that the intervention will be implemented.

### **(iii) Omission of role-plays**

Young people generally enjoy participatory skills-based activities as was evident in the preference for role-plays in the SATZ intervention. Theory-based skills activities have also been shown to be more effective in changing behaviours compared to approaches such as lectures where the participants are a passive audience (Albarracín et al, 2006). Previous studies have also shown that young people that have the necessary skills and can say no to early sex are more likely to be able to negotiate protection during sex later in life (Wren, et al, 1997). Yet the SATZ intervention designers recommended that role plays be omitted due to difficulties that the teachers experienced with facilitation and time constraints. The role-plays were not replaced with other strategies. This modification could have had implications on the extent to which students participated in the lessons, and on the transference of the skills necessary for sexual behaviour change. Omission of the role plays also resulted in a missed opportunity for the teachers to further their experience in using these strategies

as some of them reverted back to their “usual” didactic style of teaching. However, the inclusion of these activities in the intervention was itself problematic as I will discuss later in this chapter. These modifications could have had implications for the intended outcomes.

In order to achieve the desired outcomes, interventions should as much as possible be implemented as intended in their design (Buston et al, 2002). This however is dependent upon an intervention having been designed in a manner that makes it practically possible to implement within the schools for which it is intended. Unanticipated factors necessitated changes to the implementation of the SATZ intervention. Such interference has implications for the effectiveness of the intervention as it is unlikely to achieve the intended outcomes (Buston et al, 2002). The lack of implementation fidelity also has implications for evaluation of outcomes if the implemented programme differs significantly from that for which an evaluation plan was developed. With the SATZ intervention for example, changes such as the intervention developers cutting out some activities in order to ensure completion of the programme resulted in the programme having fewer skills-based activities than originally planned, and none at all in the schools or classes where teachers omitted them altogether. Besides role plays where most changes occurred, it is also likely that the teachers may have failed to report other modifications that they considered “small” but which may have significantly altered the intervention as intended by the designers. It was also difficult to establish exactly what was implemented at the schools that had a high teacher turnover during the 6 month implementation period. Some of the teachers left the schools before I could document their implementation and without sufficiently completing the lesson logs.

Although the SATZ intervention was not implemented with fidelity at most schools, the degree of completeness of implementation was comparable to previous studies. Paulussen et al (1994) for example found moderate implementation among Dutch teachers, while Visser et al (2004) in a national study in South Africa reported that the intervention was not successfully implemented. However, it is important to mention that the absence of implementation fidelity does not imply the lack of motivation or dedication amongst the teachers. The majority of them were committed to delivering the intervention and believed in its potential to impact on students' behaviours. Some of the teachers had not received any previous training in teaching HIV/AIDS education and were teaching out of love for the subject area of LO. The majority of them were very enthusiastic about HIV prevention and viewed schools and their role as LO teachers as an important means of reaching adolescents. However, as discussed earlier, constraints within some schools made it difficult even for the most dedicated educators to deliver the intervention with fidelity.

In the previous section, I have discussed the implementation of the evaluation to help understand factors that impacted on the observed outcomes. While there were many implementation shortcomings as discussed above, the programme itself also requires some discussion in light of the findings.

#### **5.4.2 Programme Issues**

The SATZ intervention was designed through a rigorous process that as far as possible applied the intervention mapping protocol, using available literature and primary data; defining specific, achievable and measurable objectives; and involving teachers, students and other stakeholders in the process of programme development. The intervention contained many of the characteristics that are associated with successful school-based interventions to prevent sexual risk behaviours (Kirby et al,

1994). These included training of teachers, a programme duration of 17 hours, specific focus on changing sexual risk-taking behaviours, focus on social pressures, clear messages about unprotected sex, basic accurate information, teaching various skills necessary for healthy sexual behaviours, and theory-driven activities. Although the intervention was aimed at postponing sexual intercourse and increasing condom use, the lessons addressed broader themes that emerged from the needs assessment as important influences on sexual behaviour, such as gendered constructions of sexuality, self esteem, substance use, values and norms. For example, in lesson 5 titled 'Boys don't cry! Girls are soft!' the intervention dealt with the gendered power imbalances and gendered constructions of sexuality that exist in society; while lesson 15 addressed substance use and sexual decision-making. Lesson 10 addressed violence and coercion in sexual relationships, which have been reported in South African studies as pervasive in adolescents' sexual experiences both within and outside the school (Jewkes et al, 2002; Wood et al, 1998; George, 2001). The intervention activities therefore focused on imparting specific skills such as how to be assertive, how to talk about condoms, and how to communicate refusal to have sex. The inclusion of these topics contributed to the favourable responses to the intervention by both students and teachers. This was encouraging in the current context where previous studies have reported 'AIDS information fatigue' amongst South African youth (Levine and Ross, 2001). However, there were some shortcomings in the intervention itself which influenced implementation and therefore the observed outcomes. These will be discussed in the following sections.

#### **5.4.2.1 Inadequate piloting**

Only a selection of the lessons and activities were pre-tested in the pilot. Thus, the feasibility of some of the included activities and lessons was unclear. In the sample selection for the study, larger schools had a higher probability of being selected. The intervention developers should therefore have anticipated having some schools with large numbers of grade 8 students. This was not a major problem for either the intervention implementation or the evaluation at schools that had a sufficient number of classrooms. At some schools however, there were too few classrooms to accommodate the large numbers of students hence the overcrowding. Since the schools were selected prior to intervention development, the intervention designers should also have assessed the class sizes for each of the intervention schools. This would have enabled them to design, pilot and adapt the intervention appropriately. As shown in chapter 3 the obstacles to implementing participatory activities included large class sizes and limited classroom space in which to implement these activities.

The inclusion of single-sex group activities in the intervention was a good approach to discussions on sexual behaviour as sexuality is in part socially constructed and shaped by gender-specific socialization. Stephenson et al (2004) reported in their evaluation that students expressed a preference for interventions offered in single-sex groups. In another study, Wight and Abraham (2000) found that the students were more open in single-sex group discussions due to their little experience in discussing sexual matters with the opposite sex. The authors also found that some of the sexually inexperienced students had difficulties identifying with the romantic relationships portrayed in some of the role-plays (Wight and Abraham, 2000). These findings are concurrent to those of the current study as discussed in chapter 4. The single sex discussion groups were impossible at most SATZ intervention schools. Furthermore, during the training,

some teachers expressed their anxieties around the practicality of some of the included participatory activities given both their inexperience in using these strategies, as well as the time that would be required to implement them properly (Ahmed et al, 2006). Nevertheless, these activities were included in the intervention, and almost predictably, posed major difficulties as discussed in Chapter 4. Thus while these approaches are desirable and have been shown to be effective in different contexts, they were inappropriate within the context of most of the schools involved in the intervention, an issue that could have been picked up during the pilot. Although it is not possible to tailor standardized interventions to each school, the lessons should have been piloted in a variety of schools with circumstances similar to those of the majority of the intervention schools in order to design the intervention to suit the realities of the schools involved.

The failure of these activities emphasises that the intervention developers should have been more innovative in developing theory- and skills-based activities that responded to the institutional realities for which the intervention was developed so as to bridge the gap between theory and practice. While skills-based activities such as role-plays have been shown to be more effective in changing behaviours and are widely promoted for use in behavioural interventions for adolescents, as demonstrated in this study, emphasis on effectiveness alone cannot be the only criteria upon which decisions to include certain activities are based. It is of little value to include role plays in an intervention if the school conditions do not allow for this activity to be properly implemented.

#### 5.4.2.2 Focus on individual behaviour change

Like most of the studies reviewed in Chapter 2, the SATZ intervention was aimed to a large extent at changing sexual behaviour at the individual level with minimal attempts to change or influence the broader social context. The intervention contained two activities that involved parents. These activities were not successful. The teachers involved in the intervention however suggested that parental involvement was important for the success of school-based interventions. While this is desirable, there is little evidence to suggest that parental involvement in school-based HIV/AIDS interventions has any positive effect on behavioural outcomes. Weeks and colleagues tested the effectiveness of involving parents in school-based AIDS education with respect to altering students' AIDS-related knowledge, attitudes, behavioural intentions, communications patterns, and behaviour (Weeks et al, 1997). The authors concluded that the effects observed in both the parent-interactive and parent non-interactive groups were the result of school-based curricula and of student self-determined intentions and behaviours, rather than the presence or absence of planned parental involvement (Weeks et al, 1997). Although in meta analysis published in 2002 parental participation appeared to be associated with higher effect sizes, this finding was based on very few studies and requires cautious interpretation (Silva, 2002). The review concluded that there was not sufficient evidence that parental participation *per se* exerts a direct influence in the outcomes of sex education programs.

The current study did not measure the effect of parental involvement on the intervention thus no conclusions can be made to this end. However, in this and previous South African studies, young people report that parents are their preferred source of information on sexuality and HIV/AIDS, but some studies report that

communication levels with parents around these topics are generally low as the youth prefer to talk to other adults besides their parents (Kelly and Parker, 2000; Pettifor et al, 2004). This concurs with findings from the needs assessment conducted prior to the development of the SATZ intervention (Ahmed et al, unpublished). These findings suggest that there is need to combine change at individual level with interventions that target the contextual factors that influence behaviour. The most common sense way to do so is to use the already existing avenues or agents of socialization such as parents, if they are positive role models. The SATZ intervention attempted unsuccessfully to create a parent-school link that would foster this communication. A sexuality and HIV/AIDS intervention was perhaps not the best means to do so as this link was non-existent at most schools and many students had not established communication about sexuality with their parents.

The evidence from the study by Weeks et al (1997) and the failure of the SATZ intervention in involving parents are insufficient to discount the usefulness of parental involvement in school-based HIV prevention efforts. There is ample sociological literature that demonstrates that adolescent sexual behaviour is in part shaped by the social, material, and cultural context in which they live. Factors within the social context such as influential groups or individuals like peers and parents; mass media; gender socialisation; education level and socioeconomic conditions shape the behaviour choices that young people make as well as their perceptions of personal risk of HIV infection (Eyre et al, 2001; Moore and Rosenthal, 1992; Zambuko and Mturi, 2005). Thus, an individual's ability to respond to and protect themselves from HIV infection through the adoption of consistent condom use for example is inextricably bound to these factors as much as it is to personal psychosocial factors. As discussed in chapter 1, there is also increasing recognition in the literature that HIV prevention

interventions that focus only on individual agency without addressing the contextual and environmental factors that influence why and how individuals have sex may not be effective in changing behaviour (Barnett and Parkhurst, 2005) For example, some South African studies have documented condom inaccessibility for adolescents due to negative attitudes of clinic nurses (Abdool Karim et al, 1992). Vergnani (2003) in a study of social-cognitive predictors and correlates of adolescent condom use at high schools in Cape Town found that condom availability was an important contextual factor that influenced condom use. An intervention that targets condom use at the individual level in such a context without simultaneously addressing the broader structural factors that hinder access to and use of condoms may fail to increase condom use not because the intervention was inherently weak, but because the social context was not enabling for the positive behaviour of condom use to occur. Similarly, an intervention that promotes abstinence within a social context where normative structures do not support abstinence may be ineffective.

As Weeks et al (1997) suggest, the extent and nature of parental involvement may vary depending on factors such as existing parent involvement in their children's schooling; resources available to follow through on a program of parent involvement; the age of the children and the sensitivity of the issue; and the ability of the parent/family to be involved effectively without great expense or sacrifice by either parent or school. The underlying assumption in the SATZ intervention activities that attempted to involve parents was the existence of parent-child communication regarding sexuality. Within the South African context, school-based interventions have to be more innovative in creating the school-home links and in addition to involving parents, look at involving other caregivers and significant adults within the community. With the growing number of orphaned children as a result of AIDS

mortality and the phenomenon of migrant labour which still exists, a focus on parents only would exclude a significant proportion of children. Such a component would also have to consider factors such as literacy levels among parents.

#### **5.4.2.3 Minimal involvement of adolescents in intervention development**

From the discussion above, it is clear that HIV prevention efforts must be based on adolescents' understandings of sex and sexuality, and also on an understanding of and changes to the socio-economic and cultural realities within which adolescent sexual behaviours are shaped (Barnett and Parkhurst, 2005; Donovan and Ross, 2000; Izugbara, 2005; Mathews et al, 1995). The needs assessment conducted as part of the developmental phase of the SATZ intervention was aimed at obtaining this understanding, and was one of the strengths of the intervention (Ahmed et al, unpublished). One of the findings was the adolescents' views that they received conflicting messages from parents, school and the media (Ahmed et al, unpublished). The results reported in chapter 4 regarding parents' objections to their children learning about sexuality in school make it all the more important that common clear messages are conveyed to adolescents from the school, home and community environments. One of the SATZ programme's shortcomings was the minimal involvement of adolescents during its developmental stage. Although the needs assessment data were used to inform the development of the intervention, the lessons may have benefited further from young people's insights by involving them in the design and in pilot testing of the activities.

#### **5.4.2.4 The use of theories developed in the West**

Another programme issue that requires some discussion is the theoretical framework on which the intervention was based. As evident in chapter 2, most school-based

HIV/AIDS interventions are based on individual behaviour change theories developed in the West. Few studies have rigorously tested the applicability of these theories in the South African context with regard to adolescent sexual behaviour. One study that has done so is that by Vergnani (2003), in which she applied a theoretical framework that integrated components from five of the major social cognitive theories of behaviour to study condom use among adolescents in Cape Town. She concluded that while some of the constructs of the theories were applicable to the study population, the theories could be improved by taking into account the contextual factors identified as important determinants of condom use. The theoretical model employed in the SATZ intervention acknowledged this by adding the constructs 'skills' and 'barriers' to the theory of planned behaviour. In practice however, the application of the theory was at the individual level as the intervention focused to a large extent on developing skills and overcoming barriers at the individual and interpersonal level. The intervention thus placed the onus solely upon the individual without addressing the contextual barriers to postponement of intercourse and condom use.

Theory-based HIV/AIDS and sexuality interventions have been shown to be more effective than those that are not based on theory. However, as shown in this study some of the theory-based interventions have not been effective in changing behaviour, particularly with regard to sexual intercourse. The relevance of these theories in adolescent populations in more collectivist cultures requires further research. Individual behavioural factors alone cannot fully explain the discrepancies in HIV prevalence within South Africa and across the world and cannot therefore be the only focus of school-based interventions.

### **5.4.3 Evaluation issues**

In the sections above, I have discussed implementation and programme level factors to help explain why the intervention did not have an effect on behaviour. Earlier in this chapter, I presented the strengths and limitations of the evaluation. That the SATZ intervention did not have an effect on sexual behaviour cannot be explained by a poor evaluation design. In comparison to many of the South African school-based evaluation studies reviewed in Chapter 2, this research had a sufficiently large sample size and a scientifically sound design that combined the use of qualitative and quantitative methodologies among other strengths discussed earlier. In this section, I will discuss some of the process and outcome evaluation issues that help further the understanding of the intervention outcomes.

The results of the outcome evaluation showed that the SATZ intervention was not effective in either delaying sexual intercourse or increasing condom use as there were no differences observed in these two behaviours between the intervention and control groups. The only significant intervention effect was in the number of lifetime sexual partners. However, this is not to suggest that the intervention was not effective in all the outcomes that were evaluated, but this is a conclusion that I cannot make with certainty because in this thesis I analysed only a fraction of the outcome data that I collected. On sexual behaviour for example, the questionnaire contained questions on other sexual behaviours besides vaginal intercourse and condom use such as petting, oral and anal intercourse. I also collected data on communication about sex and condoms, substance use and violent behaviour, among other items (See Appendix H). I have not analysed these data so I cannot make any conclusions as to whether the intervention was effective on these variables. It will be important to examine the intervention effectiveness on these items in future analysis. However, regardless of

whether positive outcomes were found on the items that I did not analyse, the result that the intervention was ineffective in delaying sexual intercourse and increasing condom use as discussed in this thesis stands. These were the two primary outcomes that the intervention sought to change and failed to do so.

It was expected that as time progressed more of the adolescents would become sexually active, as they were growing older. The desirable outcome of course was that the proportion of students becoming sexually active in the intervention group would be smaller compared to the proportion in the control group. It was also the desirable outcome that condom use would be higher among the sexually active intervention group students. As far as condom use is concerned, the intervention did not have an effect on students that were already sexually active at baseline, or those that became sexually active between baseline and the second follow-up. The rate of condom use amongst those that became sexually active in the 15 month period is particularly a matter of concern. As presented in the previous chapter, among the students that became sexually active, 59.2% (n=262) in the intervention group and 64.8% (n=176) in the control group reported at the second follow-up that they used a condom at their first sexual intercourse with no statistically significant difference between the groups (OR=0.77; CI: [0.51 to 1.18]). One hypothesis for non-condom use among this subgroup may be that both partners knew their HIV negative status. The questionnaire did not contain any questions on HIV testing, hence this is not a conclusion I can make with certainty. However, given the results from studies cited earlier about the non-conducive circumstances in which adolescent sexual intercourse occurs, and particularly first sexual intercourse, it is unlikely to have been the case that both partners were aware of their HIV negative status. A small proportion, 7 (8.0%) in the intervention group and 4 (7.4%) in the control group, of the subgroup of adolescents

that became sexually active but did not use a condom reported to have been forced to have sex or raped at their first episode. The majority of them, (71.3% in the intervention and 72.2% in the control group) reported that they were willing, yet just fewer than 50% did not use a condom the first time they had sexual intercourse. A study by Harrison et al (2005) reported a higher likelihood of risk behaviours at first sexual experience among adolescents that experienced sexual debut before the age of 15 years.

The results of this study while disappointing are comparable to those of other RCTs reviewed in Chapter 2. Of the 11 RCTs that assessed abstinence or postponement of sexual intercourse, 6 reported no intervention impact on this outcome (Kirby et al, 1997a, 1997b; Mitchell-DiCenso et al, 1997; Thomas et al, 1992; Walker et al, 2006; Wight et al, 2002). The literature provides mixed results regarding the effectiveness of school-based interventions in delaying sexual intercourse or increasing levels of abstinence, as well as condom use. Kirby et al (1994) for example reported in their review that some studies delayed the onset of sexual intercourse. In another review of 10 abstinence programmes in the United States, 9 out of 10 failed to provide credible evidence of delay of sexual intercourse (Kirby, 2002). In other reviews that included some of the studies I reviewed in chapter 2, there was little overall effect size (Silva 2002) or no evidence that the programmes evaluated were effective in delaying intercourse (DiCenso et al, 2002). For the eleven RCT studies reviewed in Chapter 2 that presented results on condom use, six found positive effects on this behaviour (Coyle et al, 1999, 2001; Flay et al, 2004; Kirby et al, 2004; Levy et al, 1995; Walter and Vaughan, 1993). The rest reported no difference between the groups and one had a negative effect on condom use. Even in some of the studies where some positive effects were noted, one needs to consider the analysis procedures that were employed.

When randomisation is at the school level and analysis is at the individual level for example, program effectiveness tends to be overestimated. Although the interventions evaluated in these studies were different in their designs and implementation, and were not conducted in South Africa, they were all implemented in schools with the aim of changing risky sexual behaviours, which makes it a matter of concern that few of them reported positive outcomes.

The results of the current study and those of the RCTs reviewed in chapter 2 warrant some discussion as to why school-based interventions that have been rigorously evaluated using RCT designs have failed to show the desired positive effects. There are several evaluation issues from the current study that can be drawn upon to further this discussion. These include the use of qualitative methodologies and good measures to assess factors other than effectiveness.

There is increasing recognition in the literature of the value of qualitative data as part of RCTs evaluating social interventions (Oakley et al, 2004). However, qualitative data are rarely collected as part of RCTs, particularly with regard to the trial outcomes. In this study for example, as well as the RCTs by Oakley et al (2004) and Wight et al (2002), qualitative data were collected only to assess the implementation of the intervention. While this provided valuable data on the context of intervention implementation and the processes there-in, it is clear given the observed outcomes that this study would have benefited from qualitative data collected after the analysis of the outcome quantitative data. Such data would have helped in better understanding and interpreting the outcomes by involving both teachers and learners in the process, thereby allowing for further exploration of some of the arguments I have put forward in the earlier discussion as explanations for the intervention's failure to change

behaviour. Qualitative research conducted after the analysis of the outcome data would for example have provided some insight to the lack of condom use at first sex amongst the subgroup of adolescents that became sexually active during the 15 month period.

The current study also did not contain good measures from which conclusions could be drawn about any association between personal teacher characteristics and successful implementation. Previous studies have found that characteristics such as enthusiasm, commitment, good rapport with learners and teachers' age are positively associated with successful implementation of sexuality interventions (Gyarmathy et al, 2002; Rohrbach et al, 1993). It is possible that there were some common patterns of personal characteristics that teachers who successfully implemented the SATZ intervention possessed, which I did not capture in the process evaluation. Such data would have enabled subgroup analysis on the outcomes to assess intervention effects based upon teacher characteristics and the quality and fidelity of their implementation. Further research on this would provide useful information for the future selection of teachers to implement HIV/AIDS interventions.

The process evaluation findings cannot be generalized beyond the contexts of the SATZ project schools, but they provided important information on the feasibility of implementing a generic intervention in a variety of schools, and useful data for improving the SATZ intervention and school-based HIV/AIDS and behaviour interventions in general. A possible explanation for the intervention failure could be self-selection at the individual student level due to difference in attendance rates of LO lessons, or differential participation in the programme. As mentioned earlier, one of the limitations of the evaluation was that it did not contain good measures of

exposure to the intervention. Thus, it was not possible to conduct analysis to assess the extent of differential exposure to the intervention and determine its effects on estimates of intervention effectiveness. The levels of exposure were also directly linked to teacher mobility which left some classes or schools without an implementation teacher for a short period. There is no reason to believe that the absenteeism and transfer rates were different between intervention and control schools participating in the study. However, in some cases, different students participate at different levels in the program activities. This differential self selection may have impacted on estimates of program intent.

At face value, the SATZ intervention was of a high quality, developed after having conducted a needs assessment study, a systematic review of existing interventions aimed at adolescents, and using a rigorous protocol that took into account previous research on development of school-based interventions. Hence the decision to conduct a rigorous evaluation was based upon the potential of the intervention to have an effect on the delay of sexual intercourse and increase in condom use. It is difficult to say whether the use of a non-randomised evaluation design would have resulted in evidence of effectiveness, but certainly conducting RCT increased confidence in the results.

The failure of the intervention to show statistical differences on the sexual behaviour outcomes does not mean that it did not have other positive qualitative impacts at the school level. As presented in the process evaluation findings, the intervention enhanced student-teacher communication, changed teachers' attitudes towards teaching HIV/AIDS prevention, enhanced the educators' personal development and increased students' enthusiasm for LO, a subject that they did not regard highly. The

application of the intervention mapping protocol to the design and development of the intervention, particularly the involvement of teachers in the process contained important lessons for the future design of school-based HIV/AIDS interventions. The process was carefully documented so that it can be replicated in developing other interventions.

In the preceding sections of this chapter, I have presented the strengths and weaknesses of this study, and discussed results of the process and outcome evaluations within the context of the intervention, its implementation and the evaluation. In the following section, I will provide some recommendations.

## **5.5 Recommendations**

From the findings of this study, I will make a number of recommendations for the development, implementation and evaluation of school-based HIV prevention interventions in South Africa. Despite the disappointing outcomes, school remains an important setting for implementing rigorous HIV prevention interventions for reasons discussed earlier, such as the ease of reaching large numbers of children and adolescents in particular; the low cost of the interventions; the positive correlation between education and protective behaviour; and the possibility of having an effect on group norms and processes that influence behaviour. Thus, efforts to improve the design, implementation and evaluation of school-based interventions must continue. The HIV pandemic has redefined the roles and responsibilities of schools. It is no longer only about providing quality education and achieving academic excellence, but also alongside this, schools have a responsibility to address factors that predispose adolescents to HIV infection, and to provide support for those children that are infected or affected by HIV/AIDS. This is a responsibility that cannot be left to

schools alone but must be duly supported through links with the broader school communities, organisations and institutions, and appropriate policy and budget decisions from relevant government departments. Therefore, in the following sections I will make recommendations at three levels: (i) the education system level; (ii) level of interventions and their implementation; (iii) the level of evaluation research.

### **5.5.1 Recommendations at the level of the education system**

The Department of Education has through various national policies committed itself to the responsibility for protecting the rights of all children. This includes promoting adolescent sexual health, HIV prevention and protecting the education rights of children infected or affected by HIV. These issues must remain a top priority in the policy and development agenda. The following recommendations can help to further inform these commitments.

#### **1. Teacher training**

This study demonstrated the need for training more teachers specializing in LO and implementing interventions to help protect adolescents from HIV infection. The training of LO teachers should focus on a number of factors, including the following:

- It should focus not only on increasing teachers' knowledge and changing their attitudes towards HIV prevention, but should also aim to influence the teachers' self efficacy and confidence to implement HIV/AIDS interventions, whether these are conducted within the LO curriculum, other subjects or are specific targeted HIV/AIDS interventions. The increase in some of the teachers' self efficacy to implement the SATZ intervention lessons that they thought they would not be able to handle such as the condom demonstration showed that it is possible even with a short training to increase teachers' self-

efficacy to implement HIV/AIDS education. Whether or not this happens in practice is another matter, but increased self efficacy increases the likelihood that the intervention will be implemented.

- Pre-service training for LO educators should aim to equip them with realistic teaching methodologies appropriate for delivering HIV/AIDS education. It was evident from the results of this study that even though some of the school circumstances did not allow for the use of participatory activities, many of the teachers were inexperienced in using this teaching approach.
- The training should aim to equip teachers with the necessary skills to better respond to the need for HIV prevention as well as dealing appropriately with children infected or affected by HIV/AIDS, and the often intertwined structural factors of violence, poverty, substance use, gender and power imbalances among others. This is a major responsibility and requires equipping teachers with a variety of skills. This study found that the teachers felt ill equipped to handle the enormous responsibility of delivering sexuality and HIV/AIDS education without adequate skills and training to also address other factors.
- The training should also be sensitive to factors such as gender appropriateness and heterosexism, as well as sensitivity to HIV infected or affected children. Increasingly, there are children of school-going age that are living with HIV transmitted from mother-to-child. Therefore, the focus in teacher training should not be limited to sexual transmission of HIV.

In addition to what the training content should include, other aspects that need to be addressed at the level of teacher training include the following:

- Teachers must be formally credited by the schools and the Department of Education for the skills gained from training on HIV/AIDS education, which should be seen as career development. Some of the teachers that expressed a sense of being demoralised had been teaching guidance education and lifeskills for many years and now life orientation. Some had also attended previous training workshops facilitated by the Department of Education and various organisations. The teachers felt that this was not duly recognised by the powers that be. Others were tired of attending training workshops where no further support or recognition was offered once the training had ended.
- Training should not only be provided for future educators, but also in-service training for current LO teachers. This should be accompanied by continued support from the schools, training institutions and the Department of Education. Without such support both at the school level and from the Department of Education, ensuring that the teachers remain motivated and the interventions are sustainable will remain be a challenge. Some of the teachers involved in SATZ intervention for example had been teaching LO for a number of years without specialised training in teaching the subject.
- The selection of teachers that possess or exhibit characteristics associated with successful implementation of sexuality and HIV/AIDS education should be considered an important aspect of training. This may be a challenge as it is not entirely clear what these characteristics are. However, it is crucial for the successful implementation of HIV prevention interventions that interested,

motivated and committed teachers who can discuss sensitive topics regarding sex in a learner-friendly manner are trained. Educators that possess these characteristics may also be more likely to increase interest and enthusiasm for LO amongst students.

- At some schools, there were not enough qualified LO teachers, so the principals hired non-trained teachers. At one school for example, one teacher was responsible for teaching LO to 8 grade 8 classes, and 7 grade 9 classes. This does not augur well for a subject that already had lower status compared to other subjects. These two factors, the employment of teachers not qualified to teach LO and insufficient numbers of LO teachers may be related to a number of issues that were beyond the scope of the study, such as teacher training colleges not graduating a sufficient number of LO teachers, low remuneration or the lack of support for LO teachers hence the high turnover. Whatever the reasons were, it was clear from this study that some attention should be paid to ensuring that each school has at least one qualified LO educator.

## **2. Resource allocation**

Some of the institutional level factors that hindered implementation of the SATZ intervention such as overcrowded classrooms, staff shortages and the lack of basic furniture and facilities arose from the broader issue of the lack of adequate resources at the school level. This was particularly in historically coloured and black schools in the townships. It is beyond the capacity of independent projects such as the SATZ project to address these issues. Changes in the education sector must address the resource inequalities currently existent in South African schools. It is difficult in the

current conditions to argue for better implementation of HIV interventions, when even basic facilities for proper teaching and learning to occur are lacking, teacher turnover is high, and some schools are massively under-resourced and overstretched thereby affecting teacher and learner motivation. For schools to remain effective arenas through which to address HIV/AIDS, the financial resources must be available to improve first and foremost the school conditions and the quality of education which is the primary goal of schools. Only then can schools have the capacity to adequately address HIV/AIDS. Coupled with the lack of resources is the poor management at some of the schools which was not assessed in this study but was evident at some schools. Poor management can of course occur even in schools that have adequate resources, but it was generally more evident at the poorly resourced schools. Having a new timetable every morning for example made it difficult for teachers to pre-plan their lessons.

### **3. Make LO an examination subject**

The incorporation of HIV/AIDS education through LO is a commendable achievement of the Revised National Curriculum Statement as it allows for HIV/AIDS to be addressed within a comprehensive curriculum (Department of Education, 2002). However, there is currently no standard recommended LO text but a variety of competing materials available for schools to choose from. Teachers are also to a large extent at liberty with regard to the content that they deliver. LO is currently a compulsory subject up to grade 12 (Department of Education, 2002). However it is not be an examination subject. Students are assessed using various other approaches such as assignments and tasks. Making LO an examination subject at grade 12 is an option that may require further exploration. This would have certain

potential advantages. It would bring about more structure and clarity of content and common messages into the curriculum. It would also elevate the status of LO as an important subject and instill into it a greater sense of seriousness from both schools and students. As expressed by one of the teachers, students considered it a “fun” subject in which serious activities like homework or examinations were considered unusual. This lack of seriousness towards LO within schools concurs with findings from a study conducted in the Western Cape and Limpopo on the status and practice of LO (Rooth, 2005). If LO was an examination subject, the criticisms leveled at the SATZ intervention of taking up too much time at the expense of other LO focus areas would have been dealt with because teachers would have been more obliged to either ensure that the intervention incorporated the other focus areas, or allocated sufficient time later in the year to each of the LO areas not covered by the intervention. It would also minimise the opportunity for snapshot unsustainable interventions that are currently common occurrence in some schools.

Given reports of HIV information overload amongst South African youth, the content of HIV/AIDS education in LO has to be carefully considered so that it responds to the current needs of the youth and not focus only on the easier to teach scientific facts about infection and prevention. If it were to become an examination subject, LO must also not adopt a scientific approach geared only towards achieving good examination results. The content would need to be sufficiently flexible and innovative so that it can be changed or adapted as new information and research data about HIV/AIDS becomes available. As shown in this and previous studies, LO was a teaching area that some head-teachers handed to any teacher that was available, regardless of their qualifications in teaching LO or enthusiasm for the subject (Rooth, 2005; Shisana et al, 2005) LO. For example, 9 out of the 24 teachers that attended the first SATZ

training workshop had not previously received any other form of HIV/AIDS or sexuality education training, and some were not trained to teach LO (Ahmed et al, 2006). Making LO a compulsory subject is therefore a development that should be embraced. However, to be successful, it must be accompanied by appropriate training of teachers and the allocation of adequate resources to enable schools to undertake this extra responsibility, as well as measures to raise its status within schools.

#### **4. School-level HIV/AIDS policy**

National policy urges schools to have a planned HIV/AIDS Strategy (Department of Education, 1999). However, not all schools have such a strategy or a HIV/AIDS policy for learners or educators. Of the 13 intervention schools, only 1 had a school HIV/AIDS policy at the time of participating in the research. Some educators however mentioned that participating in the study had got them thinking about a school HIV/AIDS policy. In a recent study in Cape Town on factors associated with educators' decision to implement HIV/AIDS education, Mathews et al (2006) found the presence of a school HIV/AIDS policy to be an important predictor. Other previous studies also suggest that the presence of school, regional or national policy guidelines can influence adoption and implementation of school HIV/AIDS education (Blake et al, 2005; Ndeki et al, 1995). Although the current study did not measure the presence of a school HIV/AIDS policy as a predictor for implementation, the presence or absence of one did not appear to influence implementation of the SATZ intervention. It is important nevertheless for schools to have a policy, particularly in the current context where there are children of school going age that are living with HIV. This situation broadens the responsibilities of schools so that they may increasingly have to function as environments of care for HIV infected children.

## **5. Acknowledge and respond to the fact that educators are themselves HIV infected**

This research did not investigate the HIV prevalence amongst teachers at the participating schools as this was not part of the aims of the study. However, previous studies have raised concerns about the prevalence rates amongst educators. A cross-sectional survey amongst teachers at South African public schools reported a HIV prevalence of 12.7%. Some of the factors associated with educator HIV infection are absenteeism and attrition due to HIV-related illnesses (Shisana et al, 2005). Training programmes such as that provided for the SATZ intervention and teacher training colleges must be cognisant of these facts. Teachers should not be viewed only as vehicles through which to get to learners but should also be equipped with the knowledge, self-efficacy and other necessary attributes to protect themselves from infection so that they can effectively tackle the responsibilities for HIV education. Anecdotal evidence has shown that it is not always safe for teachers to disclose their HIV positive status in schools, and some of those that have done so have faced negative consequences from school administrators. While giving teachers the responsibility of teaching HIV/AIDS education, schools and the relevant government departments must acknowledge that some educators are themselves infected or affected by HIV/AIDS and put in place support mechanisms within the school to prevent discrimination of both teachers and students living with HIV/AIDS, and to prevent absenteeism and loss of teachers due to AIDS. A school HIV/AIDS policy may be a good start.

## **6. Make schools safer for teachers and students**

Several teachers at the participating schools related various incidences of violence that they had experienced within the school. Some of the teachers involved in this study for example said that they could not exercise after school detention as punishment for errant students because of previous cases where the teachers that stayed with the students in detention were attacked by the students or gangsters from the community. During the research, a teacher at one of the intervention schools was physically assaulted in the school premises by an angry parent. As mentioned in chapter 4, on various occasions teachers were concerned about my safety and that of the field workers that assisted me with the data collection. This lack of safety within schools does not create an environment in which educators can be motivated to extend their services to HIV prevention and the protection of vulnerable children.

### **5.5.2 Recommendations at the intervention level**

I will now provide some recommendations at the intervention level.

#### **1. Have a scientific base**

School-based HIV/AIDS interventions must be rigorously developed by drawing on local research regarding sexual behaviour of adolescents. Only when the complex pathways of risky behaviour and behaviour change are well understood can HIV prevention programmes be effective. Condom use for example is not a one time event but involves a series of steps and behaviours such as knowing where to obtain a condom, buying or obtaining one, having it when needed, negotiating or communicating with a sexual partner about using a condom, knowing and practicing how to use it correctly. The same applies to behaviours such as substance use. Classroom-based interventions must therefore be based on an understanding of the

complex relationships between these steps and the theories of behaviour change in order to provide students with realistic HIV prevention choices, recognising that adolescents' individual behaviours are dependent upon the structure of relationships, material conditions and resources. The relationship between sexual behaviour and other risk taking behaviours must also be understood in order to develop appropriate interventions for HIV prevention. HIV prevention is complicated by the fact that sexual behaviour is to a large extent a behaviour that occurs in private, as opposed to say cigarette smoking. Nevertheless, school-based HIV prevention can also draw from studies of successful interventions in other domains such as substance use and healthy diet. Interventions must also be based on research findings regarding the school contexts within which they are to be implemented, and information about the components (activities and strategies) that are possible to implement within these school contexts. One of the strengths of the SATZ intervention was its reliance on situation analysis data and secondary literature in its development.

## **2. Beyond the classroom**

The majority of the learners that did not participate in the follow-up data collection had dropped out of school. Given research findings of the positive correlation between school-dropout and risky behaviour, efforts must be made to keep youth in school. Children who drop out of school or those who due to circumstances such as poverty and HIV/AIDS do not attend school regularly may not benefit from the protective factors, the skills and life opportunities afforded by education. The HIV epidemic is itself contributing to school dropout and absenteeism as children leave school to care for ill parents or are left to head households and look after younger siblings, further continuing the cycle of vulnerability to increased risk of HIV infection. This makes it

crucial to move the programmes beyond the classroom. Links should be made between the school and the local communities, whether through parents or other significant community members or non-government and civil society organisations. In so doing, the interventions will also have increased potential to reach the youth that have dropped out of the formal schooling system. Coupled with this, developmentally appropriate interventions should begin as early as primary school and continue until learners leave school so as to reach the proportion of children that do not proceed to high school before onset of sexual activity. As risky sexual behaviour becomes entrenched, it becomes increasingly difficult to change (DiClemente and Petersen, 1994).

In addition, the burden of the HIV pandemic is far too great to be left solely to teachers. The teachers in this study expressed the desire to have school-based interventions supported by parents and the broader school communities. This is important in order to communicate effective messages both at home and school. It is also important in creating a support mechanism for the teachers and appreciation for their work in HIV prevention. The inclusion of a parent or community component in school-based HIV prevention interventions is an area that requires further exploration to establish whether it is possible, how it should occur, and whether or not it has any added value to school-based interventions. While HIV has undoubtedly caused major devastation for many of South Africa's children, it is a problem that cannot be effectively addressed through isolated school-based interventions but requires cooperation of all relevant stakeholders in order to address all other structural factors such as gender imbalances and poverty that influence behaviour.

### **3. Sensitivity to gender and sexual orientation**

As was evident in this study, any school-based HIV prevention intervention needs to be sensitive to heterosexism and gender discrimination or stereotyping. Even though HIV transmission in South Africa is predominantly through sexual intercourse, activities included in the lessons such as role plays, should be carefully planned so as not to propagate gender stereotypes, or exclude any learners due to their sexual orientation or sexual (in)experience. The interventions must in fact challenge the gender, social and power inequalities existent in adolescent sexual relationships, and social constructions of gender and sexuality. The gender differentiated intervention effects and students' preference for single sex groups reported in some of the studies reviewed in Chapter 2 as well as the finding in this study that there were gender differences in response to the intervention point to the need for programme designers to be more sensitive to these issues.

### **4. Develop practical sustainable programmes**

The institutional challenges in some of the schools as described in chapter 4 made implementation of the SATZ intervention difficult for the teachers. The resource disparities, varied levels of literacy, varied levels of risk of HIV and differences in the life circumstances of adolescents in Cape Town high schools make standardised programmes incredibly difficult. Some of the difficulties can be overcome at the programme level by piloting interventions during development so as to assess their feasibility. However, intervention developers have to take into consideration the unique circumstances of some schools. Interventions should be designed so that they can be appropriately adjusted to different schools. This is complicated and would make evaluation more complex, but it may be necessary to do so not only enhance the

chances of implementation, but also to ensure that interventions are practical, realistic and sustainable. However, the root causes of the disparities between schools must simultaneously be addressed as they have major implications for the development and sustainability of interventions.

### **5. Involving adolescents and teachers in intervention development**

The lack of effect in the SATZ intervention underlines the importance of tailoring interventions to fit the characteristics of the students for whom they are intended, as well as the school conditions in which they are implemented. Needs assessments such as that conducted prior to development of the SATZ intervention are a useful means of including adolescents' and teachers' input into the programme. Although there will be differences in adolescents' experiences, interventions could benefit further by involving adolescents in the development of lessons and activities so that these are based on an understanding of risk taking and risk preventive behaviour, are concurrent with the lived realities of adolescents, and are designed to be possible to implement within the practical limitations of schools. While it is expected that interventions should be implemented as planned, individual and contextual factors may exert some influence on how school-based interventions are implemented as was the case with the SATZ intervention. Teachers bring to the implementation a range of different experiences, all of which impact on how they deliver an intervention. Students are also a diverse group and how they respond to an intervention may influence the manner in which it is delivered. For example, the gender differentiated responses to the SATZ intervention suggest that interventions need to consider the different needs of boys and girls. How to tailor interventions to specific characteristics such as gender is however not clear. This is an area that emerged from the current study as requiring

further research to inform the development and implementation of school-based HIV/AIDS interventions. Also, risk taking is associated with the developmental stage of adolescence, but adolescents are all not equally at risk of HIV infection. It is difficult in school-wide interventions to target interventions at those at higher risk. However, further research is required to understand what risk-taking means to this subgroup of adolescents and the dynamics around it so that interventions can be designed appropriately.

## **6. Considerations for evaluation**

As was evident from the review in chapter 2, many of the HIV interventions implemented in South African schools are not evaluated. The evidence of effectiveness of these interventions is therefore scanty. HIV/AIDS is at epidemic levels in South Africa and there is great urgency from many quarters to implement interventions without similar urgency for evaluation research. Thus interventions are conceived and implemented without consideration for evaluation research. Interventions and evaluation research must go hand in hand so as to build a body of knowledge regarding the impact of the interventions, obtain data on the implementation processes, and to advance the field of programme evaluation whilst simultaneously responding to the urgent need to prevent HIV infection. In developing future programmes, consideration should be given to evaluation so that the interventions are designed in a manner that renders them to rigorous evaluation. This requires that when developing interventions, resources should be allocated to evaluation.

### **5.5.3 Recommendations at the level of evaluation**

One of the biggest challenges to preventing HIV infection is the lack of reliable evidence of interventions that work. The design and results of this study have several implications for the evaluation of school-based HIV interventions. In this section I will provide recommendations for future research evaluating school-based HIV interventions.

#### **1. Study design**

There is clearly a gap in the availability of rigorous evaluations of school-based HIV interventions. The first choice should be to employ RCT designs as they are the optimal design for evaluating interventions where the aim is to provide evidence of effectiveness. RCTs of social interventions are complex and can be time consuming, methodologically and logistically challenging. These challenges are not insurmountable as demonstrated in the current study. In undertaking RCTs however, researchers should pay particular attention to some of the design issues discussed in this thesis. For example, care must be taken to ensure that sample sizes are sufficiently large to accommodate attrition without loss of power. The necessary measures should also be taken to reduce threats validity. RCTs of school-based interventions are financially expensive because they require large samples to take care of positive ICC. Poorly conducted may compromise the integrity of the design, and will not be cost-effective in yielding useful effectiveness data. Evaluations employing an RCT design therefore require careful planning that pays attention to the ethical, scientific and feasibility issues discussed earlier.

Although RCTs are recommended they are not the only means of obtaining evidence, nor are they always possible or appropriate for evaluating every intervention. The

design employed should also depend upon considerations of the nature of the problem; the evidence required; trade-offs between bias and usability; logistical and practical considerations such as time, money and expertise; and the purpose for which the evidence will be used. For example different kinds of evidence will be required if the aim is to inform policy, or programmes, or to enhance the science of evaluation. Each source of evidence has corresponding strengths and limitations. Study designs such as observational studies and non-randomised before and after evaluation designs therefore have an important role and can help strengthen the practice of school-based HIV prevention interventions and evaluation. These designs cannot however optimally answer questions about effectiveness or provide the level of internal validity for intervention effects as that provided when an RCT design is used (Bloom et al, 1999). RCTs are therefore more desirable and as shown in this study, are possible to conduct in the context of South African schools.

## **2. Methodological appropriateness**

Given the huge gaps in knowledge, it is necessary that studies to combine various evaluation approaches and to employ different data collection methodologies so as to provide various forms of evidence to inform decisions about HIV prevention amongst adolescents. The qualitative data collected in this study for example provided valuable data regarding the school contexts and intervention implementation. The design and methodologies employed must however maintain ethical and scientific standards, as well as reporting integrity.

## **3. Quality of evaluation instruments**

In the light of experiences of this study, it is necessary to reiterate the importance of piloting evaluation instruments and ensuring that they are psychometrically sound in

order to adequately measure the multiple influences on adolescent sexual behaviours. The use of a self completed questionnaire is practical in collecting data from a large sample of adolescents as were involved in this study. By using a self completed questionnaire in this study, the assumption was that respondents could read at the level which the questionnaire was set. Although revisions were made after the pilot and test retest studies, some of the schools in the trial had low literacy levels, an observation that was corroborated by the variation in the duration that it took learners at different schools to complete the questionnaire. Repeated measures of course meant that literacy levels improved and changes in understanding of the questionnaire occurred over time so that the learners completed the questionnaire faster during the follow-ups. The low literacy level is however is a matter of concern for large studies employing self administered questionnaires. The instruments should be piloted and accordingly revised to suit the literacy and cognitive levels and improve validity. Reports of evaluations should also provide readers with sufficient detail of the instrument quality.

### **5. Attention to process evaluation**

Where evaluation research has been conducted, there is a general tendency to want to prove effectiveness without similar consideration for process evaluation. As evident in the review of studies in chapter 2, few evaluations of school-based HIV interventions have paid attention to process evaluation. These data are often unavailable in most published reports of outcome evaluation. In the South African context where there are few rigorous evaluation studies, this lack of process evaluation data limits the extent to which we can answer questions about which intervention components can be successfully implemented and the school conditions necessary for successful

implementation. This creates the possibility that future interventions repeat past implementation mistakes and therefore limits the opportunity to replicate feasible intervention components.

Understanding which interventions are effective will require more than measures of effectiveness. As shown in the current study, schools are multi-layered, and the communities in which they are located are also complex. Effectiveness alone is insufficient evidence to disseminate an education program without an understanding of the broader structural, infrastructural and societal factors, some of which the individual has little or no control over. Evaluations of school-based interventions should therefore endeavour to collect thorough process evaluation data that provide sufficient description of the intervention, an understanding of the complexities of intervention implementation and the school settings, so as to provide comprehensive evidence of what works in these contexts. Where process evaluation is conducted, the focus is often on indicators pertaining to the implementers and recipients of the programme. The development of process indicators for factors such as teacher characteristics and school management systems is necessary for the understanding of intervention implementation as well as the link between implementation and the outcomes.

## **6. The researcher-school relationship**

As mentioned earlier, schools generally welcome interventions if they consider them to have benefits to their students. The benefit of research on the other hand is not as easily identified. RCTs in particular are conducted over a long duration, which makes it critical to maintain a good collaborative relationship with the schools as this is key to the success of the trial. In the current study, for example, I depended on the contact

teachers in negotiating time for the research with their colleagues. They also assisted in organizing dates and venues for the questionnaire administration and group discussions, and participated in the research through the educator lesson logs and interviews. The long term relationship with the schools was made much easier by explaining to the schools right at the beginning the details of what the research entailed, in particular that it would continue long after the intervention had come to an end. The relationship with the control schools had to be carefully negotiated as some teachers were unhappy about not being in the intervention group. At the intervention schools, it was crucial to explain the research component of the project to the teachers, and why it was necessary for them to participate in the research through their feedback on implementing the intervention. This helped bridge the gap between research and practice, as both the researcher and the teachers had a common understanding on the need and importance of the evaluation. At the end of the trial, all the contact teachers that were still at the intervention and control schools received a much appreciated memento from the project as a sign of appreciation. Researchers must therefore be sensitive to the circumstances of each school, recognising that research is not the schools' number one agenda and indeed exerts an extra burden on the teachers. Researchers have to carefully negotiate access into the schools and management of the ensuing relationships so that the research is not compromised, whilst being sensitive to cause minimal disruption at the schools.

## **5.6 Conclusion**

In this concluding chapter, I have presented the strengths and weaknesses of the study which I conducted to evaluate the SATZ programme, a school-based HIV/AIDS prevention intervention. Within this backdrop, I have attempted to interpret the results

of the study and provided some recommendations for the development, implementation and evaluation of school-based HIV interventions.

The objectives of the study were (i) to conduct a systematic review of international and South African evaluations of school-based HIV interventions; (ii) to document the implementation of the SATZ intervention through a process evaluation; (iii) to determine through outcome evaluation the effectiveness of the intervention in delaying sexual intercourse; and increasing consistent condom use. To meet these objectives, a systematic review of existing South African studies and published RCTs of school-based HIV interventions was conducted and discussed in chapter 2. The reviews demonstrated the lack of attention to evaluation as indicated by the small number of evaluation studies that were found. They also showed that even some comprehensive school-based interventions have failed to have any effect on the delay of sexual intercourse or condom use, and highlighted the need for evaluation studies.

A process evaluation utilising various qualitative methodologies was conducted to evaluate the intervention implementation. To establish intervention effectiveness, a rigorous RCT design was employed, with electronic self administered questionnaires as the data collection method. The design and methodologies were discussed at length in chapter 3. By employing a RCT design, this study demonstrated the feasibility of conducting long-term trials in South African schools. It contributed to the body of knowledge on evaluation of school-based interventions. The intervention was implemented with a large representative sample of grade 8 learners at schools in Cape Town. The participating students represented various demographic and risk profile characteristics of the adolescent population in Cape Town. Randomisation also resulted in the equivalence of the experimental and control groups at baseline. This

limited the external validity and the results of the study are applicable only to the SATZ intervention and the schools within which it was implemented. The results nevertheless make a significant contribution to the increased understanding of the school-contexts within which such interventions are implemented. Further, the research is an advancement in the design of evaluation of school-based interventions. The absence of rigorous evaluation studies and the lack of intervention effect in the current study reiterate the need to conduct rigorous evaluations of these interventions. There is little documentation of the complexities within schools as settings for HIV/AIDS prevention. This research furthered the understanding of these school complexities. Only when these complexities are well understood can school-based HIV prevention interventions be properly designed and implemented.

There is however a large body of evidence that HIV/AIDS has to do with a myriad of factors beyond individuals and their interpersonal relationships. This study and the SATZ intervention that I evaluated only touched on a few of the factors that influence sexual behaviour. The intervention focused on individual-level behaviour change. As discussed in chapter 1, HIV/AIDS is a complex problem that requires more complex, innovative co-ordinated and inter-sectoral interventions that go beyond individual behaviour change. The failure of this study to have an effect on behaviour has been discussed at length in this chapter. The results of the study highlight the need to develop rigorous interventions that involve various stakeholders, in particular teachers and students who are the end users of the intervention. This will not only ensure that the interventions respond to local needs and realities, but it also increases the possibility of implementation within various school contexts. While school-based individual behaviour change interventions are important and have a role to play in HIV prevention, in isolation, these programmes will not have sustainable effect on

reduction of HIV incidence. The intervention's failure to impact on sexual behaviour highlights the need to link school-based interventions with community-level interventions in order to provide support systems for the desirable behaviours to occur and be sustained beyond the school.

Finally, given the results of this and previous studies, one might ask whether there is need to continue implementing school-based HIV prevention interventions if they have not been shown to have an effect. The simple answer is yes, HIV prevention efforts amongst adolescents must remain a priority and continue to be intensified as behaviour change is a long and complex process. As discussed in chapter 1, school is a setting that provides ample opportunity to implement interventions at relatively lower costs. However, these school-based interventions must also be supported with the necessary financial and human resources to facilitate proper implementation. More importantly, such intervention efforts must be rigorously evaluated. It is disheartening that two decades into the HIV epidemic, evidence of effectiveness of school-based interventions is scanty. Where possible, evaluation studies should adopt a comprehensive approach that includes input, output, process, outcome and cost-effectiveness evaluation components, and a triangulation of different evaluation research methodologies that maximizes on the strengths of each approach.

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University of Cape Town

## **Appendices**

University of Cape Town

**Appendix A: Educator lesson log**



**SATZ PROJECT  
(2004-2006)**



**Promoting Sexual & Reproductive Health. School-based HIV/AIDS intervention  
in sub-Saharan Africa.**

**Educator Implementation Assessment Part I**

School \_\_\_\_\_

Educator's name \_\_\_\_\_

Classes taught (e.g. 8a, 8f) \_\_\_\_\_

**Dear Educator,**

The brief questions contained in this document are to help you and us to assess the process and quality of implementation of the SATZ curriculum. The implementation process has important implications for the observed behavioural outcomes that we are measuring using learner questionnaires. Your responses are important in informing yourselves and us of the things that worked and those that didn't, and why. It also informs us how this implementation could be done differently in future. You could use this exercise as a means of reflecting on what you're doing and how to improve it.

Please feel free to provide any additional comments, suggestions, criticisms that you think would be useful. All information provided here will be accessible only to SATZ staff, unless you inform us otherwise. You may answer in Afrikaans, English or Xhosa whichever you prefer. Please keep your own copy of this assessment if you so wish.

Thank you very much for participating

**Wanjiru Mukoma**  
Research Officer, SATZ Project

27<sup>th</sup> February 2004

Which of the SATZ educator training workshops did you attend? Please tick only the sessions that you attended or the last block if you didn't attend any of the workshops

	Friday	Sat
1st training (Slanghoek 6-7 Feb)		
2 <sup>nd</sup> training (Slanghoek 13-14 Feb)		
3 <sup>rd</sup> training (Dept of Psychiatry, UCT 20-21 Feb)		
4 <sup>th</sup> training (Dept of Psychiatry, UCT 27-28 Feb)		
Refresher training (23 April)		
I didn't attend any of the workshops		

On what date did you implement the first learning experience of the SATZ curriculum?

-----/-----/04  
 Day                      Month                      Year

**LEARNING EXPERIENCE 1: Values clarification with regard to adolescent sexuality**

1. Which activities did you undertake for this lesson?

- Activity 1 – What are Norms & Values?
- Activity 2 – Sharing feelings
- Activity 3 – The SATZ story
- Activity 4 – Planning a questionnaire
- Activity 5 – Important norms & values
- Activity 6 – Role play: using norms & values

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins
- Activity 2 ..... mins
- Activity 3 ..... mins
- Activity 4 ..... mins
- Activity 5 ..... mins
- Activity 6 ..... mins

3. How many contact periods did it take to complete this learning experience? Please also state the length of your contact periods.

Number of periods ..... Duration of each period ..... mins

4. Did the lesson occur as set out in the curriculum?

- Yes  No

5. Were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity					
	1	2	3	4	5	6
Yes, exactly as planned						
Yes, to a large extent						
Only to a small extent						
Not at all as planned						
Didn't undertake this activity						

6. What, if any additional material (besides that provided by SATZ) did you use?

7. Learner participation for this learning experience was

Excellent     Very good     Good     Satisfactory     Poor     Very poor

8. Provide an assessment of this learning experience reflecting on the following

- i) things that made it difficult to implement the activities as set out in the curriculum
- ii) Things that made it easier to implement this lesson
- iii) Self assessment of how you conducted the implementation
- iv) Ways of improving this learning experience
- v) Learners' response to the activities

9. Any additional comments/ suggestions

**LEARNING EXPERIENCE 2: Self Esteem and sexual decision making**

1. Which activities did you undertake for this lesson?

- Activity 1 – Recognising 'me'
- Activity 2 – 'Advertising' me

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins
- Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

4. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. If the lesson and activities were not implemented as planned, what are the reasons for this?

6. Provide your assessment of the way in which this lesson was implemented, reflecting on the learners' participation.

**LEARNING EXPERIENCE 3: How our bodies function reproductively**

1. Which activities did you undertake for this lesson?

- Activity 1 – Body reproductive functioning
- Activity 2 – The reproductive process

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins
- Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience? Please also state the length of your contact periods.

Number of periods ..... Duration of each period ..... mins

4. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. If the lesson and activities were not implemented as planned, what are the reasons for this?

6. State any additional material (besides that provided by SATZ) that you used to implement this learning experience

7. Provide an assessment of this lesson, reflecting on your comfort with implementing and any uncertainties you may have had

**LEARNING EXPERIENCE 4: Dimensions of sexuality**

1. Which activities did you undertake for this lesson?

- Activity 1 – The difference between sex & sexuality
- Activity 2 – Effects of intercourse on sexuality

2. Did the lesson occur as set out in the curriculum?

- Yes  No

3. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins
- Activity 2 ..... mins

4. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

5. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

6. Provide an assessment of the implementation process, reflecting on what you could have done differently.

**LEARNING EXPERIENCE 5: Boys don't cry! Girls are soft**

1. Which activities did you undertake for this lesson?

- Activity 1 – What people say
- Activity 2 – Media role bias

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins
- Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

4. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. What, if any, difficulties did you experience with implementing this lesson?

6. Comments, questions and/or suggestions for improving the implementation of this learning experience

**LEARNING EXPERIENCE 6: responsible decisions for sexual safety**

1. Which activities did you undertake for this lesson?

- Activity 1 – Decisions & consequences
- Activity 2 – Planning for my future

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins

➤ Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

4. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. If you did not implement any of the activities, why was this the case?

6. Any additional comments, suggestions or concerns about the implementation of this learning experience

**LEARNING EXPERIENCE 7: promoting the sexual health of young people**

1. Which activities did you undertake for this lesson?

- Activity 1 – Actions promoting sexual desire
- Activity 2 – Sexual & Reproductive Rights

2. Approximately how much time was spent on each of the activities you undertook?

➤ Activity 1 ..... mins

➤ Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

4. To what extent were the activities implemented as set out in the curriculum? Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. How would you assess the implementation of this learning experience?

- Very good     
  Fair     
  Poor

6. What, if any, difficulties did you experience with implementation of this lesson?

**LEARNING EXPERIENCE 8: How do I handle this?**

1. Which activities did you undertake for this lesson?

- Activity 1 – Different types of behaviour  
 Activity 2 – Being assertive

2. Approximately how much time was spent on each of the activities you undertook?

- Activity 1 ..... mins  
 ➤ Activity 2 ..... mins

3. How many contact periods did it take to complete this learning experience?

Number of periods ..... Duration of each period ..... mins

4 To what extent were the activities implemented as set out in the curriculum?  
 Tick appropriately in the table below

Implementation	Activity	
	1	2
Exactly as planned		
To a large extent		
Only to a small extent		
Not at all		
Didn't undertake this activity		

5. If you did not implement any of the activities, what are the reasons for this?

6. If in question 5 above you have not mentioned any difficulties experienced in implementing any of the activities, please state these here.

### ASSESSMENT OF SATZ IMPLEMENTATION

By now, you have completed 8 of the 16 learning experiences in the SATZ curriculum. Please provide an overall assessment of the implementation process by responding to the following questions or statements.

1. On a scale of 1-5, where 1 is not successful at all and five is very successful, how successful, do you think, was the implementation of the following activities? If you did not implement any of these activities, please tick in the box

#### (i) Role plays

1                      2                      3                      4                      5  
 Not successful                      Very                      successful  
 At all ←————→

I did not use any role-plays

#### (ii) small group activities

1                      2                      3                      4                      5  
 Not successful                      Very                      successful  
 At all ←————→

I did not use group activities

#### (ii) homework activities

1                      2                      3                      4                      5  
 Not successful                      Very

At all ←————→ successful

I did not give any homework

2. To what extent do you think you have implemented the curriculum as per the expectations put forward during your training?

1                      2                      3                      4                      5  
 ←————→  
 Not at all                      Completely as  
 as expected                      expected

3. State any barriers you have experienced in implementing the SATZ curriculum. Reflect on personal, interpersonal, contextual, institutional and any other factors that could have caused barriers to implementation.

- (i) Personal barriers (e.g. your preparedness, comfort with the material, knowledge of the subject matter, etc)
- (ii) Interpersonal barriers (e.g. interaction with and support from other educators, school management, parents, learners etc)
- (iii) Contextual barriers (e.g. classroom environment such as space, number of learners, cultural and age appropriateness of material, school organisational factors, etc)
- (iv) Other factors that may have been barriers to implementation

4. Tell us about things that made implementation easier.

5. How often did you have to use additional material besides that provided by SATZ?

most of the time     a few times     very rarely     never

6. Overall, implementing the SATZ curriculum has mostly been

Very easy     easy     a little difficult     very difficult

7. Overall, How would you evaluate the quality of implementation?

Very high quality     high quality     average quality     low quality

8. What in your opinion would have made implementation better?

9. Any other comments/suggestions you would like to share (feel free to attach other comments if you need to)

**THANK YOU VERY MUCH!**

University of Cape Town

**Educator Implementation Assessment (2004)**

**PART 2**

School \_\_\_\_\_

Educator's name \_\_\_\_\_

Classes taught (e.g. 8a, 8f) \_\_\_\_\_

Dear educator,

Thank you for successfully implementing the SATZ curriculum. This is part two of evaluating the implementation process. Please complete this brief document for collection before end of the current term. Thank you very much.

Wanjirũ

Research Officer, SATZ PROJECT

5 July 2004



4. Overall, how would you assess the quality of your implementation the SATZ curriculum?

Implementation quality	Learning experience							
	9	10	11	12	13	14	15	16
Very high quality								
High quality								
Average quality								
Low quality								
Very low quality								
Didn't implement this learning experience								

5. How would you evaluate learners' interest during the lessons?

Implementation quality	Learning experience							
	9	10	11	12	13	14	15	16
Very interested								
Somewhat interested								
Uninterested								
Very uninterested								
Didn't implement this learning experience								

6. Which of the following strategies and activities did you use?

Strategy	Yes	No
Role plays		
Small group discussions		
Whole class discussion led by educator		
Homework activities		
Lecture		
Other activities (be specific)		

7. Please list any other HIV/AIDS education and prevention activities that took place at your school during the period you were implementing the SATZ curriculum
8. What suggestions or other comments do you have for improving the SATZ curriculum?
9. Describe your experience of implementing the SATZ curriculum

**THANK YOU VERY MUCH**

**Appendix B: Classroom observation form**

Name of school	
----------------	--

1	What was the topic/learning experience covered in the session?	
2	What materials and strategies did you observe in use (e.g. role-plays, posters etc.)?	
3	Briefly describe the activity	
4	From your observation, were the objectives of the topic/activities evident?	
5	What questions/issues did the students raise?	
6	Besides the learners and educator, list other people that were present during the session	
7	How many learners were in the classroom?	
6	Comments from your observation e.g educators response to learners' questions	

This form was completed by:

Date:

Educator's name:

Time lesson started:

Time ended:

University of Cape Town

## **Appendix C: Teacher interviews: intervention schools**

### **Introduction**

We would like you thank you very much for implementing the SATZ intervention and for agreeing to participate in this interview. The interview is part of our evaluation of the intervention as has been discussed with you previously. The aim is for us to get better insights into how you implemented the intervention and your views about this experience and well as suggestions for improving the intervention. The information that we obtain will be used to improve this programme as well as other similar school-based interventions.

We will be about an hour. I will ask questions related to the intervention, but you're most welcome at any point to offer any other information you think is relevant for us to know about the intervention. We will also re-visit some of the information you provided in your lesson log. In reporting our findings we will maintain anonymity of all participating teachers.

1. How was the SATZ programme implemented in your school in terms of time spent, persons involved in the implementation and grade/class levels exposed to the teaching?
  - a. What if any, lessons were missed? In which grades/classes? reasons for not being taught?
  - b. What were the various strategies that you used in implementing the SATZ programme
  - c. What strategies did you find difficult to use?
    - i. What made each strategy you mentioned difficult to use?
    - ii. Of these which did you not use?
    - iii. What alternative strategies did you come up with and use?
  - d. Are there any other strategies and methods that you think would work better in your classroom?
2. What in your opinion was the usefulness of the training you received in equipping you to teach sexual and reproductive health to adolescents? (Include views about the duration of training)
3. What in your opinion was the usefulness of the SATZ programme in changing problem sexual behaviours of young people?
  - a. In what way did the SATZ programme differ from any previous approaches/programmes used to provide sexual and reproductive health information to adolescents?
5. What in your opinion were the major challenges in delivering sexual and reproductive health education for adolescents, using the SATZ programme?
  - a. What strategies were used to overcome these challenges?
6. Do you have a school HIV/AIDS policy? What changes have occurred in local school policy on sexual and reproductive health education since the beginning of programme implementation? (Collect all written local school policy documents)
7. What suggestions do you have for improvement of the programme? (What do you feel should be done differently and how?)



## Appendix D: Intervention schools focus group discussion guide

### Introduction

We would like you thank you for participating in this focus group discussion. It is a part of the ongoing research in which you have been participating using the palm pilots (small computers). The research project aims at developing effective school-based programme for students to postpone the onset of sexual activity and increase the use of safe sex practice. For the last few months you have been having sexuality education using the SATZ workbooks as part of this project.

Today we're going to have a discussion about this programme. We would like to have your opinion of the programme, what you liked, what you didn't like, and how you think we can improve the programme for the benefit of other people your age.

As with the palm pilot research, the discussion we will have today is confidential. Your educators will not know what you said, nor will your parents. Only members of the research team will have access to this material. I would also request that whatever we discuss here today be kept amongst ourselves. This way, I hope everyone will feel free to contribute honestly.

This discussion will take about 45 minutes. It is not a question and answer session. I will pose questions to keep the discussion going, but it is mostly a discussion amongst yourselves. Each of you might have your own view, and we hope that you also comment on others opinion in case you disagree or agree with them. If you feel that there are related issues that are relevant and important, you are most welcome to raise these issues during the discussion. The discussions will be taped, and transcribed at a later stage for analyses.

Any questions?

**Check that there are no objections to taping.**

1. Do you know the SATZ programme? (show them workbook)
2. What do you think is the general view of grade 8s at your school about the programme?

*Probes:* What did you think of it?

Did you learn anything new in this programme?

What kind of new things did you learn?

3. Did you go through all the lessons in the book?

4. Are there some particular lessons that you and your classmates liked/enjoyed?

Which ones? Why?

5. Are there some particular lessons that you and your classmates didn't like?

Which ones? Why?

6. What kind of activities did you do in class?

7. Did the learners participate in the activities?
8. Which of the activities did you and your classmates enjoy? Why?
9. Which of the activities didn't you enjoy? Why?
10. Do think that the SATZ-programme is having or will have any effect on the behaviour of grade eights?

Probes: what kind of effects?

11. What parts of the programme do you think are most useful
12. What is your opinion about the way that your educator presented this programme?
13. Did you use charts during the programme? E.g chart on male/female reproductive system  
What did you think of these? Were they useful?

14. Are there times when you didn't have a LO teacher? For how long?

15. Were there some topics in the workbook that you did not do?  
Which ones?

16. What is your opinion about learning sexuality education at school?

17. Do you think any of the learners talked to their parents or guardians or other adults about this programme?

*Probe:* Check whether they think any of their classmates did the activity that required them to interview their parents.

Did any of you do this activity? How did you feel about it?

18. How can we improve the programme?

19. Anything else you would like to say about this programme?

20. During the pilot research, you had to write your name on an envelope and seal it with you number inside. What were your feelings about the confidentiality of this process?

20. How do you feel about having participated in this discussion?

## Appendix E: Teacher interview guide: Control schools

### *School info:*

1. How many learners are currently in grade 8?
2. How many grade 8 classes are there at this school?
  - a. How many children are in each class?
3. Which ages are represented in grade 8?
4. Can you tell us something about the socio-economic background of the children?

#### Probes:

- i. working status parents
  - ii. family status/household
  - iii. living environment
5. Can you tell us if and how much the parents have to pay in fees for the education for their children at this school?
  - a. What about other expenses? Are there additional amounts that the parents are expected to pay?

#### Probes:

- i. teachers
- ii. schoolmaterials

### *General LO info:*

1. Have you been implementing LO in grade 8 during this year?
2. How many hours of LO do the grade 8 learners get in a week?
  - a. Is this the same for every grade 8 class or are there any differences?
3. What LO curriculum have you been using?
  - a. Who designed/supplied the curriculum?
  - b. Is it specific for grade 8?
  - c. What are the main topics covered in this curriculum?
  - d. What kind of activities and strategies are used in the curriculum? E.g. role plays, homework activities, small group discussions, etc.
  - e. Which one of these did you use most often? Why?
  - f. Is there variation between classes or between the teachers concerning the LO curriculum, activities and strategies they use?

4. Does this curriculum cover HIV/AIDS?
  - a. What aspects of HIV/AIDS knowledge are covered in the curriculum?

Probes:

    - i. Explanation of the disease
    - ii. Transmission and prevention
    - iii. abstinence and/or use of condoms
    - iv. Sexual behaviour
    - v. gender and sexuality
    - vi. information about the reproduction
    - vii. barriers to practising safer sex or abstinence
    - viii. violence
    - ix. substance use
  - b. What aspects of HIV/AIDS skills are covered in the curriculum?

Probes:

    - i. Self-esteem and assertive skills
    - ii. Coping with peer pressure
    - iii. Sexual decision-making
    - iv. Avoiding situations that carry the risk of unsafe sexual intercourse
    - v. How to use condoms
  - c. What kind of activities and strategies do you use for HIV/AIDS education?
5. During this year, how much time would you say you have spend on HIV/AIDS education with the learners of grade 8?
  - a. What is the LO cycle for grade 8?
  - b. Could you give us a print-out of the LO cycle?
  - c. Is this cycle the same in the other grade 8 classes?
6. Have you been using any other material in addition to this curriculum?
  - a. Computers, condom demonstration, posters etc
7. Have there been any other activities at your school concerning Life Orientation or sexual education

Probes

  - a. Visits of Non-Governmental-Organization

- b. Other institutional organizations

*Educator training:*

1. Have you received any training on teaching life orientation?
  - a. Who trained you?
  - b. When were you trained?
  - c. How long was the training?  
Probes: topics covered, teaching strategies addressed
2. Have you received any training on teaching HIV/AIDS specifically?
  - a. Who trained you?
  - b. When were you trained?
  - c. How long was the training?
  - d. Can you tell us a little about the most recent training you attended?

*Impact assessment:*

1. Do you think the intervention that you have implemented has had an impact on the sexual behaviour of learners?
  - a. What kind of impact?
  - b. If there have been more than one intervention at your school, have you noticed any differences in the impact on (the sexual behaviour of) the learners?
2. How do you think that LO could be delivered in order to have a positive impact on the behaviour of learners?
3. Which factors are important for the school to be able to give sufficient HIV/AIDS education?

Probes:

- a. Money
- b. Teaching Materials
- c. Supportive school environment
- d. Safety
- e. Size of classes
- f. Number of LO teachers
- g. Training on teaching HIV/AIDS
- h. Support from principal/other educators/government

- i. Presence of children in the school (or teachers or parents) who are known to be HIV positive
4. Which factors are the most important for the impact that HIV/AIDS education has on the learners?  
Probes:
  - i. Family
  - ii. Support within the community
  - iii. Peer pressure
  - iv. Economic status
  - v. Drug use/alcohol use
  - vi. Gender
  - vii. Dropping out
- b. What do you think are the barriers for the children to practice safer sex or abstinence?

*School Dropout*

1. Do you know how many learners drop out at your school?
  - a. Approximately how many drop out in grade 8?
  - b. How many have dropped out from your class this year?
2. What do you think are the most important reasons why learners drop out?

*Questions concerning the SATZ-project:*

1. What do you know about the SATZ-curriculum?
2. Do you know anything about the implementation of the SATZ curriculum at other schools?
3. Have you had any contact with a teacher(s) at any of the schools implementing the SATZ curriculum?
  - a. What kind of contact?
  - b. Have you obtained any teaching material from these teachers?
  - c. Have you seen the SATZ learner or teacher workbook?
4. Are you aware of students knowing about the SATZ-project or having contact with students at the intervention schools?

5. What were your feelings about being a control school instead of an intervention school?
6. Did you take any steps when you heard your school was not an intervention school? (to compensate)

*Questions related to the interview*

1. What do you think of this interview?
  - a. How do you feel about the questionnaire?
  - b. What do you think about the time spend on the questionnaire?
  - c. Do you have any suggestions or remarks?



**Appendix F: Questionnaire administration observation form**

**Observation of questionnaire session in classroom**

Name of school					
Baseline:		1 <sup>st</sup> Follow up		2 <sup>nd</sup> Follow up	

1	Start time instructions: Start time questionnaire: Time first learner completed Time last learner completed	
2	Members of the research team present during questionnaire session	
3	Other persons present during questionnaire session	
5	Number of learners present	
6	Number of learners expected	
7	Fieldworker comments on questionnaire administration, comments on palms etc	Learners' questions, concerns, setting of room, etc
8	Comments on palms eg specific comments about particular palms or questionnaires	

This form was completed by:

Date:

University of Cape Town

Appendix G: Visual of PDA questionnaire





## Appendix H: Xhosa-English Female Questionnaire

Please help us by filling in this questionnaire.

We are trying to find out better ways of preventing the spread of HIV/AIDS among young people. Your responses are very important to us and will help to keep young people in this country healthy.

This is not a test and there are no right or wrong answers, we want your views. Please be honest in your answers. Do NOT give us answers that you think we want. We need to know what young people really think to develop the best programmes to fight AIDS.

It is voluntary for you to participate in this study. You can withdraw from the study at any time, and you can also skip questions that you find too personal to answer. You will not need to enter your name on this questionnaire. All the information you give us will be kept private; nobody will know who filled in this questionnaire. Your teachers, neighbours, family and other learners will not see your answers.

If you have any questions, please raise your hand and ask the project staff present in the classroom.

**THANK YOU VERY MUCH FOR YOUR HELP!**

1. What year were you born? (Uzalwe ngowuphi unyaka?)

2. What is the name of your school (Yintoni igama lesikolo sakho?)
3. What grade and class are you in (e.g 8A, 8 G)? (Ukweyiphi igrade kunye neklasi okuyo?)
4. What is your religion (Yintoni inkolo yakho?)
  - 1 Christian- Catholic
  - 2 Christian other denominations
  - 3 Islam
  - 4 Other
  - 9 Not Applicable
5. Which of the following languages are spoken at home? Tick all that apply (Ngeziphi kwezi zilandelayo iilwimi ezithethwa ekhayeni lakho? Tikisha zonke ezo ziplaya kuwe)
  - 2 No
  - 1 Yes
  - 9 Not Applicable
- 2 No
- 1 Yes
- 9 Not Applicable
- 2 No
- 1 Yes
- 9 Not Applicable

**6. How do you identify yourself?  
(Uzichaza njani?)**

- 1 Black/Umnyama
- 2 White/Umhlophe
- 3 Coloured
- 4 Indian/Indiya
- 5 Other/Ezinye
- 9 Not Applicable

**7. What area do you live in? (Uhlala  
kweyiphi ilokishi okanye  
itownship?)**

**8. What is the postal code of the area  
where you live? (Ithini postal  
khodi yelokishi ohlala kuyo?)**

- 6000 - 10000  
99998 Refuse to Answer

range

**9. Do you live with your mother?  
(Uhlala nomama wakho?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**10. Do you live with your father?  
(Uhlala notata wakho?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**11. What is the highest level of  
education your father has?  
(Unayiphi imfundo  
ephakamileyo utata wakho?)**

- 1 No formal education/Akanayo imfundo
- 2 Less than primary education/Ngaphantsi kwezinga eliphantsi
- 3 Primary education/Izinga eliphantsi
- 4 Secondary education/Izinga eliphezulu
- 5 College/university education/Imfundo yasekholeji/yunivesithi/technikon
- 6 I do not know/ don't have a father/Andazi/andinaye utata
- 9 Not Applicable

**12. What is the highest level of  
education your mother has?  
(Unayiphi imfundo  
ephakamileyo umama wakho?)**

- 1 No formal education/Akanayo imfundo
- 2 Less than primary education/Ngaphantsi kwezinga eliphantsi
- 3 Primary education/Izinga eliphantsi
- 4 Secondary education/Izinga eliphezulu
- 5 College/university education/Imfundo yasekholeji/yunivesithi/technikon
- 6 I do not know/ don't have a mother/Andazi/andinaye umama
- 9 Not Applicable

**13A. Do you have a television at home?  
(Ninayo itv kowenu?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**13B. Do you have electricity at home?  
(Ninawo umbane kowenu?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**13C. Do you have a bicycle at home?  
Ninayo ibhayisikile kowenu**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**13D. Do you have tap water at home?  
Ninawo amanzi abalekayo  
(itephu) kowenu?**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**13E. Do you have a motor car at home?  
Ninayo imoto kowenu**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**14. Which of the following best  
describes your home? (Ngeyiphi  
kwezi zilandelayo ecacisa ikhaya  
lakho?)**

- 1 Shack/Ityotyombe
- 2 Wendy house or backyard  
dwelling/Indlu engasemva  
erentwayo eyadini yomntu
- 3 Tent or traditional dwelling/Intente  
or traditional dwelling
- 4 Brick house or flat/Indlu yezitena  
okanye iflethi
- 5 Other/Ezinye
- 9 Not Applicable

**15. How many people sleep in the same  
room with you at night when you  
are at home? (Bangaphi abantu  
abalala nawe egumbini elinye  
ebusuku, xa usekhaya?)**

- 0 - 20 range
- 98 Refuse to Answer

f

16. Which of the following is true of your home? Please mark the statement that best describes your situation (Ngeyiphi kwezi zilandelayi eyinyaniso ngek haya lakho?Nceda makisha isitetimente esicacisa/esichaza imeko yakho)

- 1 We don't have enough money for food
- 2 Asinayo imali eyaneleyo yokutya
- 3 We have enough money for food, but not other basic items such as clothes
- 4 Sinayo imali eyaneleyo yokutya, kodwa ezinye izinto ezinje ngempahla siyashota ngazo
- 5 We have enough money for food and clothes but are very short of many other things
- 6 Sinayo imali eyaneleyo yokutya nempahla, kodwa siyashota ngezinye izinto ezininzi
- 7 We have the most important things, but few luxury goods
- 8 Sinazo izinto ezibhlulekile, kodwa zimbaw ezolonwabo
- 10 We have money for luxury goods and extra thingsv
- 11 Sinayo imali yezinto zolonwabo nezinye izinto
- 99 Not Applicable

17. Have you ever repeated a school year due to failing exams? (Wakhe waphinda unyaka esikolweni ngenxa yokufelisha/ukuntshona imviwo?)

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

18. How many days were you absent from school during the last school quarter? (Zingaphi intsuku othe wangabikho ngazo esikolweni kwikota yokugqibela esikolweni?)

- 0 - 60 range  
98 Refuse to Answer

19. Do you think you will complete your schooling up to grade twelve? (Ucinga ukuba uzakuyigqiba imfundo yakho de ufikelele kwibakala okanye ugrade12?)

- 1 Yes/Ewe
- 2 No/Hayi
- 3 I don't know/Andazi
- 9 Not Applicable

20. What do you think you will do when you finish secondary school? (Ucinga ukuba uzakwenza ntoni emva kokuba ugqibile esikolweni esiphakamileyo?)

- 1 Attend university, technikon or other tertiary institution
- 2 Kungena eyunivesithi, etechnikon okanye ekholejini
- 3 Go to trade school (e.g. Plumbing or carpentry)
- 4 Uye kwisikolo soshishino (e.g. plumbing or carpentry)
- 5 Do some vocational training
- 6 Ndizakwenza ikhosi ezinokundifumanisa umsebenzi
- 7 Get a paid job
- 8 Ufune umsebenzi ozakundibhatala
- 10 Start a business
- 11 Uzakuqala ishishini
- 12 I will probably be unemployed for a long time
- 13 Mhlawumbe ndizohlala ndingaphangeli ixesha elide
- 14 I don't know
- 15 Andazi
- 99 Not Applicable

21. **Do sexually transmitted diseases (such as syphilis or drop) increase the chance of becoming infected with HIV? (Ingaba izifo ezisulela ngokwabelana ngesondo (Sexually Transmitted Diseases[STDs] i.e idrop okanye icauliflower) zandisa amathuba okuba usulelwe yi-HIV?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
22. **Does HIV cause AIDS? Ingaba I-HIV ibanga i-AIDS?**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
23. **Is HIV transmitted only through human body fluids? (Ingaba i-HIV idluliswa ngencindi zomzimba kuphela?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
24. **Can HIV be found in vaginal fluids? (Ingaba i-HIV ingafunyanwa kwincindi yobufazi?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
25. **If you have unprotected (without a condom) sex only once, with a person who has HIV, can you become infected with HIV? (Ukuba wabelene ngesondo ngokungakhuselekanga (ngaphandle kwekhondom) kwakanye kunye nomtu osuleleke yintsholongwane kagawulayo ingaba ungosuleleka yintsholongwane kagawulayo)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
26. **Can HIV be transmitted through unprotected (without a condom) sexual intercourse with an infected partner? (Ingaba I-HIV ingadluliswa ngokwabelana ngesondo ungakhuselekanga (ngaphandle kwekhondom) kunye neqabane elisuleleke yi-HIV)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
27. **Can a person have HIV and not show signs of any disease? (Ingaba umntu anganayo i-HIV kwaye engabonakalisi mpawu zesisifo?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable

28. **Can a person who looks healthy, but has HIV pass the virus on to other people through unprotected sexual intercourse? (Ingaba umntu ojongeka ephilile kodwa ene-HIV angadlulisa intsholongwane kwabanye abantu ngokwabelana ngesondo okungakhuselekanga?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
29. **Can a person get HIV by hugging someone who has this virus? (Ingaba umntu angayifumana i-HIV ngokwanga (hugging) omnye umntu onalentsholongwane?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
30. **One way of preventing HIV infection is not having sexual intercourse at all (Enye indlela yokukhusela ukusuleleka yi-HIV kukungabelani ngesondo konke-konke)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
31. **Can correct use of condoms when having sex prevent you from getting some sexually transmitted diseases? (Ingaba ukusetyenziswa kakuhle kwekhondom xa usabelana ngesondo kungakukhusela ekufumaneni ezinye izifo ezisulela ngokulalana (Sexually Transmitted Diseases[STD] i.e idrop okanye icauliflower?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
32. **The only time that one should use a condom is when you have sex with someone for the first time (Elona xesha apho umntu kufuneka asebenzise ikhondom kuxa esabelana ngesondo nomntu okokuqala)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
33. **If a girl is using the pill or injection, there is no need to use a condom when having sex (Ukuba intombazana isebenzisa ipilisi okanye inaliti, ayikho imfuneko yokusetyenziswa kwekhondom xa kulalwana)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable

34. **Vaseline should be used to lubricate (moisten) condoms (Ivasilina mayisetyenziswe ukuthambisa ikhondom)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I don't know/Andazi
  - 9 Not Applicable
35. **If I did not have sexual intercourse, I would have other ways of expressing love to my boyfriend (Ukuba andabelani ngesondo ndingazazi ezinye indlela zokubonisa uthando kwiowu yam)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
36. **If I had a boyfriend and I did not have sexual intercourse with him, he will think that I do not love him (Ukuba bendineowu kwaye ingafuni ukwabelana nam ngesondo, ndizakucinga ukuba ayindithandi)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
37. **If I had a boyfriend and he refused to have sex with me, I will think that he does not love me (Ukuba bendineowu kwaye ingafuni ukwabelana nam ngesondo, ndizakucinga ukuba ayindithandi)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
38. **By not having sex, I am protecting myself from the risk of getting HIV (Ngokungabelani ngesondo, ndiyazikhusela emngciphekweni wokufumana intsholongwane kagawulayo (HIV))**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

39. **If I decided not to have sexual intercourse until I am at least 18 years old, my friends would be less accepting of me (Ukuba ndigqiba ekubeni ndingabelani ngesondo de ndibe neminyaka eyi-18 ubudala, abahlobo bam abazukundamkela ngokupheleleyo**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
40. **If I do not have sexual intercourse, I will lose some of my friends ( Ukuba andabelani ngesondo, ndizakuphulukana nabanye babahlobo bam)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
41. **Using a condom would make sex less pleasant ( Ukusebenzisa ikhondom kungenza ukwabelana ngesondo kungabi mnandi)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
42. **Using a condom is a way of expressing responsibility for my partner and myself ( Ukusebenzisa ikhondom yindlela yokubonakalisa uxanduva okanye ukukhathala kwiqabane lam nakum)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
43. **If I made sure that we use a condom, it would prevent me from getting HIV ( Ukuba ndiqinisekisa ukuba sisebenzisa ikhondom, kungandikhusela oko ekubeni ndingafumani intsholongwane kagawulayo (HIV)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
44. **It is okay for a girl to suggest condom use to a sexual partner (Kulungile ukuba intombazana icebise ukuba kusetyenziswe ikhondom kwiqabane alalana nalo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

45. **It is okay for girls my age to carry condoms if they plan to have sex (Kulungile ukuba amantombazana angangam aphaathe iikhondom ukuba baplana ukwabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
46. **It is okay for boys my age to carry condoms if they plan to have sex (Kulungile ukuba amakhwenkwe angangam aphaathe iikhondom ukuba baplana ukwabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
47. **I think that a boy who carries condoms is showing responsibility for his health (Ndinga ukuba inkwenkwe ephatha iikhondom ibonakalisa uxanduva ngempilo yayo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
48. **I think that a girl who carries condoms is showing responsibility for her health (Ndinga ukuba intombazana ephatha iikhondom ibonakalisa uxanduva ngempilo yayo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
49. **HIV is a big threat against my personal health (I-HIV sisoyikiso esikhulu kwimpilo eqondene nam)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
50. **I am likely to get HIV-infected if I have sex without using condom (Ndingakufumana ukosuleleka yi HIV ukuba ndabelana ngesondo ngaphandle kwekhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

51. **HIV/AIDS is a very serious health problem for people my age ( I- HIV/AIDS yeyona ngxaki inkulu yempilo kubantu abalingana nam)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
52. **I am likely to get infected with a sexually transmitted disease if I have sex without using condom ( Ndingasifumana isifo esisulela ngokulalana ukuba ndabelana ngesondo ngaphandle kwekhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
53. **Sexually transmitted diseases are very serious health problems for people my age ( Izifo ezisulela ngokwabelana ngesondo ziyinxaki enkulu kubantu abalingana nam)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
54. **I am likely to become pregnant if I have sex without using condom ( Ndinga mitha ukuba ndabelana ngesondo ngaphandle kwekhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
55. **Teenage pregnancy is a very serious problem (Umitho lwabantu abatsha yeyona ngxaki enkulu)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
56. **Most of my friends do not plan to have sex until they are older ( Abahlobo bam abaninzi abakuplani ukwabelana ngesondo de babe badala)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

57. **Most of my friends think one has to be older before having sex ( Abahlobo bam abaninzi bacinga ukuba umntu kufuneka abemdala phambi kokuba abelane ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
58. **Most of my friends think I should not have sexual intercourse (Abahlobo bam abaninzi bacinga ukuba mandingabelani ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
59. **Most adults I know discourage people my age from having sex ( Abantu abadala abaninzi endibaziyo, ababakhuthazi abantu abalingana nam ukuba babelane ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
60. **My parents would be upset if they found out that I am having sex ( Abazali bam bangakhathazeka ukuba bangafumanisa ukuba ndabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
61. **Most of my friends think that I should use a condom when I have sex ( Abahlobo bam abaninzi bacinga ukuba kufanele ndisebenzise ikhondom xa ndisabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
62. **My parents think that I should use a condom when I have sex ( Abazali bam bacinga ukuba kufanele ndisebenzise ikhondom xa ndisabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

63. **People my age that I know have sex, always use condoms (Abantu abalingana nam endibaziyo ababelana ngesondo basoloko besebenzisa iikhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
64. **Most of my friends think that if I plan to have sex, I should carry a condom (Uninzi lwabahlobo bam bacinga ukuba ndiplana ukwabelana ngesondo kufuneka ndiphathe ikhondoms)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
65. **My parents think I should carry a condom if I plan to have sex (Abazali bam bacinga ukuba ndiphathe ikhondoms ukuba ndiplana ukwabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
66. **How likely is it that you will have sexual intercourse within the next 6 months? (Kukangakanani ukuba ungabelana ngesondo kwinyanga nje ezintandathu ezizayo?)**
- 1 Very likely/kungenzeka kakhulu
  - 2 Likely/kungenzeka
  - 3 Not likely or unlikely/kungenzeka kungangenzi
  - 4 Unlikely/ngeke kwenzeke
  - 5 Very unlikely/ngeke kwenzeke kakhulu
  - 9 Not Applicable
67. **Imagine that you were about to have sexual intercourse, how likely is it that you would use a condom? (Yiba nomfanekiso nqondweni ngokungathi ubuzakwabelana ngesondo, kukangakanani ukuba ungasebenzisa ikhondom?)**
- 1 Very likely/kungenzeka kakhulu
  - 2 Likely/kungenzeka
  - 3 Not likely or unlikely/kungenzeka kungangenzi
  - 4 Unlikely/ngeke kwenzeke
  - 5 Very unlikely/ngeke kwenzeke kakhulu
  - 9 Not Applicable

68. **Imagine that you were about to have sexual intercourse, how likely is it that you would carry a condom with you? ( Yiba nomfanekiso nqondweni ngokungathi ubuzakwabelana ngesondo, kukangakanani ukuba ngaba uphethe ikhondom kuwe?)**
- 1 Very likely/kungenzeka kakhulu
  - 2 Likely/kungenzeka
  - 3 Not likely or unlikely/kungenzeka kungangenzeke
  - 4 Unlikely/ngeke kwenzeke
  - 5 Very unlikely/ngeke kwenzeke kakhulu
  - 9 Not Applicable
69. **I plan to have sexual intercourse within the next 6 months ( Ndiceba okanye ndiplana ukwabelana ngesondo kwinyanga ezintandathu (6) ezizayo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
70. **I plan to use a condom when I have sexual intercourse ( Ndiceba okanye ndiplana ukusebenzisa ikhondom xa ndisabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
71. **I plan to carry condoms with me if I am going to have sexual intercourse ( Ndiceba okanye ndiplana ukuphatha ikhondoms kum ukuba ndizakwabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
72. **In your school about how many learners do you think have had sexual intercourse? ( Esikolweni sakho, inoba bangaphi abafundi abalingana nawe ocinga ukuba sele bakhe babelana ngesondo?)**
- 1 None/abekho
  - 2 some but less than  $\frac{1}{4}$  /abanye kodwa ngaphantsi kwe  $\frac{1}{4}$
  - 3 about  $\frac{1}{4}$ /mhlawumbi bayi  $\frac{1}{4}$
  - 4 About half/mhlawumbi isiqingatha sabo
  - 5 About  $\frac{3}{4}$ /mhlawumbi abayi  $\frac{3}{4}$
  - 6 Almost all of them/phantse bonke
  - 9 Not Applicable

73. **Among the sexually active learners in your school, about how many do you think use condoms? (Kubafundi ababelane ngesondo esikolweni sakho, inoba bangaphi ocinga ukuba basebenzisa ikhondom?)**
- 1 None/abekho
  - 2 Some but less than ¼/abanye kodwa ngaphantsi kwe ¼
  - 3 About ¼/mhlawumbi bayi ¼
  - 4 About half/mhlawumbi isiqingatha sabo
  - 5 About ¾/mhlawumbi abayi ¾
  - 6 Almost all of them/phantse bonke
  - 9 Not Applicable
74. **I am able to wait until I am at least 18 years old before I have sexual intercourse (Ndingakwazi ukulinda de ndibe neminyaka eyi 18 ubudala phambi kokuba ndabelane ngesondo?)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
75. **I am able to refuse to have sex with boyfriends who offer me gifts for sex ( Ndingakwazi ukwala ukwabelana ngesondo kunye namakhwenkwe andinika izipho ukuze ndilale nabo?)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
76. **I am able to tell my boyfriend that I do not want to have sex until I am at least 18 years old (Ndingakwazi ukuxelela iowu yam ukuba andifuni ukwabelana ngesondo de ndibe neminyaka eyi 18 ubudala?)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
77. **I am able to recognize situations that may encourage me to have sex ( Ndiyakwazi ukuzibona iimeko ezingathi zindikhuthaze ukuba ndabelane ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
78. **I am able to avoid situations that may encourage me to have sex ( Ndiyakwazi ukuphepha iimeko ezingathi zindikhuthaze ukuba ndabelane ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

79. **I would be able to refuse to have sex with my boyfriend if I did not feel like having sex ( Ndingakwazi ukwala ukwabelana ngesondo neowu yam ukuba ndiziva ndingafuni ukwabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
80. **I will be able to stay away from having sex during the next 6 months (Ndingakwazi ukuhlala ndingabelani ngesondo kwezinyanga zintandathu zizayo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
81. **I would be able to refuse to have sexual intercourse even if I had been drinking alcohol ( Ndinganakho ukukwazi ukwala ukwabelana ngesondo nokokuba ndisele utywala)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
82. **I am able to make sure that I use a condom every time I have sex ( Ndiyakwazi ukuqinisekisa ukuba ndisebenzisa ikhondom lonke ixesha ndisabelana ngesondo)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
83. **If I had sex, I would be able to make sure that I use a condom even if my partner does not want to use one ( Ukuba sekhe ndabelana ngesondo, ndingakwazi ukuqinisekisa ukuba ndisebenzisa ikhondom nokuba iqabane lam alifuni ukuyisebenzisa)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
84. **I would be able to refuse to have sex if my partner did not want to use a condom (Ndinakho ukukwazi ukwala ukwabelana ngesondo ukuba iqabane lam alifuni ukusebenzisa iikhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

85. I would be able to delay sex if my partner and I did not have a condom available ( Ndinganakho ukukwazi ukulibazisa ukwabelana ngesondo ukuba mna neqabane lam asinayo ikhondom ekhoyo okanye efumanekayo)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi ngamandla
- 5 Strongly disagree/awuvumi

87. If I was to have sex, I would stop to make sure that I use a condom no matter how sexually aroused I am ( Ukuba bendizakwabelana ngesondo, ndingalinda de ndiqinisekise ukuba iqabane lam liyayisebenzisa ikhondom nokuba ndisemdeni (ndibatywe) kangakanani na)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

86. I would be able to make sure that I use a condom without spoiling the mood ( Ndingakwazi ukuqinisekisa ukuba sisebenzisa ikhondom ngaphandle kokuphazamisa umdla wokwabelana ngesondo)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

88. If I had sex more than once with the same partner, I would be able to make sure we use condoms all the time (Ukuba ndilele neqabane elinye kwade kwangaphezulu kunakanye, ndingakwazi ukuqinisekisa ukuba sisebenzisa ikhondom lonke ixesha)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

89. I would be able to start a conversation about using condoms with my partner ( Ndingakwazi ukuqala incoko ngokusetyenziswa kwekhondom kunye neqabane lam)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

90. **I would be able to talk to my sexual partner about using a condom ( Ndingakwazi ukuthetha neqabane endilalana nalo ngokusebenzisa ikhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
91. **I would be able to make sure that I use a condom even if I had been drinking alcohol ( Ndingakwazi ukuqinisekisa ukuba iqabane lam liyayisebenzisa ikhondom nokuba ndisele utywala)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
92. **I am able to use a condom correctly ( Ndiyakwazi ukusebenzisa ikhondom kakuhle)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

93. **If you needed a condom, how easy or difficult would it be for you to obtain one? (Ukuba ubufuna ikhondom, kungalula okanye kunganzima kangakanani ukuba uyifumane)**
- 1 Very easy/kulula kakhulu
  - 2 Easy/kulula
  - 3 Neither easy nor difficult/akululanga kungenzimanga
  - 4 Difficult/kunzima
  - 5 Very difficult/kunzima kakhulu
  - 9 Not Applicable
94. **I would be able to go to a clinic to fetch condoms (Ndinakho ukukwazi ukuya ekliniki ukuyolanda ikhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
95. **I would be able to go to a pharmacy or a shop to buy condoms ( Ndinakho ukukwazi ukuya ekhemesti okanye evenkileni ndiyothenga iikhondom)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

96. **How often have you discussed condoms with your friends? (Kukangakanani uxoxa ngekhondoms kunye nabahlobo bakho)**

- 1 Very often/Qho Kakhulu
- 2 often/Ixesha elininzi
- 3 sometimes/maxawambi
- 4 only a few times/amaxesha nje ambalwa
- 5 never/zange
- 9 Not Applicable

97. **How often have you discussed condoms with a boyfriend? (Kukangakanani uxoxa ngekhondoms kunye neowu?)**

- 1 Very often/Qho Kakhulu
- 2 often/Ixesha elininzi
- 3 sometimes/maxawambi
- 4 only a few times/amaxesha nje ambalwa
- 5 never/zange
- 9 Not Applicable

98. **Have you ever had a boyfriend? (Wakhe wanyo inkwenkwe?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

99. **Have you ever kissed a boy? (Wakhe waphuzana nenkwenkwe?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

100. **Have you ever engaged in light petting (fondling each other's upper body)? (Wakhe wadlalisana nje nomntu (nacofana emabeleni okanye kulomzimba ungasentla)?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

101. **Have you ever been engaged in heavy petting (fondling each other's private parts) Wakhe waphathana kakhulu (ukuphathaphathana kwindawo ezinqabileyo[private parts])**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

102. **Have you ever had vaginal sexual intercourse? This means intimate contact with someone during which the penis enters the vagina (female private parts) Wakhe wabelana ngesondo ebufazini[vaginal sex]? Oku kuthetha ukuphatha-phathana nomntu apho ubudoda buthi bungene ebufazini (inawo ezinqabileyo zowasetyhini[female private parts])**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

103. **Have you ever had oral sex? This means intimate contact during which the penis is in the mouth or mouth to anus or mouth to vagina (Wakhe wabelana ngesondo ngomlomo? Oku kuthetha ukuphatha-phathana nomntu apho ubudoda busemlonyeni okanye ezimpundu okanye bukwi lungu bomfazi)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

104. **Have you ever had anal sex? This means sexual intercourse during which the penis enters the anus (Wakhe wabelana ngesondo ezimpundwini? Oku kuthetha ukulalana apho ilungu lobudoda lingena ezimpundwini)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

105. **If you have never had sex, at what age do you expect to first have your sexual intercourse? ( Ukuba zange wabelane ngesondo, ulindele ukwabelana ngesondo okokuqala xa umngakanani ubudala?**  
99 Refuse to Answer
106. **If you have had sexual intercourse, how old were you when you did so for the first time? ( Ukuba sowukhe wabelana ngesondo, wawumngakanani xa wawusenza oku okokuqala?**  
99 Refuse to Answer
107. **With how many different people have you had sexual intercourse in the past 6 months? ( Bangaphi abantu abohlukileyo owabelane nabo ngesondo kwezinyanga zintandathu zidlulileyo?)**  
99 Refuse to Answer
108. **With how many different people have you had sexual intercourse in your life? (Nabantu abangaphi abohlukeneyo okhe wabelana nabo ngesondo ebomini bakho)**  
99 Refuse to Answer
109. **Have you ever been pregnant? (Wakhe wamitha?)**  
1 Yes/Ewe  
2 No/Hayi  
3 I don't know/Andazi  
4 I have never had sex/zange ndabelane ngesondo  
9 Not Applicable
110. **Have you ever been told by a health care worker that you had a sexually transmitted disease? (Wakhe waxelelwa ngumsebenzi wezempilo ukuba unesifo esisulela ngokwabelana ngesondo?)**  
1 Yes/Ewe  
2 No/Hayi  
9 Not Applicable

111. **Have you and your partner ever used a condom during sex? ( Wakhe wena neqabane lakho nayisebenzisa ikhondom xa nisabelana ngesondo?)**  
1 Yes/Ewe  
2 No/Hayi  
3 I have never had sex/Zange ndabelane ngesondo  
9 Not Applicable
112. **The last time you had sex, did you use anything to prevent pregnancy or disease? Please mark more than one if necessary (Ukugqibela kwakho ukwabelana ngesondo, ikhona into owayisebenzisayo ukukhusela ukumitha okanye isifo?**  
No, we did not use anything/Hayi, zange sisebenzise nto  
2 No  
1 Yes  
9 Not Applicable  
Yes, we used a condom/ewe, sasebenzisa ikhondom  
2 No  
1 Yes  
9 Not Applicable  
Yes, the pill/Ewe, ipilisi  
2 No  
1 Yes  
9 Not Applicable  
Yes, injection/Ewe, inaliti  
2 No  
1 Yes  
9 Not Applicable  
Other/Enye 1  
2 No  
1 Yes  
9 Not Applicable

I have never had sex/Zange ndabelane ngesondo

- 2 No
- 1 Yes
- 9 Not Applicable

**113. The first time you had sexual intercourse, did your partner use a condom? ( Okokuqala usabelana ngesondo, iqabane lakho liyisebenzisile ikhondom?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 3 I have never had sex/zange ndabelane ngesondo
- 9 Not Applicable

**114. Have you ever had sex without your partner using a condom? (Wakhe wabelana ngesondo apho iqabane lakho lingazange lisebenzise ikhondom?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 3 I have never had sex/zange ndabelane ngesondo
- 9 Not Applicable

**115. If you have ever had sex without using a condom, what are the reasons why your partner did not use a condom? (Mark all that apply) Ukuba wakhe wabelana ngesondo ngaphandle kwekhondom, zithini izizathu zokuba iqabane lakho lingakhange lisebenzise ikhondom? Makisha zonke ezichaphazelayo)**

I have never had sex/Zange ndabelane ngesondo

- 2 No
- 1 Yes
- 99 Not Applicable

*Appendix H: Xhosa-English female questionnaire*  
My partner has always used a condom when I have sex/Soloko ndisebenzisa ikhondom xa ndilalana

- 2 No
- 1 Yes
- 99 Not Applicable

Condoms are expensive/Ikhondoms zinamaxabiso aphezulu

- 2 No
- 1 Yes
- 99 Not Applicable

Condoms were not available anywhere nearby/Ikhondoms zazingekho naphina kwindawo ekufutshane

- 2 No
- 1 Yes
- 99 Not Applicable

My partner refused to use a condom/Iqabane lam zange lifune ukusebenzisa ikhondom

- 2 No
- 1 Yes
- 99 Not Applicable

My partner forced me to have sex without a condom/Iqabane lam landinyanzelisa ukuba ndilalane ngaphandle kwekhondom

- 2 No
- 1 Yes
- 99 Not Applicable

I was too embarrassed or shy to go anywhere to get condoms/Ndandisooyika okanye ndinentloni zokuya ekhemesti/ekliniki/kugqirha ndiyofuna

- 2 No
- 1 Yes
- 99 Not Applicable

I do not know where to get condoms/Andazi apho ndinokufumana ikhondoms

- 2 No
- 1 Yes
- 99 Not Applicable

I do not know how to use condoms/Andikwazi ukusebenzisa ikhondom

- 2 No
- 1 Yes
- 99 Not Applicable

It is morally wrong to use condoms/Akulunganga ukusebenzisa ikhondom

- 2 No
- 1 Yes
- 99 Not Applicable

Condoms are dangerous/Ikhondoms ziyingozi

- 2 No
- 1 Yes
- 99 Not Applicable

It is against my religion to use Condoms/Ayivumelani nenkolo yam ukusebenzisa ikhondom

- 2 No
- 1 Yes
- 99 Not Applicable

Condoms reduce pleasure/Ikhondoms zinciphisa ulonwabo/ubumnandi

- 2 No
- 1 Yes
- 99 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

My boyfriend may think I have a disease/Iowu yam inokucinga ukuba ndinesifo

- 2 No
- 1 Yes
- 99 Not Applicable

Other/Ezinye

- 2 No
- 1 Yes
- 99 Not Applicable

**116. How often do you obtain condoms (buying, free, from friends or clinic)? ( Uzifumana amaxesha amangaphi iikhondom? (uzithenge, simahla, kubahlobo, eklinikhi)?**

- 1 Very often/Qho Kakhulu
- 2 often/Ixesha elininzi
- 3 sometimes/maxawambi
- 4 only a few times/amaxesha nje ambalwa
- 5 never/zange
- 9 Not Applicable

**117. Have you ever had a boyfriend who beat you up? (Wakhe wanayo iowu eyakhe yakubetha?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**118. Has a boyfriend ever punched or hit you with something that could hurt? (Yakhe iowu yakubetha ngenqindi okanye yakubetha ngento engakulimaza?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

- Appendix H: Xhosa-English female questionnaire*
119. **Have you ever punched or hit a boyfriend with something that could hurt? (Wakhe wayibetha ngenqindi iowu okanye wayibetha ngento enokuyilimaza iowu?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
120. **Has a boyfriend ever threatened to use a knife or other weapon against you? (Ingaba iowu yakho yakhe yakugrogrisa/yakoyikisa ngokusebenzisa imela okanye esinye isixhobo kuwe?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
121. **Have you ever threatened to use a knife or other weapon against a boyfriend? (Ingaba wakhe wagrogrisa ngokusebenzisa imela okanye esinye isixhobo kwiowu?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
122. **Have you ever used a knife or other weapon against a boyfriend? (Wakhe wasebenzisa imela okanye esinye isixhobo kwiowu?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
123. **Has a boyfriend ever used a knife or other weapon against you? (Ingaba iowu yakhe yasebenzisa imela okanye esinye isixhobo kuwe?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
124. **Have you ever had a boyfriend who physically forced you to have sex when you did not want to? (Wakhe wabaneowu eyathi yakunyanzela ngokukuntlokothisa ngokomzimba ukuba ulale nayo xa wawungafuni?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
125. **Have you ever forced someone to have sex with you when they did not want to? (Wakhe wanyanzela umntu ukuba alale nawe xa wayengafuni?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable
126. **If a girl refuses to have sex with her boyfriend, is it sometimes okay for him to hit her? (Ukuba intomabazana iyala ukwabelana ngesondo kunye neowu yayo, ingaba kulungile maxawambi ukuba imbethe?)**  
 1 Yes/ewe  
 2 Maybe/mhlawumbi  
 3 Unsure/Awuqinisekanga  
 4 No/Hayi  
 5 Not at all/Hayi nje tu  
 9 Not Applicable
127. **Do you know of people your age who have sex for money, food, drinks or other gifts? (Ingaba kukho abantu abalingana nawe obaziyo ababelana ngesondo ukuze bafumane imali; ukutya; idrinki okanye ezinye iziphho?)**  
 1 Yes/Ewe  
 2 No/Hayi  
 9 Not Applicable

- 128. Have you ever received money, food, drinks or other gifts in exchange for sex? (Wakhe wafumana imali; ukutya; idrinki okanye ezinye izipho ukuze wabelane ngesondo?)**
- 1 Yes/Ewe
  - 2 No/Hayi
  - 3 I have never had sex/Zange ndabelane ngesondo
  - 9 Not Applicable
- 129. Which of the following best describes the first time you had sex? Choose only one ( Yeyiphi kwezi zilandelayo eyona ichaza ixesha lokuqala usabelana ngesondo? Khetha ibenye kuphela)**
- 1 I have never had sex/Zange ndikhe ndabelane ngesondo
  - 2 I was willing/Ndandifuna
  - 3 I was persuaded/Ndacengwa
  - 4 I was tricked/Ndaqhathwa
  - 5 I was forced/ndanyanzelwa
  - 6 I was raped/Ndadlwengulwa
  - 9 Not Applicable
- 130. Which of the following best describes the last time you had sex? Choose only one ( Yeyiphi kwezi zilandelayo eyona ichaza ukugqibela kwakho ukwabelana ngesondo? Khetha ibenye kuphela)**
- 1 I have never had sex/Zange ndikhe ndabelane ngesondo
  - 2 I was willing/Ndandifuna
  - 3 I was persuaded/Ndacengwa
  - 4 I was tricked/Ndaqhathwa
  - 5 I was forced/ndanyanzelwa
  - 6 I was raped/Ndadlwengulwa
  - 9 Not Applicable
- 131. If a girl dresses sexily, she asks to be raped ( Ukuba intombazana inxiba sexy izicelela ukuba idlwengulwe?)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
- 132. A boy has to chase girls, not the other way around ( Inkwenkwe kufuneka ilandele okanye ifune intombazana hayi ngolunye uhlobo?)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable
- 133. Regarding sex, girls should show less interest than boys (Kwinto yokwabelana ngesondo amantombazana kufuneka abonakalise umdla omncinci kunamakhwenkwe)**
- 1 Strongly agree/uvuma ngamandla
  - 2 Agree/uyavuma
  - 3 Neither agree or disagree/awuvumi ungaphikisi
  - 4 Disagree/awuvumi
  - 5 Strongly disagree/awuvumi ngamandla
  - 9 Not Applicable

134. It is more important for a girl to delay sex until marriage, than it is for a boy ( Kubalulekile ukuba intombazana idileye ukulalana de itshate, kunokuba kunjalo kwinkwenkwe)It is more important for a girl to delay sex until marriage, than it is for a boy ( Kubalulekile ukuba intombazana idileye ukulalana de itshate, kunokuba kunjalo kwinkwenkwe)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

135. Sometimes a boy needs to put a little pressure on a girl to get the sex that he wants ( Ngamanye amaxesha inkwenkwe kufuneka inyanzelise kancinci kwintombazana ukuze ifumane ukulalana ekufunayo)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

136. When a boy is sexually excited, a girl should not refuse to have sex ( Xa inkwenkwe inomdla wokulalana, intombazana akufuneki yale ukwabelana ngesondo)

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphikisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

137. How often do your parents or guardians talk with you about HIV/AIDS? ( Kukangakanani ukuba abazali bakho okanye abantu abakugcinileyo bathethe nawe malunga ne nesifo sikagawulayo?)

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

138. How often do your parents or guardians talk with you about you not having sex (abstinence)? (Kukangakanani ukuba abazali bakho okanye abantu abakugcinileyo bathethe nawe malunga nokungabelani kwakho ngesondo?)

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**139. How often do your parents or guardians talk with you about condoms? (Kukangakanani ukuba abazali bakho okanye abantu abakugcinileyo bathethe nawe malunga nekhondoms?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**140. How often do other family members (older sister or brother, aunt, uncle or grand parent etc.) talk with you about HIV/AIDS? (Kukangakanani ukuba amanye amalungu apha efemelini (usisi omdala okanye ubhuti, umakazi, malume okanye umzali omdala) athethe nawe malunga ne sifo sikagawulayo?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**141. How often do other family members (older sister or brother, aunt, uncle or grand parent etc.) talk with you about you not having sex (abstinence)? (ukangakanani ukuba amanye amalungu apha efemelini (usisi omdala okanye ubhuti, umakazi, malume okanye umzali omdala) athethe nawe malunga nokungabelani ngesondo?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**142. How often do other family members (older sister or brother, aunt, uncle or grand parent etc.) talk with you about condoms? Kukangakanani ukuba amanye amalungu apha efemelini (usisi omdala okanye ubhuti, umakazi, malume okanye umzali omdala) athethe nawe malunga nekhondoms?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**143. How often do your teachers talk with you about HIV/AIDS? (Kukangakanani ukuba ootitshala bakho bathethe nawe malunga ne HIV/AIDS?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**144. How often do your teachers talk with you about you not having sex (abstinence)? (Kukangakanani ukuba ootitshala bakho bathethe nawe malunga nokungabelani ngesondo?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**145. How often do your teachers talk with you about condoms? (Kukangakanani ukuba ootitshala bakho bathethe nawe malunga neekhondom?)**

- 1 Never/zange
- 2 Hardly ever/nzima
- 3 Sometimes/ngamanye amaxesha
- 4 A lot/kaninzi
- 5 All the time/lonke ixesha
- 9 Not Applicable

**146. With whom do you prefer to discuss these topics (HIV/AIDS, abstinence and condoms)? Choose only one answer ( Ngubani okhetha ukuxoxa/ukuthetha naye malunga nezi zihloko ( isifo sikagawulayo, ukungabelani ngesondo, neekhondom) ? Khetha impendulo ibenye qha)**

- 1 Your father/Utata wakho
- 2 Your mother/Umama wakho
- 3 Other family member/Elinye ilungu lefemeli
- 4 Your teacher/Utitshala
- 5 Other/Omnye
- 9 Not Applicable

**147. If you needed such health care services, would you be able to obtain good quality services? ( Ukuba ufuna inkonzo ezinakekela ezempilo ezinjengezo, kungalula okanye kunganzima kangakanani kuwe ukuba ufumane isevisi ekumgangatho ophezulu)**

- 1 Very easy/kulula kakhulu
- 2 Easy/kulula
- 3 Neither easy nor difficult/akululanga kungenzimanga
- 4 Difficult/kunzima
- 5 Very difficult/kunzima kakhulu
- 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

**148. If you needed such health care services, would you be able to afford the services? (Ukuba ufuna inkonzo ezinakekela ezempilo ezinjengezo, ungakwazi ukuzihlawulela ezonkonzo)**

- 1 Very likely/kungenzeka kakhulu
- 2 Likely/kungenzeka
- 3 Not likely or unlikely/kungenzeka kungangenzeke
- 4 Unlikely/ngeke kwenzeke
- 5 Very unlikely/ngeke kwenzeke kakhulu
- 9 Not Applicable

**149. If you needed to talk with a health care worker about such topics, would you trust that this information is treated confidentially? ( Ukuba ufuna ukuthetha nomsebenzi wezononophelo ngezempilo malunga nezo zihloko, ungathemba ukuba lolwazi lungagcinakala luyimfihlelo?)**

- 1 Yes, definitely/Ewe ngokuqinisekileyo
- 2 Most likely/Ewe kungenzeka
- 3 I don't know/Andazi
- 4 No, probably not/Hayi, kungangenzeke
- 5 No, definitely not/Hayi, akunakwenzeka tu
- 9 Not Applicable

**150. People my age are involved in planning local sex education programmes for youth ( Abantu abazintanga zam bayabandakanyeka ekuqulunqeni iprogram zasekuhlaleni ezifundisa ngezeso ndo kulutsha)**

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphekisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

**151. I am encouraged by adults to take part in meetings and help plan youth sex education activities (Ndiyakhuthazwa ngabantu abadala ukuba ndithathe inxaxheba kwintlanganiso kwaye ndinceda ekuqulunqeni (plan) okwenziwa lulutsha ukufundisa ngezeso)**

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphekisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

**152. In my community, people my age participate in how to prevent HIV/AIDS among young people (Phaya ekuhlaleni, abantu abazintanga zam bathatha inxaxheba kwindlela zokunqanda isifo sikagawulayo kubantu abatsha)**

- 1 Strongly agree/uvuma ngamandla
- 2 Agree/uyavuma
- 3 Neither agree or disagree/awuvumi ungaphekisi
- 4 Disagree/awuvumi
- 5 Strongly disagree/awuvumi ngamandla
- 9 Not Applicable

**153. During the past 4 weeks (1 month), did you smoke a whole cigarette? ( Kwiveki ezine ezidlulileyo (inyanga enye) ubukhe watshaya ientyi yonke/ephelileyo?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**154. During the past 4 weeks (1 month), did you use alcohol (including beer and wine), other than a few sips? ( Kwiveki ezine ezidlulileyo (inyanga enye) ubukhe wasebenzisa utywala (kuquka ibhiya newayini) ngaphandle nje kwamathamo ambalwa?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**155. During the past 4 weeks (1 month), did you smoke marijuana (dagga)? (Kwiveki ezine ezidlulileyo (inyanga enye) ubukhe watshaya intsangu?)**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**156. Have you ever used "tik" ("tik-tik") Wakhe wayisebenzisa itik?**

- 2 No
- 1 Yes
- 9 Not Applicable

**157. Have you used "tik" in the past year? ubukhe wasisebenzisa na isiyobisi esiyi Tik kwezinyanga zili - 12 zidlulileyo?**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**158. Have you used "tik" in the past 30 days? Ubukhe wasisebenzisa na isiyobisi esiyi Tik kwezintsuku zingama-30 zigqithileyo?**

- 1 Yes/Ewe
- 2 No/Hayi
- 9 Not Applicable

**159. On how many days in the past during the last 30 days did you use "tik"? uyisebenzise kangakanani kwezintsuku zingama-30 zigqithileyo?**

- 1 I have used it once/bendiyisebenzisa kanye
- 2 I have used it twice/bendiyisebenzisa kabini
- 3 I have used it 3-5 times/bendiyisebenzisa kathathu-kwishiyanu
- 4 I have used it 6-10 times/bendiyisebenzisa kathandathu-kwishumi
- 5 I have used it every second day/bendiyisebenzisa qho emva kwentsuku ezimbini
- 6 I have used it every day/bendiyisebenzisa yonke imihla
- 9 Not Applicable

**160. In which year did you use tik for the first time? Kukweyiphi nonyaka apho wasebenzisa itik okokuqala?**

**161. How many Life Orientation lessons (or SATZ) on sexuality or HIV/AIDS did you receive last year? Zingaphi izifundo ze life orientation (okanye ze SATZ) ezingesondo okanye ugawulayo othe wazifumana kulo nyaka ophelile apha esikolweni sakho?**

- 1 More than 10 lessons /Ngaphezu kweshumi
- 2 Between 5 and 10 lessons/?Phakathi kweshiyanu ne shumi lezifundo
- 3 Fewer than 5 lessons/Ezingaphantsi kwezifundo ezintlanu
- 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

**162. How would you rate the usefulness of the lessons in Life Orientation (or SATZ) that are dealing with HIV/AIDS?**

**(Ungakuchaza njani ukubaluleka kwezifundo zelifu orientation (okanye iSATZ) ezithetha ngeHIV/AIDS?)**

- 1 The lessons were very useful/Izifundo bezibalulekile kakhulu
- 2 The lessons were useful /Izifundo bezibalulekile
- 3 I don't know how useful the lessons were/Andazi ukuba bezibaluleke kangakanani izifundo
- 4 The lessons were not useful/Izifundo bezingabalulekanga
- 5 The lessons were not useful at all/Izifundo bezingabalulekanga konke konke
- 6 I didn't receive any lessons in Life Orientation on sexuality, reproductive health and/or HIV/AIDS/Azange ndifumane nasinye isifundo se life orientation ezingezesondo, impilo ngenzala (reproductive health), okanye ugawulayo
- 9 Not Applicable

**163. How did you like the lessons you received in Life Orientation (or SATZ) on condom use during the past school-year? (Uzithande kangakanani izifundo ozifumene kwi life orientation (okanye uSATZ) ezingokusetyenziswa kwecondom kunyaka wesikolo ophelileyo**

- 1 I liked them very much/Ndizithande kakhulu
- 2 I liked them/Ndizithandile
- 3 I neither liked or disliked them/Andizithandanga ndingazizondanga
- 4 I disliked them/Andizithandanga
- 5 I disliked them very much/Andizithandanga kakhulu
- 6 I didn't receive any lessons on condom use/Khange ndifumane nasinye isifundo ngokusetyenziswa kwekhondom
- 9 Not Applicable

**164. How did you like the lessons you received in Life Orientation (or SATZ) about not having sex (abstinence) during the past school-year (Uzithandile na izifundo ozifumene kwi life orientation (okanye uSATZ) malunga nokungabelani ngesondo kulonyaka wesikolo ophelileyo?**

- 1 I liked them very much/Ndizithande kakhulu
- 2 I liked them/Ndizithandile
- 3 I neither liked or disliked them/Andizithandanga ndingazizondanga
- 4 I disliked them/Andizithandanga
- 5 I disliked them very much/Andizithandanga kakhulu
- 6 I didn't receive any lessons on condom use/Khange ndifumane nasinye isifundo ngokusetyenziswa kwekhondom
- 9 Not Applicable

**165. To what extent did you feel that you were encouraged by your teacher to express your opinions and ask questions during the Life Orientation lessons (or SATZ) Ucinga ukuba ititshala yakho ikukhuthaze kangakanani ukuba izeze izimvo zakho kwaye ubeze nemibuzo ngexesha lezifundo ze life orientation?**

- 1 I was very much encouraged/Ndikhuthazwe kakhulu
- 2 I was encouraged to some extent/Ndakhuthazwa nje
- 3 I was not encouraged at all/Zange ndikhuthazwe konke konke
- 9 Not Applicable

**166. To what extent did you express your own opinions and asked questions during the Life Orientation lessons (or SATZ) Uziveze kangakanani izimvo zakho kwaye ubuze nemibuzo ngexesha lezifundo ze life orientation (okanye iSATZ)?**

- 1 To a large extent/Kakhulu
- 2 To some extent/Nje/kancinci
- 3 I did not express opinions or ask questions/Khange ndiveze izimvo okanye ndibuze imibuzo
- 9 Not Applicable

**167. What do you think about the way the teacher presented the Life Orientation lessons (or SATZ)? Ucinga ntoni malunga nendlela ititshala ethe yatitsha izifundo ze life orientation (okanye iSATZ)**

- 1 I am very much satisfied with my teacher/Ndonelisekile kakhulu yititshala yam
- 2 I am satisfied/Ndonelisekile
- 3 Neither satisfied or dissatisfied/ Andonelisakanga ndingonelisekanga
- 4 I am not satisfied/Andonelisekanga
- 5 I am very little satisfied/Ndoneliseke kancinci
- 6 I didn't receive lessons on these issues/Khange ndifumane izifundo kwezozinto
- 9 Not Applicable

**168. To what extent do find you're your Life Orientation teacher cares about your health and well-being? Ufumanise ukuha ititshala yakho ye life orientation iyinanekekele kangakanani impilo yakho kunye nobume bakhe nje bonke bezempilo?**

- 1 My teacher cares a lot /Ititshala yam iyinakekele kakhulu
- 2 My teacher cares a little/Ititshala yam iyinakekele kancinci
- 3 My teacher does not care/Ititshala yam ayiyinakekelanga
- 9 Not Applicable

*Appendix H: Xhosa-English female questionnaire*

**169. Do you feel that the Life Orientation lessons (or SATZ) have made it easier for you to talk with your friends about HIV/AIDS (Ingaba ucinga ukuba izifundo ze life orientation (okanye iSATZ) zenze kwabaluleka ukuba uthethe netshomi zakho nge HIV/AIDS?)**

- 1 The lessons made it much easier/ Izifundo zenze kwabaluleka kakhulu
- 2 The lessons made it a bit easier/ Izifundo zenze kwabaluleka kancinci
- 3 The lessons did not make any difference/ Izifundo azenzanga mahluko
- 4 I did not receive any LO/SATZ lessons/ Khange ndifumane zifundo ze LO okanye iSATZ
- 9 Not Applicable

**170. Do you feel that the Life Orientation lessons (or SATZ) have made it easier for you talk with your friends about not having sex (abstinence) (Ucinga ukuba izifundo zelifu orientation (okanye iSATZ) zenze kwabaluleka ukuba uthethe netshomi zakho ngokungabelani ngesondo?)**

- 1 The lessons made it much easier/ Izifundo zenze kwabaluleka kakhulu
- 2 The lessons made it a bit easier/ Izifundo zenze kwabaluleka kancinci
- 3 The lessons did not make any difference/ Izifundo azenzanga mahluko
- 4 I did not receive any LO/SATZ lessons/ Khange ndifumane zifundo ze LO okanye iSATZ
- 9 Not Applicable

**171. Do you feel that the Life Orientation lessons (or SATZ) have made it easier for you talk with your friends about condoms (Ucinga ukuba izifundo zelifa orientation (okanye i SATZ) zenze kwabaluleka ukuba uthethe netshomi zakho ngokusetyenziswa kwenkhondom?)**

- 1 The lessons made it much easier/  
Izifundo zenze kwabaluleka kakhulu
- 2 The lessons made it a bit easier/  
Izifundo zenze kwabaluleka kancinci
- 3 The lessons did not make any difference/  
Izifundo azenzanga mahluko
- 4 I did not receive any LO/SATZ lessons/  
Khange ndifumane zifundo ze LO okanye iSATZ
- 9 Not Applicable

**172. In what language did you complete most of this questionnaire? (Leliphi ulwimi olusebenziseleyo ukuphendula imibuzo emininzi kwelixwebhu lwemibuzo?)**

- 1 English
- 2 Xhosa

**173. Are you a boy or a girl? (Uyinkwenkwe noba uyintombazana?)**

- 1 Male
- 2 Female

**174. Questionnaire number (Inombolo yelixwebhu lwemibuzo)**

**175. Date (Umhla)**

University of Cape Town

**Appendix I: Pairwise comparison of demographic characteristics at baseline**

Age: N=3613

Pair	Intervention			Control			WMD	CI (95%)
	N	mean	SD	N	mean	SD		
1.	129	13.88	0.85	165	13.64	0.62	0.24	[0.07, 0.41]
2.	282	14.00	0.78	57	14.09	0.81	-0.09	[-0.32, 0.14]
3.	195	14.09	0.38	169	14.11	0.44	-0.02	[-0.11, 0.07]
4.	166	14.09	0.88	140	14.06	0.76	0.03	[-0.15, 0.21]
5.	12	14.08	0.79	99	13.81	0.62	0.27	[-0.19, 0.73]
6.	224	15.07	1.33	212	15.51	1.68	-0.44	[-0.73, -0.15]
7.	295	14.34	1.24	94	14.57	1.23	-0.23	[-0.52, 0.06]
8.	139	15.50	1.61	171	15.32	1.46	0.18	[-0.17, 0.53]
9.	63	14.11	0.85	133	14.05	.815	0.06	[-0.19, 0.31]
10.	190	13.91	0.89	103	14.43	1.06	-0.52	[-0.76, -0.28]
11.	173	13.77	0.58	208	13.61	0.55	0.16	[0.05, 0.27]
12.	137	13.73	0.58	57	13.67	0.55	0.06	[-0.11, 0.23]
<b>Overall</b>	<b>2005</b>	<b>14.24</b>	<b>1.10</b>	<b>1608</b>	<b>14.31</b>	<b>1.21</b>	<b>0.01</b>	<b>[-0.04, 0.06]</b>

Appendix I: Pairwise comparison of demographic characteristics at baseline

Gender: Girls

Pair	Intervention		Control		OR	95% CI
	n	N	n	N		
1.	76 (58.9)	129	89 (53.9)	165	1.22	[0.77, 1.95]
2.	157 (55.5)	283	32 (56.1)	57	0.97	[0.55, 1.73]
3.	97 (49.7)	195	92 (54.4)	169	0.83	[0.55, 1.25]
4.	88 (52.7)	167	76 (54.3)	140	0.94	[0.60, 1.47]
5.	6 (50.0)	12	61 (61.6)	99	0.62	[0.19, 2.07]
6.	130 (57.3)	227	109 (50.9)	214	1.29	[0.89, 1.88]
7.	147 (49.7)	296	49 (51.6)	95	0.93	[0.58, 1.47]
8.	63 (44.7)	141	60 (34.9)	172	1.51	[0.95, 2.38]
9.	35 (55.6)	63	80 (60.2)	133	0.83	[0.45, 1.52]
10.	123 (64.7)	190	58 (56.3)	103	1.42	[0.87, 2.33]
11.	99 (57.2)	173	127 ()	208	0.85	[0.57, 1.29]
12.	72 (52.6)	137	31 (54.4)	57	0.93	[0.50, 1.73]
<b>Overall</b>	<b>1093 (54.3)</b>	<b>2013</b>	<b>864 (53.6)</b>	<b>1612</b>	<b>1.05</b>	<b>[0.91, 1.20]</b>

Socioeconomic status N=3625

Pair	Intervention			Control		WMD	CI (95%)	
	N	Mean*	SD	N	mean			SD
1.	129	2.56	0.67	165	2.43	0.64	0.13	[-0.02, 0.28]
2.	283	2.28	0.69	57	2.19	0.69	0.09	[-0.11, 0.29]
3.	195	2.89	0.35	169	2.91	0.29	-0.02	[-0.09, 0.05]
4.	167	1.95	0.71	140	2.04	0.73	-0.09	[-0.25, 0.07]
5.	12	1.50	0.67	99	2.29	0.66	-0.79	[-1.19, -0.39]
6.	227	1.32	0.51	214	1.30	0.54	0.02	[-0.08, 0.12]
7.	296	1.45	0.60	95	1.32	0.49	0.13	[0.01, 0.25]
8.	141	1.18	0.42	172	1.40	0.59	-0.22	[-0.33, -0.11]
9.	63	1.86	0.76	133	1.73	0.73	0.13	[-0.09, 0.35]
10.	190	1.54	0.56	103	1.37	0.58	0.17	[0.03, 0.31]
11.	173	2.42	0.63	208	2.57	0.58	-0.15	[-0.27, -0.03]
12.	137	2.85	0.39	57	2.82	0.43	0.03	[-0.10, 0.16]
<b>Overall</b>	<b>2013</b>	<b>1.99</b>	<b>0.82</b>	<b>1612</b>	<b>2.01</b>	<b>0.83</b>	<b>-0.01</b>	<b>[-0.05, 0.03]</b>

\*standardised SES variable banded into low, middle and high

Appendix I: Pairwise comparison of demographic characteristics at baseline

<b>Language</b>						
<b>Xhosa</b>						
<b>Pair</b>	<b>Intervention</b>		<b>Control</b>		<b>OR</b>	<b>95% CI</b>
	<b>n</b>	<b>N</b>	<b>n</b>	<b>N</b>		
1.	3 (2.3)	129	7 (4.2)	165	0.54	[0.14, 2.12]
2.	18 (6.4)	283	6 (10.5)	57	0.58	[0.22, 1.53]
3.	0 (0.0)	195	1 (0.6)	169	0.29	[0.01, 7.10]
4.	5 (3.0)	167	4 (2.9)	140	1.05	[0.28, 3.99]
5.	1 (8.3)	12	0 (0.0)	99	25.96	[1.00, 675.01]
6.	192 (84.6)	227	184 (86.0)	214	0.89	[0.53, 1.52]
7.	252 (85.1)	296	88 (92.6)	95	0.46	[0.20, 1.05]
8.	118 (83.7)	141	159 (92.4)	172	0.42	[0.20, 0.86]
9.	1 (1.6)	63	3 (2.3)	133	0.70	[0.07, 6.86]
10.	182 (95.8)	190	96 (93.2)	103	1.66	[0.58, 4.71]
11.	5 (2.9)	173	0 (0.0)	208	13.61	[0.75, 247.91]
12.	2 (1.5)	137	2 (3.5)	57	0.41	[0.06, 2.97]
<b>Overall</b>	<b>779 (38.7)</b>	<b>2013</b>	<b>550 (34.1)</b>	<b>1612</b>	<b>0.75</b>	<b>[0.56, 1.01]</b>

*Appendix I: Pairwise comparison of demographic characteristics at baseline*

**Afrikaans**

Pair	Intervention		Control		OR	95% CI
	n	N	n	N		
1.	46 (35.7)	129	80 (48.5)	165	0.59	[0.37, 0.94]
2.	197 (69.6)	283	42 (73.7)	57	0.82	[0.43, 1.55]
3.	191 (97.9)	195	135 (79.9)	169	12.03	[4.17, 34.68]
4.	119 (71.3)	167	93 (66.4)	140	1.25	[0.77, 2.04]
5.	10 (83.3)	12	70 (70.7)	99	2.07	[0.43, 10.04]
6.	0 (0.0)	227	1 (0.5)	214	0.31	[0.01, 7.72]
7.	1 (0.3)	296	0 (0.0)	95	0.97	[0.04, 24.00]
8.	1 (0.7)	141	0 (0.0)	172	3.68	[0.15, 91.12]
9.	58 (92.1)	63	113 (85.0)	133	2.05	[0.73, 5.75]
10.	0 (0.0)	190	0 (0.0)	103	Not	Estimable
11.	67 (38.7)	173	0 (21.6)	208	264.30	[16.20, 4310.89]
12.	31 (22.6)	137	18 (31.6)	57	0.63	[0.32, 1.26]
<b>Overall</b>	<b>721 (35.8)</b>	<b>2013</b>	<b>597 (37.0)</b>	<b>1612</b>	<b>1.71</b>	<b>[1.38, 2.13]</b>

*Appendix I: Pairwise comparison of demographic characteristics at baseline*

<b>English</b>						
<b>Pair</b>	<b>Intervention</b>		<b>Control</b>		<b>OR</b>	<b>95% CI</b>
	<b>n</b>	<b>N</b>	<b>n</b>	<b>N</b>		
1.	77 (59.7)	129	77 (46.7)	165	1.69	[1.06, 2.70]
2.	61 (21.6)	283	8 (14.0)	57	0.22	[0.03, 1.78]
3.	2 (1.0)	195	30 (17.8)	169	0.67	[0.21, 2.13]
4.	35 (21.0)	167	41 (29.3)	140	5.63	[0.32, 98.41]
5.	1 (8.3)	12	29 (29.3)	99	3.68	[0.15, 91.12]
6.	5 (2.2)	227	7 (3.3)	214	0.33	[0.07, 1.52]
7.	8 (2.7)	296	0 (0.0)	95	2.75	[0.13, 57.73]
8.	1 (0.7)	141	0 (0.0)	172	0.37	[0.24, 0.58]
9.	2 (3.2)	63	12 (9.0)	133	1.84	[0.94, 3.58]
10.	2 (1.1)	190	0 (0.0)	103	1.68	[0.76, 3.74]
11.	97 (56.1)	173	161 (77.4)	208	0.05	[0.01, 0.20]
12.	104 (75.9)	137	36 (63.2)	57	0.64	[0.38, 1.08]
<b>Overall</b>	<b>395 (19.6)</b>	<b>2013</b>	<b>401 (24.9)</b>	<b>1612</b>	<b>0.74</b>	<b>[0.60, 0.91]</b>

**Family structure: respondents living with both parents**

Pair	Intervention		Control		OR	95% CI
	Live with both parents	N	Live with both parents	N		
	n		n			
1.	92 (74.2)	124	119 (74.8)	159	0.97	[0.56, 1.66]
2.	194 (73.8)	263	33 (62.3)	53	1.70	[0.92, 3.17]
3.	148 (77.9)	190	128 (76.2)	168	1.10	[0.67, 1.80]
4.	90 (60.4)	149	83 (63.8)	130	0.86	[0.53, 1.40]
5.	4 (33.3)	12	61 (63.5)	96	0.29	[0.08, 1.02]
6.	102 (52.3)	195	96 (51.6)	186	1.03	[0.69, 1.54]
7.	119 (48.0)	248	37 (46.8)	79	1.05	[0.63, 1.74]
8.	72 (59.5)	121	75 (52.1)	144	1.35	[0.83, 2.20]
9.	33 (58.9)	56	92 (74.2)	124	0.50	[0.26, 0.97]
10.	97 (55.1)	176	48 (53.9)	89	1.05	[0.63, 1.75]
11.	119 (71.7)	166	150 (72.8)	206	0.95	[0.60, 1.49]
12.	111 (83.5)	133	45 (80.4)	56	1.23	[0.55, 2.75]
Overall	1181 (64.4)	1709	967 (64.9)	1331	1.01	[0.87, 1.18]

University of Cape Town

**Appendix J: Pairwise comparison of theoretical constructs**

**Baseline comparison of theoretical constructs N=3625**

**Knowledge of HIV/AIDS N=3599**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	9.91	2.43	164	9.64	2.05	0.27	[-0.25, 0.79]
2.	277	8.11	2.69	57	8.26	2.73	-0.15	[-0.93, 0.63]
3.	195	9.41	2.39	169	9.66	2.35	-0.25	[-0.74, 0.24]
4.	165	7.74	2.42	138	8.03	2.49	-0.29	[-0.85, 0.27]
5.	12	8.25	1.22	99	7.54	2.75	0.71	[-0.17, 1.59]
6.	227	7.02	2.72	212	7.41	2.77	-0.39	[-0.90, 0.12]
7.	293	7.54	2.69	93	7.62	2.39	-0.08	[-0.66, 0.50]
8.	140	7.09	2.67	169	7.63	2.66	-0.54	[-1.14, 0.06]
9.	62	7.17	2.34	133	7.19	2.57	-0.02	[-0.75, 0.71]
10.	190	8.33	2.40	101	8.15	2.75	0.18	[-0.46, 0.82]
11.	172	9.01	2.32	208	9.76	2.18	-0.75	[-1.21, -0.29]*
12.	137	10.07	2.03	57	10.70	2.31	-0.63	[-1.32, 0.06]
<b>Overall</b>	<b>1999</b>	<b>8.24</b>	<b>2.70</b>	<b>1600</b>	<b>8.45</b>	<b>2.71</b>	<b>-0.23</b>	<b>[-0.40, -0.06]</b>

**Attitude towards delay of sexual intercourse N=3577**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	2.07	0.88	163	2.07	0.86	0.00	[-0.20, 0.20]
2.	277	2.67	1.03	57	2.84	1.09	0.78	[0.29, 1.27]
3.	194	1.84	0.81	169	1.94	0.80	-0.21	[-0.37, -0.05]*
4.	165	2.88	0.95	136	2.73	1.06	-0.23	[-0.43, -0.03]*
5.	12	3.45	0.80	98	2.67	0.95	0.18	[-0.02, 0.38]
6.	220	2.85	0.87	211	3.06	0.85	0.19	[-0.10, 0.48]
7.	291	2.78	0.86	93	3.01	0.83	-0.07	[-0.29, 0.15]
8.	139	3.16	0.85	168	2.98	0.91	0.37	[0.17, 0.57]*
9.	58	3.42	0.94	132	3.23	0.95	0.20	[-0.06, 0.46]
10.	190	2.66	0.94	102	2.73	0.90	-0.17	[-0.48, 0.14]
11.	172	2.45	1.03	208	2.08	0.93	0.10	[-0.07, 0.27]
12.	136	2.01	0.82	57	1.81	0.87	0.15	[-0.08, 0.38]
<b>Overall</b>	<b>1983</b>	<b>2.60</b>	<b>1.00</b>	<b>1594</b>	<b>2.59</b>	<b>1.02</b>	<b>0.05</b>	<b>[-0.02, 0.11]</b>

Attitude towards condoms N=3580

Pair	Group							
	Intervention			N	Control		WMD	CI 95%
	N	Mean	SD		Mean	SD		
1.	129	3.97	0.86	164	4.01	0.83	-0.04	[-0.24, 0.16]
2.	278	3.91	0.83	57	3.97	0.67	-0.10	[-0.67, 0.47]
3.	193	3.84	0.87	169	4.08	0.73	-0.09	[-0.24, 0.06]
4.	162	3.85	0.85	138	4.07	0.77	0.06	[-0.11, 0.23]
5.	12	3.71	0.96	96	3.81	0.80	-0.14	[-0.30, 0.02]
6.	222	3.78	0.84	211	3.87	0.71	0.04	[-0.17, 0.25]
7.	291	3.84	0.78	94	3.78	0.72	-0.13	[-0.32, 0.06]
8.	140	3.79	0.73	167	3.93	0.72	0.00	[-0.17, 0.17]
9.	60	3.99	0.66	132	3.95	0.71	0.09	[-0.16, 0.34]
10.	190	3.80	0.91	102	3.93	0.69	-0.06	[-0.26, 0.14]
11.	172	3.95	0.88	208	3.95	0.78	0.24	[0.08, 0.40]
12.	136	4.07	0.78	57	3.98	0.80	-0.22	[-0.40, -0.04]
<b>Overall</b>	<b>1985</b>	<b>3.87</b>	<b>0.83</b>	<b>1595</b>	<b>3.95</b>	<b>.749</b>	<b>-0.03</b>	<b>[-0.08, 0.03]</b>

Outcome expectancy towards STD or pregnancy N=3567

Pair	Group							
	Intervention			N	Control		WMD	CI 95%
	N	Mean	SD		Mean	SD		
1.	129	4.43	0.61	164	4.45	0.52	-0.02	[-0.15, 0.11]
2.	279	4.40	0.61	57	4.18	0.73	0.22	[0.02, 0.42]
3.	194	4.29	0.65	169	4.35	0.67	0.06	[-0.08, 0.20]
4.	164	3.89	0.91	135	4.33	0.76	-0.44	[-0.63, -0.25]
5.	12	4.04	0.66	98	4.29	0.82	-0.25	[-0.66, 0.16]
6.	225	4.06	0.76	210	3.96	0.73	0.10	[-0.04, 0.24]
7.	290	4.05	0.72	94	4.06	0.68	-0.01	[-0.17, 0.15]
8.	140	3.94	0.73	167	3.97	0.74	-0.03	[-0.19, 0.13]
9.	60	4.22	0.66	133	4.23	0.68	-0.01	[-0.21, 0.19]
10.	190	4.13	0.76	103	4.03	0.68	0.10	[-0.07, 0.27]
11.	172	4.45	0.54	208	4.41	0.58	0.04	[-0.07, 0.15]
12.	137	4.51	0.50	57	4.50	0.50	0.01	[-0.14, 0.16]
<b>Overall</b>	<b>1992</b>	<b>4.23</b>	<b>0.70</b>	<b>1595</b>	<b>4.24</b>	<b>0.69</b>	<b>0.01</b>	<b>[-0.04, 0.05]</b>

**Perceived susceptibility to STD N=3578**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.13	0.89	163	4.21	0.91	-0.08	[-0.29, 0.13]
2.	278	4.09	0.91	57	4.02	0.83	0.07	[-0.17, 0.31]
3.	191	4.15	0.70	168	4.15	0.75	0.00	[-0.15, 0.15]
4.	164	3.89	0.91	135	4.33	0.76	-0.44	[-0.63, -0.25]
5.	12	3.97	0.82	98	4.12	0.74	-0.15	[-0.64, 0.34]
6.	224	3.85	0.88	210	3.91	0.77	-0.06	[-0.22, 0.10]
7.	289	3.84	0.91	94	3.85	0.82	-0.01	[-0.21, 0.19]
8.	139	3.80	0.78	167	3.97	0.75	-0.17	[-0.34, 0.00]
9.	60	4.13	0.74	133	4.17	0.71	-0.04	[-0.26, 0.18]
10.	190	4.02	0.86	103	4.17	0.68	-0.15	[-0.33, 0.03]
11.	172	4.14	0.98	208	4.30	0.79	-0.16	[-0.34, 0.02]
12.	137	4.32	0.89	57	4.51	0.52	-0.19	[-0.39, 0.01]
<b>Overall</b>	<b>1985</b>	<b>4.01</b>	<b>0.88</b>	<b>1593</b>	<b>4.13</b>	<b>0.78</b>	<b>-0.11</b>	<b>[-0.17, -0.06]</b>

**Social norms regarding sex N=3583**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.30	0.66	163	4.24	0.63	0.06	[-0.09, 0.21]
2.	279	4.13	0.68	57	4.13	0.69	0.00	[-0.20, 0.20]
3.	194	4.07	0.66	169	4.11	0.69	-0.04	[-0.18, 0.10]
4.	164	4.03	0.78	135	4.16	0.73	-0.13	[-0.30, 0.04]
5.	12	3.93	0.61	98	4.09	0.63	-0.16	[-0.53, 0.21]
6.	224	3.86	0.82	210	3.74	0.75	0.12	[-0.03, 0.27]
7.	288	3.72	0.70	94	3.75	0.69	-0.03	[-0.19, 0.13]
8.	140	3.76	0.77	167	3.64	0.81	0.12	[-0.06, 0.30]
9.	60	3.99	0.71	133	4.06	0.77	-0.07	[-0.29, 0.15]
10.	190	3.88	0.74	103	3.90	0.62	-0.02	[-0.18, 0.14]
11.	172	4.15	0.78	208	4.31	0.65	-0.16	[-0.31, -0.01]
12.	137	4.21	0.74	57	4.24	0.56	-0.03	[-0.22, 0.16]
<b>Overall</b>	<b>1989</b>	<b>3.99</b>	<b>0.751</b>	<b>1594</b>	<b>4.02</b>	<b>0.73</b>	<b>-0.02</b>	<b>[-0.07, 0.03]</b>

## Social norms regarding condoms N=3569

Pair	Group						WMD	CI 95%	
	Intervention			Control					
	N	Mean	SD	N	Mean	SD			
1.	129	4.14	0.75	162	4.19	0.66	-0.05	[-0.21, 0.11]	
2.	279	4.19	0.71	57	3.94	0.87	0.25	[0.01, 0.49]	
3.	191	4.09	0.71	168	4.26	0.66	0.17	[0.03, 0.31]	
4.	163	3.97	0.80	137	4.27	0.63	-0.30	[-0.46, -0.14]	
5.	12	4.03	0.50	94	4.20	0.67	-0.17	[-0.48, 0.14]	
6.	225	3.80	0.78	208	3.90	0.66	-0.10	[-0.24, 0.04]	
7.	291	3.88	0.73	94	3.73	0.73	0.15	[-0.02, 0.32]	
8.	139	3.85	0.76	166	3.84	0.73	0.01	[-0.16, 0.18]	
9.	58	3.99	0.86	133	4.22	0.69	-0.23	[-0.48, 0.02]	
10.	190	3.95	0.79	103	3.84	0.71	0.11	[-0.07, 0.29]	
11.	173	4.30	0.60	206	4.21	0.62	0.09	[-0.03, 0.21]	
12.	135	4.15	0.75	56	4.02	0.68	0.13	[-0.09, 0.35]	
<b>Overall</b>	<b>1985</b>	<b>4.02</b>	<b>0.75</b>	<b>1584</b>	<b>4.07</b>	<b>0.70</b>	<b>-0.03</b>	<b>[-0.07, 0.02]</b>	

## Injunctive norm N=3575

Pair	Group						WMD	CI 95%	
	Intervention			Control					
	N	Mean	SD	N	Mean	SD			
1.	129	4.35	0.86	161	4.46	0.70	-0.11	[-0.29, 0.07]	
2.	278	4.18	0.85	57	4.10	0.90	0.08	[-0.17, 0.33]	
3.	191	4.38	0.70	169	4.41	0.73	0.03	[0.18, -0.12]	
4.	165	4.08	0.88	136	4.33	0.73	-0.25	[-0.43, -0.07]	
5.	12	4.10	0.74	96	4.28	0.70	-0.18	[-0.62, 0.26]	
6.	224	3.62	0.94	210	3.79	0.80	-0.17	[-0.33, -0.01]	
7.	291	3.75	0.87	94	3.67	0.81	0.08	[-0.11, 0.27]	
8.	138	3.76	0.79	165	3.85	0.74	-0.09	[-0.26, 0.08]	
9.	60	4.01	0.77	133	4.12	0.86	-0.11	[-0.35, 0.13]	
10.	189	3.74	0.91	103	3.79	0.87	-0.05	[-0.26, 0.16]	
11.	172	4.43	0.70	208	4.42	0.75	0.01	[-0.14, 0.16]	
12.	137	4.38	0.84	57	4.30	0.87	0.08	[-0.19, 0.35]	
<b>Overall</b>	<b>1986</b>	<b>4.03</b>	<b>0.89</b>	<b>1589</b>	<b>4.14</b>	<b>0.82</b>	<b>-0.06</b>	<b>[-0.12, 0.01]</b>	

## Self-efficacy to delay intercourse N=3567

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	128	4.26	0.66	161	4.11	0.78	0.15	[-0.02, 0.32]
2.	277	4.09	0.71	57	4.07	0.64	0.02	[-0.17, 0.21]
3.	193	4.28	0.55	169	4.21	0.69	-0.07	[-0.06, 0.20]
4.	161	3.97	0.71	136	4.17	0.73	-0.20	[-0.36, -0.04]
5.	12	3.93	0.57	93	4.10	0.70	-0.17	[-0.52, 0.18]
6.	223	3.74	0.76	211	3.70	0.69	0.04	[-0.10, 0.18]
7.	292	3.70	0.71	93	3.63	0.70	0.07	[-0.09, 0.23]
8.	139	3.60	0.66	168	3.60	0.72	0.00	[-0.15, 0.15]
9.	57	3.93	0.69	132	4.03	0.71	-0.10	[-0.32, 0.12]
10.	189	3.83	0.80	103	3.72	0.68	0.11	[-0.06, 0.28]
11.	173	4.10	0.76	207	4.36	0.58	-0.26	[-0.40, -0.12]
12.	137	4.22	0.64	56	4.43	0.58	-0.21	[-0.40, -0.02]
<b>Overall</b>	<b>1981</b>	<b>3.96</b>	<b>0.74</b>	<b>1586</b>	<b>4.0</b>	<b>0.74</b>	<b>-0.03</b>	<b>[-0.08, 0.02]</b>

## Self-efficacy to use condoms N=3553

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.36	0.55	161	4.32	0.68	0.04	[-0.10, 0.18]
2.	278	4.28	0.60	57	4.10	0.78	0.18	[-0.03, 0.39]
3.	192	4.22	0.55	169	4.25	0.62	0.03	[-0.15, 0.09]
4.	157	4.15	0.65	136	4.38	0.63	-0.23	[-0.38, -0.08]
5.	12	3.81	0.80	95	4.22	0.62	-0.41	[-0.88, 0.06]
6.	223	3.83	0.75	210	3.82	0.66	0.01	[-0.12, 0.14]
7.	291	3.85	0.70	93	3.73	0.62	0.12	[-0.03, 0.27]
8.	138	3.68	0.76	165	3.80	0.69	-0.12	[-0.28, 0.04]
9.	57	3.98	0.79	132	4.14	0.76	-0.16	[-0.40, 0.08]
10.	188	4.03	0.68	100	3.95	0.67	0.08	[-0.08, 0.24]
11.	172	4.31	0.64	207	4.41	0.54	-0.10	[-0.22, 0.02]
12.	136	4.33	0.53	55	4.29	0.60	0.04	[-0.14, 0.22]
<b>Overall</b>	<b>1973</b>	<b>4.08</b>	<b>0.70</b>	<b>1580</b>	<b>4.12</b>	<b>0.69</b>	<b>-0.03</b>	<b>[-0.07, 0.02]</b>

## Condom availability/self efficacy to obtain condoms N=3559

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	127	3.70	0.97	163	3.75	0.99	-0.05	[-0.28, 0.18]
2.	278	3.72	0.95	57	3.62	0.88	0.10	[-0.15, 0.35]
3.	191	3.66	0.95	168	3.79	0.92	-0.13	[-0.32, 0.06]
4.	155	3.88	0.91	136	3.96	0.90	-0.08	[-0.29, 0.13]
5.	12	3.78	1.04	94	3.67	0.97	0.11	[-0.51, 0.73]
6.	227	3.73	0.80	210	3.86	0.73	-0.13	[-0.27, 0.01]
7.	291	3.84	0.82	93	3.79	0.69	0.05	[-0.12, 0.22]
8.	138	3.79	0.86	167	3.75	0.77	0.04	[-0.15, 0.23]
9.	59	3.71	1.05	132	3.93	0.82	-0.22	[-0.52, 0.08]
10.	187	3.87	0.81	102	3.74	0.80	0.13	[-0.06, 0.32]
11.	173	3.87	0.98	208	3.84	0.87	0.03	[-0.16, 0.22]
12.	135	3.75	0.97	56	3.52	0.89	0.23	[-0.05, 0.51]
<b>Overall</b>	<b>1973</b>	<b>3.78</b>	<b>0.90</b>	<b>1586</b>	<b>3.80</b>	<b>0.86</b>	<b>-0.01</b>	<b>[-0.07, 0.05]</b>

**Comparison of theoretical constructs at Follow-up 1: N= 3625****Knowledge N=3466**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	128	10.69	2.34	164	10.27	2.36	0.42	[-0.12, 0.96]
2.	283	9.02	2.65	57	8.61	2.78	0.41	[-0.37, 1.19]
3.	193	10.35	2.33	168	10.18	2.30	0.17	[-0.31, 0.65]
4.	165	8.02	2.87	137	8.38	2.87	-0.36	[-1.01, 0.29]
5.	12	8.19	1.84	96	8.08	2.77	0.11	[-1.07, 1.29]
6.	296	8.22	2.82	94	7.20	2.74	1.02	[0.38, 1.66]
7.	140	7.19	2.57	169	8.02	2.93	-0.83	[-1.44, -0.22]*
8.	63	7.52	2.94	133	7.02	2.91	0.50	[-0.38, 1.38]
9.	189	9.18	2.36	103	8.50	2.74	0.68	[0.05, 1.31]
10.	172	9.45	2.24	208	10.33	2.20	-0.88	[-1.33, -0.43]*
11.	137	10.62	2.03	57	11.60	1.62	-0.98	[-1.52, -0.44]*
12.	165	8.02	2.87	137	8.38	2.87	-0.36	[-1.01, 0.29]
<b>Overall</b>	<b>1943</b>	<b>8.91</b>	<b>2.78</b>	<b>1523</b>	<b>8.82</b>	<b>2.91</b>	<b>-0.12</b>	<b>[-0.30, 0.06]</b>

**Attitude towards delay of sexual intercourse N=3590**

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	128	1.79	0.84	163	1.92	0.89	-0.13	[-0.33, 0.07]
2.	281	2.49	1.08	57	2.51	1.02	-0.02	[-0.31, 0.27]
3.	193	1.83	0.80	167	1.78	0.75	0.05	[-0.11, 0.21]
4.	163	2.80	1.06	139	2.44	1.01	0.36	[0.13, 0.59]
5.	12	3.53	1.00	95	2.34	1.07	1.19	[0.58, 1.80]
6.	226	2.87	0.94	211	2.99	0.98	-0.12	[-0.30, 0.06]
7.	293	2.79	1.03	95	2.99	0.94	-0.20	[-0.42, 0.02]
8.	138	3.09	0.91	167	2.88	0.93	0.21	[0.00, 0.42]
9.	63	2.88	1.07	133	3.02	1.13	-0.14	[-0.47, 0.19]
10.	189	2.45	1.00	103	2.60	1.01	-0.15	[-0.39, 0.09]
11.	172	2.23	1.07	208	1.76	0.81	0.47	[0.28, 0.66]
12.	137	1.86	0.68	57	1.65	0.77	0.21	[-0.02, 0.44]
<b>Overall</b>	<b>1995</b>	<b>2.48</b>	<b>1.06</b>	<b>1595</b>	<b>2.41</b>	<b>1.07</b>	<b>0.07</b>	<b>[0.01, 0.14]</b>

## Attitude towards condoms N=3577

Pair	Group				Control	WMD	CI 95%	
	Intervention			N				
	N	Mean	SD					
1.	128	4.15	0.76	162	4.24	0.76	-0.09	[-0.27, 0.09]
2.	278	4.11	0.78	57	4.05	0.73	0.06	[-0.15, 0.27]
3.	192	3.97	0.81	167	4.21	0.69	-0.24	[-0.40, -0.08]
4.	161	3.97	0.89	139	4.06	0.81	-0.09	[-0.28, 0.10]
5.	12	4.14	0.59	95	3.99	0.80	0.15	[-0.22, 0.52]
6.	226	4.00	0.85	210	4.04	0.83	-0.04	[-0.20, 0.12]
7.	292	4.03	0.89	95	3.89	0.76	0.14	[-0.04, 0.32]
8.	138	3.97	0.71	167	3.99	0.82	-0.02	[-0.19, 0.15]
9.	61	3.95	0.87	133	4.04	0.87	-0.09	[-0.35, 0.17]
10.	189	4.18	0.87	103	4.13	0.87	0.05	[-0.16, 0.26]
11.	170	4.13	0.74	208	4.15	0.74	-0.02	[-0.17, 0.13]
12.	137	4.27	0.73	57	4.11	0.80	0.16	[-0.08, 0.40]
<b>Overall</b>	<b>1984</b>	<b>4.07</b>	<b>0.82</b>	<b>1593</b>	<b>4.09</b>	<b>0.80</b>	<b>-0.03</b>	<b>[-0.08, 0.03]</b>

## Outcome expectancy towards STDs/ pregnancy N=3582

Pair	Group				Control	WMD	CI 95%	
	Intervention			N				
	N	Mean	SD					
1.	128	4.58	0.53	162	4.52	0.53	0.06	[-0.06, 0.18]
2.	277	4.51	0.63	57	4.37	0.68	0.14	[-0.05, 0.33]
3.	193	4.34	0.62	169	4.40	0.54	-0.06	[-0.18, 0.06]
4.	162	4.24	0.75	139	4.40	0.65	-0.16	[-0.32, 0.00]
5.	12	4.42	0.51	97	4.40	0.68	0.02	[-0.30, 0.34]
6.	226	4.15	0.77	210	4.06	0.82	0.09	[-0.06, 0.24]
7.	293	4.20	0.85	95	3.96	0.75	0.24	[0.06, 0.42]
8.	138	3.98	0.77	166	4.03	0.81	-0.05	[-0.23, 0.13]
9.	61	4.30	0.79	132	4.35	0.81	-0.05	[-0.29, 0.19]
10.	189	4.34	0.73	103	4.28	0.62	0.06	[-0.10, 0.22]
11.	172	4.43	0.69	208	4.54	0.50	-0.11	[-0.23, 0.01]
12.	137	4.55	0.55	56	4.40	0.54	0.15	[-0.02, 0.32]
<b>Overall</b>	<b>1988</b>	<b>4.32</b>	<b>0.73</b>	<b>1594</b>	<b>4.31</b>	<b>0.70</b>	<b>0.01</b>	<b>[-0.03, 0.06]</b>

## Perceived susceptibility to STD N=3569

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	128	4.51	0.53	162	4.46	0.53	0.05	[-0.07, 0.17]
2.	276	4.42	0.65	57	4.30	0.64	0.12	[-0.06, 0.30]
3.	191	4.30	0.59	168	4.39	0.45	-0.09	[-0.20, 0.02]
4.	161	4.17	0.71	139	4.36	0.62	-0.19	[-0.34, -0.04]
5.	11	4.34	0.54	93	4.31	0.64	0.03	[-0.31, 0.37]
6.	225	4.11	0.76	210	4.04	0.78	0.07	[-0.07, 0.21]
7.	293	4.08	0.84	95	3.94	0.74	0.14	[-0.04, 0.32]
8.	138	3.95	0.74	165	4.01	0.80	-0.06	[-0.23, 0.11]
9.	61	4.23	0.77	132	4.29	0.79	-0.06	[-0.30, 0.18]
10.	189	4.30	0.70	103	4.25	0.66	0.05	[-0.11, 0.21]
11.	171	4.39	0.70	208	4.51	0.48	-0.12	[-0.24, 0.00]
12.	137	4.50	0.52	56	4.48	0.45	0.02	[-0.13, 0.17]
<b>Overall</b>	<b>1981</b>	<b>4.26</b>	<b>0.72</b>	<b>1588</b>	<b>4.28</b>	<b>0.67</b>	<b>-0.02</b>	<b>[-0.06, 0.03]</b>

## Social norms regarding sex N=3564

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	127	4.39	0.66	161	4.13	0.81	0.26	[0.09, 0.43]
2.	274	4.18	0.68	57	4.12	0.68	0.06	[-0.13, 0.25]
3.	192	4.09	0.78	168	4.12	0.65	-0.03	[-0.18, 0.12]
4.	163	3.91	0.89	138	3.98	0.79	-0.07	[-0.26, 0.12]
5.	11	4.07	0.61	92	4.07	0.79	0.00	[-0.39, 0.39]
6.	225	3.72	0.87	209	3.67	0.82	0.05	[-0.11, 0.21]
7.	293	3.81	0.90	94	3.69	0.79	0.12	[-0.07, 0.31]
8.	137	3.53	0.87	165	3.54	0.90	-0.01	[-0.21, 0.19]
9.	61	3.97	0.74	132	4.18	0.90	-0.21	[-0.45, 0.03]
10.	189	4.00	0.85	103	3.83	0.79	0.17	[-0.02, 0.36]
11.	171	4.13	0.82	208	4.30	0.67	-0.17	[-0.32, -0.02]
12.	137	4.25	0.68	57	4.18	0.74	0.07	[-0.15, 0.29]
<b>Overall</b>	<b>1980</b>	<b>3.99</b>	<b>0.84</b>	<b>1584</b>	<b>3.97</b>	<b>0.82</b>	<b>0.02</b>	<b>[-0.03, 0.08]</b>

**Social norms regarding condoms N=3546**

Pair	Intervention			Group		Control	WMD	CI 95%	
	N	Mean	SD	N	Mean				SD
1.	126	4.22	0.68	158	4.25	0.57	-0.03	[-0.18, 0.12]	
2.	272	4.26	0.68	57	4.13	0.69	0.13	[-0.07, 0.33]	
3.	190	4.10	0.72	163	4.34	0.54	-0.24	[-0.37, -0.11]	
4.	160	3.94	0.86	139	4.19	0.72	-0.25	[-0.43, -0.07]	
5.	12	4.18	0.65	91	4.24	0.79	-0.06	[-0.46, 0.34]	
6.	226	3.91	0.71	212	3.98	0.81	-0.07	[-0.21, 0.07]	
7.	293	4.08	0.82	94	3.77	0.91	0.31	[0.10, 0.52]	
8.	137	3.79	0.81	164	3.84	0.84	-0.05	[-0.24, 0.14]	
9.	61	3.95	0.81	132	4.15	0.90	-0.20	[-0.45, 0.05]	
10.	190	4.17	0.69	103	3.98	0.81	0.19	[0.01, 0.37]	
11.	168	4.22	0.79	205	4.18	0.68	0.04	[-0.11, 0.19]	
12.	136	4.20	0.66	57	3.99	0.81	0.21	[-0.03, 0.45]	
<b>Overall</b>	<b>1971</b>	<b>4.09</b>	<b>0.76</b>	<b>1575</b>	<b>4.10</b>	<b>0.76</b>	<b>-0.03</b>	<b>[-0.08, 0.03]</b>	

**Injunctive norm N=3546**

Pair	Intervention			Group		Control	WMD	CI 95%	
	N	Mean	SD	N	Mean				SD
1.	128	4.38	0.78	160	4.42	0.80	-0.04	[-0.22, 0.14]	
2.	273	4.29	0.83	57	4.31	0.74	-0.02	[-0.24, 0.20]	
3.	188	4.32	0.76	165	4.44	0.66	-0.12	[-0.27, 0.03]	
4.	157	4.01	0.97	138	4.32	0.75	-0.31	[-0.51, -0.11]	
5.	12	4.21	0.73	93	4.25	0.80	-0.04	[-0.48, 0.40]	
6.	225	3.84	0.85	211	3.91	0.85	-0.07	[-0.23, 0.09]	
7.	295	3.94	0.95	93	3.64	0.73	0.30	[0.12, 0.48]	
8.	137	3.83	0.80	164	3.90	0.88	-0.07	[-0.26, 0.12]	
9.	61	4.15	0.81	129	4.21	0.91	-0.06	[-0.32, 0.20]	
10.	190	4.08	0.86	102	3.93	0.93	0.15	[-0.07, 0.37]	
11.	167	4.36	0.86	207	4.52	0.62	-0.16	[-0.32, 0.00]	
12.	137	4.35	0.78	57	4.36	0.83	-0.01	[-0.26, 0.24]	
<b>Overall</b>	<b>1970</b>	<b>4.13</b>	<b>0.87</b>	<b>1576</b>	<b>4.20</b>	<b>0.84</b>	<b>-0.05</b>	<b>[-0.11, 0.01]</b>	

## Self-efficacy to delay intercourse N=3551

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	126	4.40	0.59	161	4.30	0.76	0.10	[-0.06, 0.26]
2.	275	4.13	0.78	55	4.03	0.73	0.10	[-0.11, 0.31]
3.	191	4.29	0.66	166	4.25	0.73	0.04	[-0.11, 0.19]
4.	159	3.89	0.91	138	4.15	0.77	-0.26	[-0.45, -0.07]
5.	12	4.15	0.43	94	4.09	0.76	0.06	[-0.23, 0.35]
6.	223	3.79	0.73	212	3.72	0.77	0.07	[-0.07, 0.21]
7.	293	3.86	0.81	93	3.72	0.72	0.14	[-0.03, 0.31]
8.	137	3.52	0.85	164	3.52	0.84	0.00	[-0.19, 0.19]
9.	62	3.96	0.83	131	4.13	0.79	-0.17	[-0.42, 0.08]
10.	190	3.97	0.80	103	3.80	0.74	0.17	[-0.01, 0.35]
11.	168	4.17	0.83	207	4.33	0.63	-0.16	[-0.31, -0.01]
12.	134	4.25	0.67	57	4.22	0.71	0.03	[-0.19, 0.25]
<b>Overall</b>	<b>1970</b>	<b>4.01</b>	<b>0.80</b>	<b>1581</b>	<b>4.02</b>	<b>0.80</b>	<b>0.02</b>	<b>[-0.04, 0.07]</b>

## Self-efficacy to use condoms N=3521

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	122	4.39	0.57	159	4.42	0.58	-0.03	[-0.17, 0.11]
2.	271	4.30	0.71	55	4.22	0.79	0.08	[-0.15, 0.31]
3.	189	4.28	0.58	165	4.31	0.58	-0.03	[-0.15, 0.09]
4.	156	3.95	0.93	137	4.24	0.71	-0.29	[-0.48, -0.10]
5.	12	4.44	0.52	93	4.20	0.79	0.24	[-0.10, 0.58]
6.	225	3.98	0.73	209	3.94	0.75	0.04	[-0.10, 0.18]
7.	291	4.02	0.79	92	3.73	0.86	0.29	[0.09, 0.49]
8.	135	3.79	0.77	161	3.85	0.77	-0.06	[-0.24, 0.12]
9.	62	4.02	0.89	131	4.22	0.81	-0.20	[-0.46, 0.06]
10.	190	4.20	0.71	103	4.10	0.74	0.10	[-0.07, 0.27]
11.	166	4.31	0.77	207	4.46	0.52	-0.15	[-0.29, -0.01]
12.	133	4.36	0.61	57	4.15	0.70	0.21	[0.00, 0.42]
<b>Overall</b>	<b>1952</b>	<b>4.15</b>	<b>0.76</b>	<b>1569</b>	<b>4.17</b>	<b>0.73</b>	<b>-0.01</b>	<b>[-0.06, 0.04]</b>

## Condom availability/ self-efficacy to obtain condoms N=3531

Pair	Intervention			Control		WMD	CI 95%	
	N	Mean	SD	N	Mean			SD
1.	125	3.79	1.07	160	3.84	0.98	-0.05	[-0.29, 0.19]
2.	274	3.75	0.98	54	3.90	0.71	-0.15	[-0.37, 0.07]
3.	190	3.78	0.98	165	3.79	0.96	-0.01	[-0.21, 0.19]
4.	154	3.80	0.96	138	3.93	0.82	-0.13	[-0.33, 0.07]
5.	12	4.10	0.72	89	3.78	0.95	0.32	[-0.13, 0.77]
6.	226	3.90	0.77	212	3.97	0.86	-0.07	[-0.22, 0.08]
7.	290	3.84	0.92	95	3.75	0.81	0.09	[-0.10, 0.28]
8.	136	3.83	0.90	166	3.86	0.85	-0.03	[-0.23, 0.17]
9.	61	3.84	0.83	130	4.02	0.97	-0.18	[-0.45, 0.09]
10.	189	3.95	0.91	101	3.95	0.83	0.00	[-0.21, 0.21]
11.	165	3.89	1.06	207	3.83	0.99	0.06	[-0.15, 0.27]
12.	135	3.80	1.01	57	3.75	0.89	0.05	[-0.24, 0.34]
<b>Overall</b>	<b>1957</b>	<b>3.84</b>	<b>0.95</b>	<b>1574</b>	<b>3.87</b>	<b>0.91</b>	<b>-0.03</b>	<b>[-0.09, 0.03]</b>

## Comparison of theoretical constructs at Follow-up 2: N= 3625

## Knowledge of HIV/AIDS n=3587

Pair	Group						WMD	CI 95% 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	10.96	2.50	165	10.33	2.25	0.63	[0.08, 1.18]
2.	276	9.44	2.94	57	9.24	2.65	0.20	[-0.57, 0.97]
3.	191	10.75	2.38	168	10.86	2.00	-0.11	[-0.56, 0.34]
4.	162	8.10	3.22	139	8.79	2.81	-0.69	[-1.37, -0.01]
5.	12	8.04	1.87	96	8.33	2.73	-0.29	[-1.48, 0.90]
6.	225	8.00	3.24	213	7.89	2.85	0.11	[-0.46, 0.68]
7.	295	8.24	3.03	94	7.16	3.05	1.08	[0.37, 1.79]
8.	140	7.08	3.04	170	7.98	3.12	-0.90	[-1.59, -0.21]
9.	62	7.18	2.98	133	7.29	3.47	-0.11	[-1.06, 0.84]
10.	189	9.40	2.54	102	8.51	3.05	0.89	[0.20, 1.58]
11.	171	9.67	2.67	208	10.72	2.11	-1.05	[-1.54, -0.56]
12.	134	4.42	0.64	56	4.17	0.94	0.25	[-0.02, 0.52]
<b>Overall</b>	<b>1986</b>	<b>9.11</b>	<b>3.09</b>	<b>1601</b>	<b>9.06</b>	<b>3.03</b>	<b>0.04</b>	<b>[-0.12, 0.20]</b>

## Attitude towards delay of sexual intercourse n=3568

Pair	Group						WMD	CI 95% 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	1.84	0.87	165	1.82	0.81	0.02	[-0.17, 0.21]
2.	274	2.42	1.09	57	2.46	1.16	-0.04	[-0.37, 0.29]
3.	190	1.81	0.78	168	1.69	0.80	0.12	[-0.04, 0.28]
4.	156	2.63	1.08	139	2.26	1.02	0.37	[0.13, 0.61]
5.	12	3.19	0.89	94	2.21	1.12	0.98	[0.43, 1.53]
6.	223	2.71	1.00	212	2.87	1.01	-0.16	[-0.35, 0.03]
7.	294	2.59	1.00	94	2.83	0.98	-0.24	[-0.47, -0.01]
8.	139	3.04	0.90	169	2.92	1.02	0.12	[-0.09, 0.33]
9.	61	3.08	0.97	131	2.69	1.09	0.39	[0.08, 0.70]
10.	189	2.15	0.98	102	2.43	0.91	-0.28	[-0.51, -0.05]
11.	170	2.02	1.03	208	1.61	0.71	0.41	[0.23, 0.59]
12.	135	1.66	0.63	57	1.54	0.75	0.12	[-0.10, 0.34]
<b>Overall</b>	<b>1972</b>	<b>2.36</b>	<b>1.05</b>	<b>1596</b>	<b>2.28</b>	<b>1.07</b>	<b>0.09</b>	<b>[0.02, 0.15]</b>

Attitude towards condoms n=3561								
Pair	Intervention				Control		WMD	CI 95%
	N	Mean	SD	N	Mean	SD		
1.	128	4.27	0.69	163	4.23	0.75	0.04	[-0.13, 0.21]
2.	272	4.27	0.78	57	4.31	0.49	-0.04	[-0.20, 0.12]
3.	190	4.16	0.77	167	4.21	0.68	-0.05	[-0.20, 0.10]
4.	154	4.08	0.82	138	4.17	0.80	-0.09	[-0.28, 0.10]
5.	12	4.33	0.50	96	4.11	0.78	0.22	[-0.10, 0.54]
6.	225	4.06	0.84	212	4.05	0.87	0.01	[-0.15, 0.17]
7.	295	4.19	0.83	94	3.74	0.99	0.45	[0.23, 0.67]
8.	138	4.00	0.86	168	4.16	0.78	-0.16	[-0.35, 0.03]
9.	59	4.16	0.67	132	4.11	0.82	0.05	[-0.17, 0.27]
10.	189	4.27	0.81	103	4.29	0.70	-0.02	[-0.20, 0.16]
11.	169	4.15	0.78	208	4.18	0.72	-0.03	[-0.18, 0.12]
12.	135	4.22	0.71	57	4.22	0.84	0.00	[-0.25, 0.25]
<b>Overall</b>	<b>1966</b>	<b>4.17</b>	<b>0.80</b>	<b>1595</b>	<b>4.15</b>	<b>0.79</b>	<b>0.00</b>	<b>[-0.05, 0.06]</b>

Outcome expectancy towards STD or pregnancy n=3573								
Pair	Intervention				Control		WMD	CI 95%
	N	Mean	SD	N	Mean	SD		
1.	129	4.47	0.61	163	4.48	0.60	-0.01	[-0.15, 0.13]
2.	272	4.47	0.70	57	4.41	0.55	0.06	[-0.11, 0.23]
3.	190	4.32	0.64	169	4.32	0.58	0.00	[-0.13, 0.13]
4.	155	4.31	0.64	139	4.37	0.79	-0.07	[-0.24, 0.10]
5.	12	4.17	0.59	97	4.45	0.64	-0.28	[-0.64, 0.08]
6.	224	4.01	0.87	213	4.15	0.81	-0.15	[-0.31, 0.01]
7.	295	4.21	0.79	95	3.79	1.00	0.41	[0.19, 0.63]
8.	140	3.90	0.97	169	4.04	0.80	-0.14	[-0.34, 0.06]
9.	60	4.28	0.67	132	4.35	0.75	-0.07	[-0.28, 0.14]
10.	189	4.29	0.74	103	4.26	0.79	0.02	[-0.17, 0.21]
11.	170	4.61	0.50	208	4.50	0.58	0.11	[0.00, 0.22]
12.	135	4.38	0.75	57	4.30	0.76	0.08	[-0.15, 0.31]
<b>Overall</b>	<b>1971</b>	<b>4.29</b>	<b>0.76</b>	<b>1602</b>	<b>4.29</b>	<b>0.75</b>	<b>0.01</b>	<b>[-0.04, 0.06]</b>

## Perceived susceptibility to STD n=3551

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.44	0.70	163	4.38	0.85	0.06	[-0.12, 0.24]
2.	266	4.27	0.92	57	4.26	0.70	0.01	[-0.20, 0.22]
3.	190	4.28	0.68	166	4.33	0.68	-0.05	[-0.19, 0.09]
4.	153	4.18	0.81	139	4.23	0.91	-0.05	[-0.25, 0.15]
5.	12	4.19	0.69	96	4.22	0.80	-0.03	[-0.45, 0.39]
6.	223	3.90	1.03	212	4.01	0.95	-0.11	[-0.30, 0.08]
7.	294	3.93	1.04	95	3.71	1.07	0.22	[-0.03, 0.47]
8.	139	3.82	1.06	168	4.01	0.94	-0.19	[-0.42, 0.04]
9.	59	4.27	0.64	131	4.23	0.88	0.04	[-0.18, 0.26]
10.	189	4.20	0.95	103	4.12	1.02	0.08	[-0.16, 0.32]
11.	170	4.35	0.82	207	4.48	0.68	-0.13	[-0.28, 0.02]
12.	134	4.43	0.70	56	4.35	0.74	0.08	[-0.15, 0.31]
<b>Overall</b>	<b>1958</b>	<b>4.16</b>	<b>0.92</b>	<b>1593</b>	<b>4.20</b>	<b>0.88</b>	<b>-0.02</b>	<b>[-0.08, 0.04]</b>

## Social norms regarding sex n=3551

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.24	0.76	162	4.09	0.79	0.15	[-0.03, 0.33]
2.	266	4.11	0.85	57	3.99	0.62	0.12	[-0.07, 0.31]
3.	189	4.08	0.75	167	4.04	0.74	0.04	[-0.12, 0.20]
4.	154	3.98	0.75	138	3.94	0.88	0.04	[-0.15, 0.23]
5.	12	4.17	0.49	95	3.99	0.77	0.18	[-0.14, 0.50]
6.	224	3.56	0.93	213	3.57	0.91	-0.01	[-0.18, 0.16]
7.	293	3.68	0.94	95	3.42	0.98	0.26	[0.04, 0.48]
8.	139	3.59	0.91	167	3.50	0.92	0.09	[-0.12, 0.30]
9.	60	4.04	0.60	131	4.14	0.76	-0.10	[-0.30, 0.10]
10.	190	3.68	0.93	102	3.70	0.94	-0.02	[-0.25, 0.21]
11.	170	4.14	0.83	206	4.34	0.67	-0.20	[-0.35, -0.05]
12.	135	4.16	0.77	57	4.03	0.84	0.13	[-0.12, 0.38]
<b>Overall</b>	<b>1961</b>	<b>3.90</b>	<b>0.88</b>	<b>1590</b>	<b>3.90</b>	<b>0.87</b>	<b>0.03</b>	<b>[-0.02, 0.09]</b>

**Social norms regarding condoms n=3534**

Pair	Group				Control	WMD	CI 95%	
	Intervention			N				
	N	Mean	SD					
1.	124	4.10	0.75	161	4.14	0.71	-0.04	[-0.21, 0.13]
2.	264	4.20	0.73	57	4.26	0.55	-0.06	[-0.23, 0.11]
3.	188	4.17	0.68	166	4.15	0.63	0.02	[-0.12, 0.16]
4.	155	3.99	0.82	136	4.05	0.76	-0.06	[-0.24, 0.12]
5.	12	4.23	0.41	94	4.19	0.73	0.04	[-0.23, 0.31]
6.	224	3.84	0.81	212	3.91	0.80	-0.07	[-0.22, 0.08]
7.	293	4.00	0.81	95	3.59	1.00	0.41	[0.19, 0.63]
8.	139	3.91	0.81	167	3.87	0.89	0.04	[-0.15, 0.23]
9.	60	4.17	0.61	130	4.17	0.73	0.00	[-0.20, 0.20]
10.	189	4.05	0.80	101	4.03	0.83	0.02	[-0.18, 0.22]
11.	170	4.21	0.75	207	4.20	0.68	0.01	[-0.14, 0.16]
12.	133	4.14	0.62	57	3.96	0.87	0.18	[-0.07, 0.43]
<b>Overall</b>	<b>1951</b>	<b>4.06</b>	<b>0.77</b>	<b>1583</b>	<b>4.04</b>	<b>0.78</b>	<b>0.02</b>	<b>[-0.03, 0.07]</b>

**Injunctive norm n=3575**

Pair	Group				Control	WMD	CI 95%	
	Intervention			N				
	N	Mean	SD					
1.	128	4.33	0.88	160	4.26	0.90	0.07	[-0.14, 0.28]
2.	261	4.30	0.85	57	4.25	0.81	0.05	[-0.18, 0.28]
3.	190	4.29	0.76	167	4.30	0.76	-0.01	[-0.17, 0.15]
4.	153	4.08	0.93	136	4.22	0.88	-0.14	[-0.35, 0.07]
5.	12	4.21	0.59	93	4.25	0.76	-0.04	[-0.41, 0.33]
6.	223	3.76	0.89	211	3.96	0.88	-0.20	[-0.37, -0.03]
7.	293	4.02	0.91	94	3.70	1.13	0.32	[0.07, 0.57]
8.	139	3.76	0.96	167	3.90	0.86	-0.14	[-0.35, 0.07]
9.	60	4.29	0.76	131	4.06	0.91	0.23	[-0.02, 0.48]
10.	189	4.17	0.82	103	4.09	0.94	0.08	[-0.14, 0.30]
11.	168	4.37	0.77	207	4.44	0.78	-0.07	[-0.23, 0.09]
12.	134	4.42	0.64	56	4.17	0.94	0.25	[-0.02, 0.52]
<b>Overall</b>	<b>1950</b>	<b>4.14</b>	<b>0.87</b>	<b>1582</b>	<b>4.12</b>	<b>0.89</b>	<b>0.00</b>	<b>[-0.06, 0.06]</b>

## Self-efficacy to delay intercourse n=3524

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	129	4.33	0.72	158	4.13	0.86	0.20	[0.02, 0.38]
2.	266	4.14	0.79	57	4.04	0.74	0.10	[-0.11, 0.31]
3.	188	4.17	0.78	164	4.18	0.73	-0.01	[-0.17, 0.15]
4.	153	3.98	0.87	134	4.08	0.79	-0.10	[-0.29, 0.09]
5.	12	4.27	0.46	90	4.23	0.68	0.04	[-0.26, 0.34]
6.	222	3.72	0.84	209	3.74	0.85	-0.02	[-0.18, 0.14]
7.	294	3.85	0.84	94	3.32	0.94	0.53	[0.32, 0.74]
8.	140	3.66	0.79	166	3.69	0.76	-0.03	[-0.20, 0.14]
9.	60	4.24	0.59	131	4.12	0.80	0.12	[-0.08, 0.32]
10.	188	3.85	0.89	100	3.71	0.83	0.14	[-0.07, 0.35]
11.	169	4.22	0.80	207	4.38	0.66	-0.16	[-0.31, -0.01]
12.	136	4.29	0.61	57	4.17	0.76	0.12	[-0.10, 0.34]
<b>Overall</b>	<b>1957</b>	<b>4.01</b>	<b>0.85</b>	<b>1567</b>	<b>3.99</b>	<b>0.83</b>	<b>0.05</b>	<b>[0.00, 0.10]</b>

## Self-efficacy to use condoms n=3488

Pair	Group						WMD	CI 95%
	Intervention			Control				
	N	Mean	SD	N	Mean	SD		
1.	126	4.32	0.77	159	4.34	0.64	-0.02	[-0.19, 0.15]
2.	258	4.29	0.75	57	4.13	0.70	0.16	[-0.04, 0.36]
3.	183	4.20	0.63	164	4.23	0.66	-0.03	[-0.17, 0.11]
4.	147	4.03	0.92	131	4.21	0.67	-0.18	[-0.37, 0.01]
5.	12	4.34	0.39	90	4.26	0.63	0.08	[-0.18, 0.34]
6.	222	3.88	0.86	210	3.94	0.76	-0.06	[-0.21, 0.09]
7.	292	4.05	0.78	90	3.50	0.95	0.55	[0.33, 0.77]
8.	140	3.83	0.82	167	3.83	0.78	0.00	[-0.18, 0.18]
9.	60	4.26	0.63	131	4.17	0.83	0.09	[-0.12, 0.30]
10.	188	4.16	0.78	102	4.12	0.83	0.04	[-0.16, 0.24]
11.	166	4.34	0.62	207	4.40	0.64	-0.06	[-0.19, 0.07]
12.	129	4.22	0.58	57	4.10	0.77	0.12	[-0.10, 0.34]
<b>Overall</b>	<b>1923</b>	<b>4.13</b>	<b>0.77</b>	<b>1565</b>	<b>4.12</b>	<b>0.77</b>	<b>0.02</b>	<b>[-0.03, 0.07]</b>

University of Cape Town

**Appendix L: Sample lesson from Educator Manual**

**LEARNING EXPERIENCE 7**

CRITICAL OUTCOMES: 3, 9, 10  
1½ hours

Specific Outcomes: 7, 4, 5

Duration:

GRADE 8  
PROMOTION

FOCUS: HEALTH

TOPIC: *Promoting the sexual health of young people (YP)*

KNOWLEDGE	SKILLS	VALUES/ATTITUDES
Sexual and reproductive rights (S&R) Gender bias in sexual rights Bodily boundaries Behaviours, suggestions, situations that may threaten bodily boundaries	List the S&R rights of YP Explain the gender bias operating in S& R rights issues Define own bodily boundaries Recognise the behaviours, suggestions, situations that may threaten bodily boundaries Recognise a potentially violent/ sexually exploitive situation	Values own and others' sexual health and safety Well developed sense of self preservation Respect for own and others' body

**THE LEARNER WILL BE ABLE TO:**

- Explain what sexual and reproductive rights are
- Understand and articulate the right to say no
- Understand and discuss the gender dynamics related to S&R rights
- Understand and define their bodily boundaries
- Understand and explain the right to have their bodily boundaries respected
- Recognise which behaviours, suggestions, references of situations may threaten their bodily boundaries
- Recognise a potentially violent/exploitative situation
- Understand and articulate that both familiar and unfamiliar peers and adults may be guilty of violating their sexual and reproductive rights

**LEARNING ACTIVITIES**

1. Develop their own sexual and reproductive rights banner/chart and include their responsibilities
2. Consider how violent and/or sexually exploitive situations could be avoided or defused

**ASSESSMENT STRATEGIES**

1. According to criteria - correctness, impact, attractive, group cooperation

**Educator Notes:**

1. Discuss the responses to the diagram from lesson 7, Activity 2, if it has been done as homework.
2. Learners list the behaviours/actions of boys/girls that could encourage sexual excitement e.g. dress, language, gifts, etc.

3. Learners discuss the Sexual and Reproductive Rights and decide on those that are most important for themselves, understanding that these promote good sexual health. (See Addendum)
  4. Learners list the responsibilities that each of their rights carry and then design a banner or chart showing the rights and responsibilities. (Activity 2 - using the Addendum)
  5. Groups discuss some violent and/or sexually exploitive situations and how they could be avoided or defused. (Activity 3)
-

## PRESENTING LEARNING EXPERIENCE 7

### Organisation:

Learners will need paper or newsprint to complete activity 2. Kokis, magazines, glue & scissors may also be required.

### Information

Learners should understand that there are sexual and reproductive rights that apply to them. However the different contexts/situations that they experience and the values that they hold could influence them to not necessarily agree on which rights are the most important for them. It is important however that they realise that rights always include responsibilities and that respect for the rights of others must always be considered.

With this learners should understand that they can say "no" to situations/experiences they do not wish to participate in that cross their personal and bodily boundaries.

### Presenting the material

1. If activity 2 from the previous lesson was done at home you should hold a short discussion regarding how they easily they could complete each dimension, how they felt about doing it and whether it made a difference to their understanding of themselves (their self-assessment).

#### Activity 1:

2. Ask the learners to complete the table in their workbook. Girls should consider what it is that boys do or say that makes them sexually aware or alert or excited i.e. that makes them want to get together, and write it in the column under 'what boys do'. Similarly, boys should consider what it is that girls do or say that makes them respond sexually and write it in the column under 'what girls do'.
3. Do be careful not to make specific suggestions to your learners and the less you comment the better, but if they are struggling you could ask questions like:
  - a. "Does the way someone dresses 'turn you on'? If this is so describe the kind of dress."
  - b. "What kind of actions have sexual connotations?"
4. Once the learners have completed their own column they should share their ideas and complete the second column indicating the way in which they themselves (or their sex) may 'turn' another on.
5. Learners should then individually complete the personal reflection table.

#### Activity 2:

6. Ask the learners to study the page of sexual and reproductive rights for young people and to choose 4 or 5 which are most appropriate for them and their sexual health. Groups and individuals may differ according to personal circumstances and needs and if these are different you may need to assist them in finding consensus for this particular activity.
7. They must then write down their responsibilities with regard to those particular rights. It is often easy to demand responsibilities from another, but within that context each individual is also responsible for their own behaviour/actions. The focus in this activity is not only on what others should accept (my rights), but also on the recognition of personal actions and responsibilities. Support for others whose rights are being abused could also be considered.

8. Each group (or individual) should then design a banner or chart to display these rights and the individual's responsibilities that go with these rights. These can be displayed in the classroom, passage or foyer.
9. Assess the banner/chart according to the criteria for 'design and make' or use the criteria given below.
10. Complete the session with a brief discussion of a few situations that exploit the various sexual dimensions of the individual or group. (This will be dealt with further at a later stage.)

**Appendix M: Logistic Regression on primary outcomes at FU2****Condom use: All sexually active respondents**

Number of obs = 241

Wald chi2(6)= 43.83

Prob &gt; chi2 = 0.0000

Std. Err. adjusted for 21 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	1.18	0.31	0.65	0.515	0.71 -1.97
Age	1.18	0.11	1.78	0.075	0.98 -1.41
Gender	0.66	0.20	-1.35	0.176	0.36 -1.21
Middle SES	1.16	.3720211	0.45	0.652	0.62 - 2.17
High SES	1.30	0.54	0.63	0.526	0.58- 2.95
Condom use at baseline	0.37	0.07	-5.03	0.00	0.25 - 0.54

**Condom use: Sexually active boys**

Number of obs = 188

Wald chi2(5) = 14.57

Prob &gt; chi2 = 0.0124

Std. Err. adjusted for 21 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	1.15	0.37	0.45	0.65	0.62 - 2.16
Age	1.35	0.15	2.75	0.01	1.09 - 1.68
Middle SES	0.93	0.28	-0.23	0.82	0.51 - 1.69
High SES	1.02	0.54	0.04	0.97	0.36 - 2.89
Condom use at baseline	0.42	0.11	-3.17	0.00	0.24 - 0.72

**Condom use: sexually active girls**

Number of obs = 53

Wald chi2(5) = 50.66

Prob &gt; chi2 = 0.0000

Std. Err. adjusted for 15 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	2.14	0.37	1.66	0.65	0.62 - 5.22
Age	0.56	0.15	-2.82	0.01	1.09 - 0.82
Middle SES	2.68	0.28	1.32	0.82	0.51 - 11.66
High SES	2.63	0.54	1.03	0.97	0.36 - 16.56
Condom use at baseline	0.17	0.11	-2.29	0.00	0.24 - 0.78

**Sexual intercourse at FU2 amongst the sub-sample that were virgins at baseline**

Number of obs = 3261

Wald chi2(5)= 198.85

Prob &gt; chi2 = 0.0000

Std. Err. adjusted for 24 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	0.85	0.14	-0.97	0.33	0.62 - 1.17
Age	1.29	0.04	7.75	0.00	1.21 - 1.38
Gender	0.34	0.05	-6.98	0.00	0.25 - 0.46
Middle SES	0.62	0.07	-4.27	0.00	0.50 - 0.78
High SES	0.40	0.06	-6.64	0.00	0.30 - 0.52

**Sexual intercourse at FU2 amongst boys that were virgins at baseline**

Number of obs = 1386

Wald chi2(4) = 44.51

Prob &gt; chi2 = 0.0000

Std. Err. adjusted for 24 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	0.83	0.37	-1.00	0.65	0.62 - 1.20
Age	1.20	0.15	3.36	0.01	1.09 - 1.33
Middle SES	0.68	0.28	-2.92	0.82	0.51 - 0.88
High SES	0.38	0.54	-5.87	0.97	0.36 - 0.53

**Sexual intercourse at FU2 amongst girls that were virgins at baseline**

Number of obs = 1875

Wald chi2(4)= 166.89

Prob &gt; chi2 = 0.0000

Std. Err. adjusted for 24 clusters

	<b>Odds Ratio</b>	<b>Robust Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>
Group	0.89	0.37	-0.51	0.65	0.62 - 1.42
Age	1.45	0.15	5.41	0.01	1.09 - 1.66
Middle SES	0.56	0.28	-2.41	0.82	0.51 - 0.90
High SES	0.44	0.54	-3.85	0.97	0.36 - 0.67