EVALUATING THE COMPUTER-ASSISTED HIV/AIDS EDUCATION INTERVENTION IMPLEMENTED IN SCHOOLS IN UGANDA

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LIST OF ABBREVIATION

AIDS	Acquired Immunodeficiency Syndrome
AIS	Abandoned Implementation Study
ARRM	The AIDS Risk Reduction Model
CD ROMs	Compact Disk Read Only Memory
CIS	Completed Implementation Study
ISOSSIME	Inquire, Segment, Oblige, Support, Supplement, Involve, Motivate and Evaluate.
DC	Developing Countries
DFID	Department for International Development
ETD	Executive and Training Director
HIV	Human Immunodeficiency Virus
ICT	Information Communication Technology
MDG	Millennium Development Goal
NGO	Non-Governmental Organisations
STDs	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
SRHC	Sexual Health and Reproductive Consultant
TSS	Teacher Support Specialist
UDHS	Uganda Demographic Health Survey
UGASS	UN General Assembly Special Session on Drugs
UNAIDS	Joint United Nations Programme on HIV and AIDS
UNICEF	United Nations Children's Fund
WHO	World Health Organisation
WPF	World Population Foundation
WSWM	World Starts With Me

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ABSTRACT

Over 29 years into the epidemic, fighting HIV (Human Immunodeficiency Virus), the virus that causes AIDS (Acquired, Immune, Deficiency, Syndrome) continues to be a global concern. School-based computer-assisted HIV/AIDS interventions can provide innovative ways of preventing HIV among young people from diverse backgrounds in Africa. However, questions of technological, social and organisational readiness cannot be overlooked. This is because of: (1) being health interventions implemented in educational centres; (2) limited technological facilities and skills; (3) the prevailing norms that associate young people's sex education with sex experimentation. Despite these concerns, there are significantly few studies evaluating school-based computer-assisted HIV/AIDS interventions in developing countries. In addition, the commonly used health promotion theories have limited application in HIV prevention. These theories tend to lack sufficient attention to contextual mediators that influence implementation and impacts of HIV interventions.

This research addresses some of these gaps by evaluating the implementation and the impacts of a computer-assisted HIV/AIDS intervention, known as the World Starts With Me (WSWM), which is implemented in schools in Uganda. To overcome some of the criticisms voiced above, this research employed mixed quantitative and qualitative methods to conduct three investigations. Investigation 1 is a quantitative controlled before-after intervention study that assessed the level of significance of the impacts of the WSWM intervention on in-school young people. Investigation 2 is a qualitative cross-case analysis study that explored in-depth why the WSWM intervention implementation was completed in one school but abandoned in another. Investigation 3 is a qualitative study that assessed in-depth the impacts and the computer-mediated benefits of the WSWM intervention on out-of-school young people. Overall, this research involved 584 quantitative questionnaires answered by 292 participants, 53 interviewees and 2 focus group discussions comprising of 50 participants.

Findings indicate that: (1) the intervention significantly improved the in-school young people's HIV/AIDS knowledge, attitudes self-efficacy, sex abstinence and fidelity, but had no significant impact on condom use. (2) Implementation factors include technological facilities, perceived usefulness, confidence and skills, cultural-religious compatibility, management support, match with routine workflow, and institutional climate, all of which were more favourable in the school that completed the intervention than in the school that abandoned it. (3) The intervention had positive impacts on the out-of-school young people's sexual behaviours, HIV/AIDS knowledge and perception of vulnerability, attitudes and self-efficacy. (4) Contextual mediators such as familial mediators, relationship characteristics, peer influence, gender-biased social norms, economic constraints and religious beliefs influence young people's uptake of HIV preventive measures. (5) Computer-mediated benefits of the intervention include privacy and confidentiality of the otherwise sensitive information, unlimited geographical accessibility, source of the otherwise denied sexuality and HIV/AIDS information, and interactivity and social support.

DECLARATION

I declare that this an original piece of research; no portion of this work has ever been submitted for any other degree or qualification in this or any other university or institution of learning.

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DEDICATION

To God the Father, the Son and the Holy Spirit in whose strength I stand.

ACKNOWLEDGEMENT

This thesis would not have been possible without spiritual, academic and social support:

Spiritually, I praise and glorify the only wise God of Heaven and earth that continuously empowered me with all that I needed to run this rewarding yet very challenging race. To You God, belong the Glory and dominion, Power and Honour, Mighty and Majesty, in the name of Jesus Christ, the Son of the Most High God.

ABOUT THE AUTHOR

After the end of her first degree (Bachelor of Computer Science degree) in 2003, Musiimenta emerged the best student and was immediately retained as a Teaching Assistant, school of computing, Mbarara University of Science and Technology-Uganda. In 2005, she successfully completed a Masters of Science in Information Systems from the University of Leeds, UK, under the sponsorship of Commonwealth Scholarship Commission. After that she worked as a Lecturer of Information Systems in Mbarara University up to Sept.2007, when she left Uganda for The University of Manchester-UK for a PhD programme. At the end of her first year of study, Musiimenta won the prize for the winner of the Best Abstract during the 2008 MBS Doctoral Conference.

In June 2010, Musiimenta was nominated by Womendeliver as a youth leader in advocating the sexual and reproductive rights of girls through application of social network technologies. As a youth advocate, she represented young people in a global conference organised by Womendeliver in Washington DC, June 2010. In July 2010, Musiimenta served as an online social network guest editor for the United Nations Population Fund (UNFPA), where she advocated for the rights of young people living with HIV/AIDS.

Together with her supervisor, Musiimenta is currently working on a number of papers from this PhD for publishing in academic journals.

Musiimenta is also currently involved in a systematic literature review of social network technologies in healthcare, under the Northwest Institute for Bio-Health, the University of Manchester.

Musiimenta aims to become an eminent IT director, researcher and academician. She has particular interests in the area of health informatics in order to apply her expertise in information technology to address real life health issues, thereby appreciating how health and IT complement each other. She applies both qualitative and quantitative research methods to explore the interaction between IT-based health interventions, their users and the social and organizational contexts in which they are implemented. This involves examining how IT influences individuals, groups and organisations as well as how individual knowledge, behaviours, attitudes and cultures influence the design, operation and effectiveness of IT-based health interventions. She analyses consumer service needs and preferences, service satisfaction, accessibility, usability, process and impact evaluation of IT-based innovations, aimed at improving people's health. She is particularly interested in exploring the role of innovative technologies in fostering a citizen-driven e-health and its implications on emerging health-divide resulting from digital-divide.

CHAPTER ONE: INTRODUCTION

1 Background of the Subject Area under Investigation

1.1 Current Global Challenges in HIV/AIDS Prevention

HIV (Human Immunodeficiency Virus) is the virus that causes AIDS (Acquired Immune Deficiency Syndrome). Over twenty nine years into the epidemic, fighting HIV/AIDS continues to be a global concern. Nearly 90% of HIV infected populations live in developing countries (UNAIDS 2004). Around 67% of the world's HIV/AIDS infected population lives in Sub-Saharan Africa (UNAIDS 2008). Uganda is one of the sub-Saharan African countries whose population has been infected and affected by the HIV/AIDS pandemic since around 1982 (Garbus et al 2003).

In response to the high prevalence of HIV/AIDS particularly in young people, world leaders are working together globally to prevent HIV/AIDS. For example, one of the aims of the Millennium Development Goal (MDG) number six is:

> "…to have halted by 2015 and begun to reverse the spread of HIV including HIV prevalence among population groups aged 15-24 years." (UNAIDS 2006).

In addition, the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS aimed to ensure that by 2010:

> "…at least 95% of young people have access to the information, skills, and service needed to reduce their vulnerability to HIV." (UN 2006).

Despite this global effort, HIV/AIDS prevalence continues to increase among young people aged 15-24 in Uganda (Ministry of Health Uganda 2005). Reasons for this increase include lack of HIV/AIDS knowledge and self-efficacy skills for HIV/AIDS prevention (UDHS and ORC Macro 2001; Hulton et al 2000).

Thus, it is important to evaluate HIV/AIDS interventions in order to investigate how such interventions are impacting young people's HIV knowledge and self-efficacy. Such investigations can yield fruitful contribution to the current global efforts in fight HIV/AIDS among young people.

1.2 Lack of Appropriate Theories for HIV/AIDS Interventions

The applicability of the prevailing theories and models of health education and promotions in the context of HIV/AIDS prevention have long been questioned (Airhihembuwa and Obregon 2000; Wallson 2005). These theories/models over-emphasise individual level influences while failing to address contextual dimensions that significantly influence HIV/AIDS prevention (Diclemente et al 2008; and Evans and Lambert 2008).

The literature increasingly expresses dissatisfaction with the dominant prevailing descriptive survey-type HIV/AIDS-related research (Kelly and Parker 2000; Airhihembuwa and Obregon 2000). These descriptive surveys are often 'force-fitted' into the prevailing 'victim-blaming' individual oriented models of health behaviour. Such models (Kotler and Roberto 1989; Catania 1990; Bandura 1986; and Ajzen 1988) are mainly individual-focused models, with two notable exceptions (Connell 1987; McLeroy 1988).

Yet, although Connell's theory of gender and power acknowledges the influence of gender-based social norms, the theory does not cater for determinants of sexual behaviours at an individual level. McLeroy's ecological models for health promotion offer some promise since it advocates considering both individual and contextual mediators. However, the model does not specify particular constructs that should be considered and how such constructs should be investigated.

Generally, it is evident that preventing HIV/AIDS require integrative approaches that consider both individual and contextual mediators (Airhihembuwa and Obregon 2000; Wallson 2005; Exner 2003).

Yet none of the prevailing models of health promotion appropriately cater for both individual and contextual determinants of HIV/AIDS prevention. Lack of appropriate theories suggests a need for an abductive research approach where themes and theories emerge from data collection and analysis rather than being pre-determined (Buchanan and Bryman 2009). Such an approach can provide in-depth understanding of how different contexts interact to influence the implementation and the impacts of HIV/AIDS interventions.

1.3 Limitedness of Research in Computer-assisted Healthcare Interventions

For the purpose of this research, computer-assisted healthcare interventions refer to the use of Information Communication and Technology (ICT) (e.g. internet, computers, CD-ROMs, phones) to facilitate the storage, processing, retrieval and exchange of health-related information. Such interventions include the use of secure emails, e-booking interventions, e-prescriptions, electronic patient record systems and picture archiving and communication systems.

Empirical studies have demonstrated some evidence of the usefulness of computer-assisted healthcare interventions to promote health behaviours e.g. promotion of weight loss (Tate et al 2001), diabetes self-management (Glasgow et al 2003), and health eating and activity (Norman et al 2007). Applied to a wide range of healthcare behaviours, there has been some success in increasing knowledge (Coumba et al 2005; Murray et al 2005; Campbell et al 2004), changing attitudes and coping self-efficacy (Wikgren 2003; Stout et al 2001; Gustafson et al 2001; Richie et al 2000) some limited success in changing behaviour and yielding quantifiable health benefits (Littlejohns et al 2003; Hersh et al 2001; Campbell 2004; Eysenbach et al 2004; Wofford et al 2005; Howells et al 2002).

Most of the behavioural change computer-assisted healthcare interventions have been implemented in developed countries (Murray et al 2005; Halpern et al 2008; Wofford et al 2005).

Yet such interventions have the potential to satisfy the unmet needs of health education in poorly resourced countries e.g. teacher shortage and other barriers to health education (Canadian International Development Agency 2003).

Since HIV/AIDS is mainly a behavioural disease that is commonly transmitted through risky sexual practices, ICT can provide innovative ways of preventing its transmission (Benotsch et al 2006; McFarlane et al 2005; Noar et al 2009). The modest studies conducted in this area show some evidence that computer-assisted HIV/AIDS intervention increase participants' knowledge of HIV/AIDS (Lou et al 2006; Keine et al 2006; Tian et al 2007; Halpern et al 2008), attitudes and self-efficacy (Gustafson et al 2001; Ashton et al 2005; Coursaris et al 2009), and some evidence on influencing sexual behaviours (Lonczak et al 2002), including condom use, number of partners (Noar et al 2009).

Despite the promising benefits, the application of computer-assisted HIV/AIDS interventions is significantly limited, particularly in developing countries where the pandemic is widespread (Payton and Kiwanuka-Tondo 2009). Reasons for this limited application include lack of computers, low bandwidth, network unreliability, low internet accessibility, lack of reliable electricity and low levels of computer literacy (Forma 2004; Edejer 2000; Siika et al 2005). Thus, before introducing computer-assisted healthcare interventions in developing countries, it is important to assess the availability of technological facilities, infrastructure and skills.

Very few computer-assisted healthcare interventions for young people's behavioural change have been rigorously evaluated (Etter 2005; Halpern et al 2008). Besides, unlike in developed countries, studies evaluating computer-assisted healthcare interventions in developing countries are rare (Edejer 2000). Yet evaluation findings conducted in developed countries may not be generalised to the developing world, given the differences in context, culture and technological infrastructure. The evaluation of computer-assisted healthcare interventions in Africa remains hugely under-researched.

Even when evaluation is carried out, there is a lack of methodological rigour in many of the studies that evaluated computer-assisted healthcare interventions in developing countries (Lucas 2008). Consequently, there is limited evidence about the adoption and the usefulness of computer-assisted healthcare interventions in the context of low resource countries, including Uganda. Current systematic reviews affirm the need to explore the use of computer-assisted healthcare interventions in developing countries (Murray et al 2005).

1.4 User Resistance in Computer-assisted HIV/AIDS Intervention

Generally, there is scarce literature investigating computer-assisted HIV interventions in both the developed and developing nations. Even the modest computer-assisted HIV interventions in the developed world are normally designed and implemented without user involvement and are most often culturally incompatible with the values of the populations they are intended to serve (Payton and Kiwanuka-Tondo 2009).

Evidence persistently indicates high levels of user resistance in adopting computer-assisted HIV interventions (Mitchell et al 2001; O'Grady 2006). Community resistance reported by Mitchell and colleagues stems from cultural incompatibility issues. O'Grady reports the worst case scenario where all the targeted HIV population indicated total lack of interest in using the computer-assisted HIV/AIDS intervention investigated. The current report from the International Development Research Centre (2001) demonstrate negative perceptions about ICT for HIV prevention from some HIV prevention activists involved in fighting HIV in Africa and other developing countries. From this report, these activists claim that:

> "…the immediate needs of those affected are so obvious and resources available so inadequate, that any resources allocated to ICT can seem a misplaced luxury."

As this report affirms, compared to investment in the ICT for HIV prevention, providing HIV drugs, food and shelter may be perceived to have direct benefits to the populations infected with and affected by HIV/AIDS.

Generally, the HIV/AIDS community is persistently reported to be ambivalent about the usefulness and relevance of computer-assisted HIV/AIDS interventions. As cautioned by a recent systematic review (Nguyen et al 2004) and other researchers (Siika et al 2005; O'Grady 2006), it is important to empirically investigate the perceptions of HIV/AIDS communities in order to explore the motivational and inhibiting mediators for the adoption and effects of computer-assisted HIV/AIDS interventions.

1.5 Social and Organisational Challenges in School-based HIV/AIDS Interventions

As places that accommodate many young people of diverse backgrounds, schools can be used as intervention sites for HIV/AIDS prevention (Gordon 2008). Given that school-based HIV/AIDS interventions are health projects implemented in the educational sector, a variety of organisational issues can present challenges. These organisational issues include timetabling issues and administrative support (Shepherd et al 2010; Smith et al 2003; Buston et al 2002; Power et al 2004; Hyde et al 2002; UNAIDS IATT 2006). Given schools' fixed routines, getting the HIV/AIDS intervention to fit within routine schools' formal curricula can be a challenge. Teachers' willingness to deliver HIV interventions in addition to their routine academic workloads cannot be assumed. In cases where HIV interventions are implemented by external organisations, the likelihood of mismatch of administrative expectations between school administrations and external leaders of the intervention cannot be overlooked.

HIV interventions are normally delivered by pre-existing academic teachers, who are not necessarily experts in sexuality and HIV issues. Thus, the extent to which school teachers are professionally equipped to deliver HIV interventions cannot be assumed (Power et al 2004; Turner et al 1997). Although school teachers often undergo some training before delivering HIV interventions, there are cautions of the inadequacies of this training (Kirby 2009).

Even with adequate training, given its sensitive nature, teaching sexuality and HIV prevention in school environments is a challenge that is globally experienced by teachers in both developing and developed countries, including the USA and UK (Smith et al 2003; Buston et al 2002; Shepherd et al 2010; Wight and Abraham 2004; Paulussen et al 1994).

The biggest social-organisational challenge in achieving successful implementation and adoption of HIV interventions appears to be that of cultural incompatibility. In Uganda, Mitchell et al (2001) report high levels of resistance from parents who claimed that HIV/AIDS interventions encourage promiscuity among young people. Some parents believe that young people are more likely to 'experiment out' what they learn from HIV/AIDS interventions e.g. condom use experimentation (Mosley 2003; Parker and Kelly 2000). Despite their concerns, as acknowledged by Kirby (2009), HIV interventions targeting young people often do not explore parents' perceptions regarding such interventions. Investigating parents' values and perceptions can provide a basis for identifying potential beliefs that oppose intervention adoption, which can then be dealt with in time in order to implement HIV interventions that are culturally compatible with community values.

Given the above social-organisational challenges, the extent to which schools are socially-organisationally ready to implement computer-assisted HIV interventions needs to be explored. Such an investigation can illuminate any prevailing potential constraints that can be resolved in time to enable successful implementation of school-based computer-assisted HIV interventions. The need to assess the extent of technological and social-organisational readiness is even greater in cases where HIV interventions are implemented by organisations that are external to schools, such as is the case investigated in this thesis.

1.6 Scarcity of Research in School-based HIV/AIDS Interventions

The effectiveness of computer-assisted school-based HIV/AIDS interventions particularly in low resource countries remains unclear (Paul-Ebhohimhen et al 2008).

Mediators for successful implementation of school-based HIV interventions remain under researched (Buston et al 2002). The most recent review by Shepherd and colleagues recommends rigorous impact and process evaluation of school-based HIV interventions targeting young people (Shepherd et al 2010). A related recent literature review of 87 studies, 70% of which were school-based, affirms a lack of evaluated sexuality and HIV interventions in developing countries (UNESCO 2009). Recent meta-analyses persistently caution of a lack of rigorous evaluation (e.g. controlled studies) of school-based HIV/AIDS interventions in Africa (Magnussen et al 2004; Paul-Ebhohimhen et al 2008).

The only government-initiated school-based HIV/AIDS intervention that was implemented in Uganda yielded no health benefits and suffered low prioritisation from schools (Hyde et al 2002). The rest of the school-based HIV/AIDS interventions implemented in Uganda are/were donor-funded pilot projects, which, apart from the few existing self-published findings, have hardly been evaluated using careful systematic and methodologically sound evaluations. For political reasons, results from failed donor-funded interventions are rarely published, yet such unsuccessful stories would provide good lessons for future interventions.

1.7 Summary and Research Gap

Fighting HIV/AIDS, especially among young people, is a global challenge. There are no appropriate theoretical frameworks that address both individual and contextual determinants of HIV/AIDS prevention.

Computer-assisted healthcare interventions have the potential to satisfy the unmet health needs of populations in low resource countries. ICT can provide innovative approaches to HIV prevention. However, there are significantly few empirical studies in the area of computer-assisted HIV/AIDS interventions. The modest prevailing computer-assisted HIV/AIDS interventions report challenges of user resistance mainly due to culture incompatibility issues.

In order to target young people from various backgrounds, HIV intervention can be implemented in schools. However, being health interventions implemented in educational centres, school-based HIV interventions often experience social and organisational challenges.

Recent literature reviews indicate urgent need for rigorous impact and process evaluation of school-based HIV interventions in developing countries.

The research presented in this thesis evaluates the implementation and the effects of the World Starts With Me (WSWM) intervention. The WSWM intervention is a computer-assisted sexuality and HIV/AIDS intervention implemented in schools in Uganda. On the basis of the research gaps highlighted in the above brief review of existing literature, the evaluation of the WSWM intervention is appealing for seven reasons:

1. Given that the WSWM intervention is a health intervention implemented in schools, it is important to investigate whether or not schools are organisationally ready to implement the intervention.

2. Given the limited technological facilities, poor infrastructure and low levels of computer literacy in Uganda, the extent to which schools are technologically ready to implement the WSWM intervention cannot be assumed.

3. Amidst lack of drugs, food and shelter for HIV dying patients, investing in computer-assisted HIV interventions may rather be perceived as a "misplaced luxury".

4. The prevailing norms that associate young people's sex education with sex experimentation may contradict the objectives of the WSWM intervention.

5. The sensitive nature of sexuality may present challenges in delivering and discussing the contents of the WSWM intervention in a school environment.

6. There is a lack of controlled experiments and contextual sensitive and multi-perspective studies evaluating the impacts and mediating influences of the implementation of school-based HIV interventions, especially those that are computer-based.

7. Given the current global efforts to fight HIV/AIDS among young people, evaluating the WSWM intervention can generate important insights to guide practice and research.

In the light of the above points, there is a need to find out how schools are organisationally and technologically ready to implement the WSWM intervention, how different school stakeholders perceive the intervention, and to investigate the intervention impacts on young people.

No empirical research has been published thus far, investigating the implementation and impacts of a computer-assisted HIV/AIDS intervention, implemented in schools in Uganda. It is this identified gap that this research intends to address.

1.8 Research Questions and Objectives

In light of the above identified research gaps, the present study addresses the following questions:

1. Did the WSWM intervention significantly influence the in-school young people's sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy?

2. How has the WSWM intervention influenced the out-of-school young people's sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy amidst contextual mediators? What are the computer-related benefits of the WSWM intervention?

3. Why was the implementation of the WSWM intervention completed in one school but abandoned in another?

Addressing these questions involved three investigations each of which complements the objectives of this research. These investigations are:

- Investigation 1: quantitative controlled before-after intervention study.
- Investigation 2: qualitative cross-case analysis study.
- Investigation 3: qualitative out-of-school multiple case study.

The objective of investigation 1 (quantitative controlled before-after intervention study) was to assess the level of significance of the impacts of the WSWM intervention on in-school young people's sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy. This investigation involved simultaneously administering questionnaires to 146 young people in an intervention group (the group receiving the WSWM intervention) and 146 young people in a comparison group (the group who did not receive the WSWM intervention), before (February 2009) and after the intervention (December 2009).

Investigation 2 (qualitative cross-case analysis study) aimed to obtain rich insights into the facilitating or inhibiting influences on the implementation of the WSWM intervention by investigating why the intervention implementation was completed in one school but abandoned in another. Conducted between Sept.08 and Dec.09, this investigation involved 33 semi-structured interviews with stakeholders of the Completed Implementation School (CIS) and the Abandoned Implementation School (AIS), as well as intervention leaders.

In addition, within the same period, two focus group discussions composed of 50 young people from the CIS and the AIS were conducted.

The objective of investigation 3 (qualitative out-of-school multiple case study) was to obtain deep insights into the impacts of the WSWM intervention on out-of-school young people's sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy amidst contextual mediators. This investigation also aimed to identify contextual mediators of HIV/AIDS prevention as well as to explore the benefits of the computer-based nature of the WSWM intervention.

Between Sept.08 and Dec.08, telephone interviews were employed to collect data from 20 young people who had previously completed the WSWM intervention when they were still in many unspecified secondary schools.

1.9 Thesis Structure

The structure adopted in this thesis is: introduction, literature review, methodology, presentation of results, discussion, and conclusion. Overall, this thesis has nine chapters.

Following the introductory chapter is chapter 2 that reviews literature relevant to the subject area of investigation. Specifically, this chapter:

- Examines the state of art of a broad area of the implementation of computer-assisted healthcare interventions. This analysis notes that research in this area reveals that a technology-driven approach is employed that gives less attention to the social and organizational issues that are vital to the successful implementation of such interventions.

- Analyses literature about computer-assisted HIV/AIDS interventions, which affirms that there are significantly few empirical studies that have been conducted focusing on computer-assisted HIV/AIDS interventions.

- Reviews the models/theories commonly used in health education and promotion. This analysis notes the absence of qualifying theory that can appropriately address the implementation and the effects of school-based computer-assisted HIV interventions.

- Analyses literature on school-based sexuality and HIV/AIDS interventions, which indicates that such interventions often face a variety of social and organisational challenges. There is also a lack of rigorously evaluated studies regarding school-based HIV interventions in developing countries, especially those that are computer-assisted.

- Reviews the specific contexts of HIV/AIDS in Uganda, and presents the intervention investigated by this study. This analysis indicates the severity of HIV/AIDS among young people in Uganda. It is also notes that many of the school-based HIV interventions implemented in Uganda are often donor-funded pilot projects, which, for political and economic reasons are hardly evaluated.

Chapter 3 presents and justifies the methodology employed in this research. In particular, this chapter includes:

- Giving a brief overview of investigations, data collection sites, and the research strategy employed.

- Presenting and discussing investigation 1 (quantitative controlled before-after intervention study) including a discussion of how quality was ensured in this investigation.

- Discussing and justifying the use of the qualitative case study design and abductive approaches.

- Discussing investigation 2 (qualitative cross-case analysis study) including demonstrating the design procedures employed in this investigation: gaining access to and selection of the case studies, selection of participants, data collection and data analysis.

- Discussing investigation 3 (qualitative out-of-school multiple case study) including demonstrating design procedures employed in this investigation: gaining access to and selection of the case studies, selection of participants, data collection and data analysis.

- Discussing how quality was ensured in the qualitative investigations.

- Justifying the use of mixed qualitative and quantitative methods in this research.

Chapter 4 presents the findings from investigation 1 (quantitative controlled before-after intervention study):

- This chapter documents the results of the quantitative before-after intervention study that assessed the level of significance of the impacts of the intervention on the in-school young people's sexual behaviours, knowledge of HIV/AIDS, attitudes and perceived self-efficacy.

- To improve the reliability of the extent to which the identified impacts can be attributed to the intervention, in addition to assessing the intervention group, a 'similar' group (comparison/control group) that never had the intervention is also assessed at both pre-test and post-test.

Chapter 5 describes investigation 3 (qualitative out-of-school multiple case study):

- This chapter documents the impacts of the WSWM intervention on out-of-school young people's sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy.

  Investigating the out-of-school young people provided the opportunity to explore how young people practically put to use the knowledge and skills gained from the intervention to deal with real world challenges of HIV/AIDS.

- The chapter also demonstrates contextual mediators that shape young people's adoption of HIV preventive measures.

- The chapter the explored the benefits of the computer-based nature of the WSWM intervention.

Chapter 6 and chapter 7 present findings from investigation 2 (qualitative cross-case analysis study). For the purposes of identification, participants involved in the qualitative cross-case analysis study were divided into two categories. These categories are the internal and the external stakeholders:

- Internal stakeholders were involved in the intervention from within the contexts of the schools e.g. heads of schools, intervention teachers, and young people. Chapter 6 documents the cross-case analysis of results from internal stakeholders of the CIS and the AIS.

- External stakeholders were participants whose relationship within the intervention was outside the contexts of the school. These were parents of CIS and AIS and the intervention leaders who had visited both the CIS and the AIS.

Chapter 7 presents results from cross-case analysis of external stakeholders. The views of external stakeholders further explained why the intervention was completed or abandoned.

Chapter 8 consolidates and discusses the key points that emerged from the previous three investigations, and compares and contrasts the findings with extant literature:

- The chapter consolidates and discusses qualitative and quantitative impacts of the WSWM intervention that emerged from both the in-school and the out-of-school young people. Findings are summarised in a framework showing the impacts/benefits of the intervention and the mediating contextual influences.

- It consolidates and discusses qualitative findings regarding mediators influencing the implementation of the intervention from both the internal and the external stakeholders of the CIS and the AIS. Findings are summarised in a framework showing mediators for the implementation of the WSWM intervention.

Chapter 9 is the last chapter in this thesis that:

- Demonstrates the theoretical and methodological contributions of this study.

- Discusses implications for practice and research. The implications for practice and research are summarised into a strategic framework that can be used to guide the integration of HIV/AIDS education in schools.

- Outlines the limitations of this research and concludes this research.

CHAPTER 2: LITERATURE REVIEW

1. Introduction

This chapter analyses literature that is relevant to the present study. Section 1 examines the state of art of a broad area of the implementation of computer-assisted healthcare interventions, and analyses literature about computer-assisted healthcare interventions for behavioural change. Section 2 reviews the models commonly used in health education and promotion, and examines literature about computer-assisted healthcare interventions in developing countries. Section 3 reviews literature on school-based sexuality and HIV/AIDS interventions. Section 4 analyses the specific contexts of HIV/AIDS in Uganda, including a presentation of the intervention investigated by this study, and section 5 concludes with a summary of the literature reviewed.

1.1 Technical versus Social and Organisational Challenges in Computer-assisted Healthcare Interventions

Although technology adoption is a relatively mature field in other areas, the field is relatively new in the health industry (Schaper and Pervan 2004). Moreover, the widely known Technology Acceptance Model (TAM) (Davis 1989), is reported to have limited application in health (Chau and Hu 2002). The work of other researchers (e.g. Dixon and Stewart 2000; and Chismar and Wiley-Patton 2002) generally confirms the limited application of TAM in the adoption of computer-assisted healthcare interventions. As Chau and Hu (2002) argue, healthcare may have fundamental differences from business users and students who are normally used to test technology adoption models. Similarly, Lucas and Spitler (1999) urge that in a real field setting, organisational-cultural norms are better predictors of technology adoption than the TAM' s famous construct of Perceived Usefulness.

Organisational challenges include values, perceptions and expectations common to an organisation (Burnes 2000; Munir and Kay 2003). A variety of empirical studies e.g. (Hostgaard 1995; Brender et al 2000; Meyer and Goes 1988; Hare 2006) have demonstrated that organizational incompatibility is the major cause of low technology adoption rates in healthcare. Issues of service integration, given the complexity of healthcare, have been of great concern (Hanseth et al 1995; Lock 1996; Iakovidis 1998; Harstwood et al 2001; Jenkings 2006; Young 2007).

Developers and implementers of such interventions need to take into consideration the role played by the interconnection of a network of people and technology, for these interrelations are essential in producing the desired output (Bassard 1999; Coulter and Ellins 2006).

Without paying proper attention to the organisational values prevailing among the potential adopters, the uncertainties associated with the use of computer-assisted healthcare interventions can constrain its adoption. For instance, empirical evidence (Hofstede 1991) affirms that some organisational values tend to avoid the ambiguity and unpredictability associated with organisational innovation. Gerwin (1988) reports that the perception of uncertainty associated with computer-assisted innovations is the major source of adoption resistance. Computer-assisted healthcare innovations are no exception to Hofstede's and Gerwin's contentions; for instance, in a study of diffusion of computer-assisted healthcare interventions in 25 hospitals, Meyer and Goes (1988) contend that negative perceptions about technological innovation significantly contributed to the poor reception of these interventions. Other studies e.g. Ven and Rogers (1988) associate failures of adoption of computer-assisted healthcare interventions with perceptions of negative consequences of these interventions.

Evidently, many of the failures of computer-assisted healthcare interventions are related with social-organisational incompatibilities.

Yet, numerous studies (e.g. Brender et al 2000; Munir and Kay 2003; Toussaint et al 2000; Day and Norris 2006) contend that social and organizational compatibility issues have been insufficiently investigated in the development and implementation of computer-assisted healthcare interventions. It is thus no surprise that computer-assisted healthcare interventions have a long history of failed implementation (Kaplan 1987; Heeks et al 1999; Kaplan 2001). The major attributing mediators for this repeated failure are social-organisational in nature rather than technical (Young 2007; Brender et al 2000; Hare 2006).

Studies (e.g. Bangert and Doktor 2002; Hofstede 1991) affirm that there is a need to match the design of computer-assisted healthcare interventions with the values and needs of the organisations and societies that these interventions are meant to serve.

Investigating the meaning attached to technology from the perspectives of potential adopters can generate insights that can be used to devise real time responses to possible contingencies. Such an approach results in interventions that are in harmony with the organisation, rather than interventions that contradict the values prevailing in an organisation.

1.2 Overview of Computer-assisted Healthcare Interventions in Developing Countries

Computer-assisted healthcare interventions can play a vital role in improving the health of citizens of developing countries (Chertley 2006). Such technologies can improve the efficiency and quality of care (Rotich et al 2003) given the shortage of health professionals and prevalence of many diseases. Computerised healthcare interventions can deliver healthcare services with minimal labour force and in the shortest possible time. However, unlike the industrialised nations, many low resource countries have not yet embraced the use of IT in processing, retrieving and exchanging health information, mainly due to poor technological infrastructures and skills.

Figure 1 below indicates a significant digital gap between the rich nations and poor countries regarding use of the internet:

Figure 1: The digital (internet) gap between rich and poor countries (Heeks 2010)
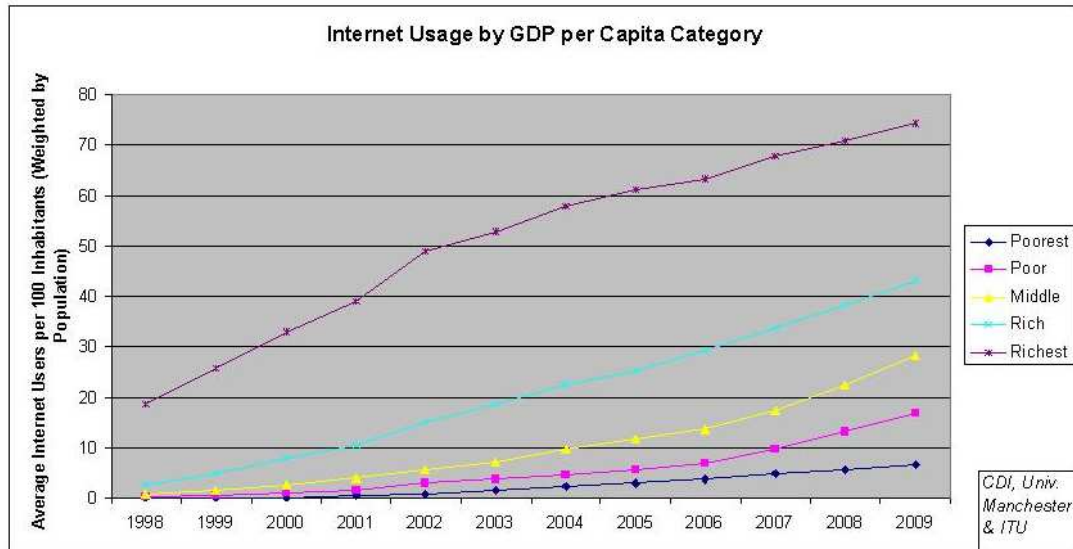
As figure 1 above indicates, the digital gap between poor countries, which include African countries, is continually widening. Generally, the application of computer-assisted healthcare interventions in developing countries is still in its infancy and in some remote areas is generally infeasible due to poor infrastructure (Siika et al 2005; Edejer 2000). Major constraining technical challenges include lack of computers, low bandwidth, network unreliability, low internet accessibility, and lack of reliable electricity.

Low levels of computer literacy affect the ability of health professionals to actively participate in the application of computer-assisted healthcare interventions and make sense of the data included in such interventions (Siika et al 2005). Despite the existence of a huge body of knowledge concerning treatment and management of diseases on the internet, such a knowledge base would still be underutilised due to the limited technological skills of health professionals and low levels of computer and health literacy levels among the health consumers in the developing world.

Issues of affordability, acceptability and sustainability of computer-assisted healthcare interventions applications in developing countries remain challenging (Arunachalam 1999). Even the use of simple low cost store and forwarding technologies (e.g. digital cameras) is still unaffordable by the majority of developing countries.

The applications of less sophisticated email web support services that provide education and support through web discussion forums, interactive quizzes (Zolfo et al 2006) would be instrumental in providing guidelines for managing HIV/AIDS in developing countries. However, as was experienced in the case of the HIV/AIDS telemedicine intervention (Zolfo et al 2006), those that are on the wrong side of the digital divide (e.g. the rural populations and other hard-to-reach population including health professionals) are denied the opportunity to access healthcare services and information.

The use of low cost, low power mobile computers powered by locally fabricated solar panels (e.g. Uganda Health Information Network 2006) presents opportunities for utilising computer-assisted healthcare interventions in developing countries. For instance, due to their widespread adoption, mobile phone services, e.g. voice messaging and Short Messaging Texts (SMS), can play a significant role in improving healthcare in Africa. The low costs and mobility associated with mobile phones could explain their wider adoption; for instance, Ahonen (2008) affirms that globally, 3.3 billion people have mobile phones compared to 2.5 billion people that use the internet.

This popularity makes mobile phones suitable to reach traditional underserved populations with information necessary to improve their health. For instance, compared to other forms of technology such as the internet, mobile phones reduce the digital divide since they are widely spread between populations (Forestier et al 2002). The widespread adoption of mobile phones in developing countries promises to reduce the global digital divide between the rich and poor nations of the world.

Figure 2 below shows that compared to the digital gap between the poor and rich nations regarding internet and broadband, the digital gap in the context of mobile phones is rapidly reducing.

Figure 2: Internet, mobile and broadband digital gap between the richest and poorest countries (Heeks 2010)
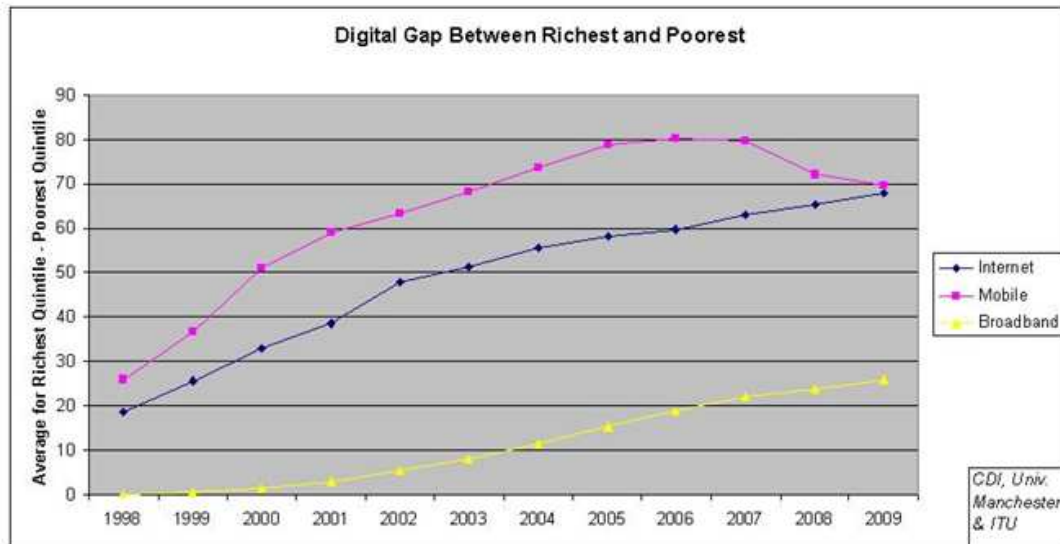
As shown in figure 2 above, since the year 2000, the digital gap in internet and broadband between the rich and poor nations continues to increase, while that of mobile phones has been reducing to the extent that it is almost closing up.

Mobile penetration has a digital lag of less than 10 years while that of internet penetration is between 14-15 years (Heeks 2010). This implies that it will take less than 10 years for the adoption of mobile phones in poor countries to reach the adoption level in the rich nations, and between 14-15 years for the penetration of the internet.

The use of open source technologies and outsourced technological healthcare services (e.g. radiological and haematological interpretations and diagnosis from developed countries to low resource countries) can be a workable cost-saving strategy (Iluyemi and Briggs 2009). But still, given their limited applications, the effectiveness of open source and the feasibility of outsourcing healthcare services in the developing countries remain unknown.

In addition, the health outcome benefits and mediators that are responsible for effective adoption of computer-assisted healthcare interventions applications in developing countries remain largely unknown. For instance, in an evaluation of a computerised health information intervention in South Africa (Littlejohns et al 2003), the authors reported no significant differences in the quantifiable health benefits analysed. Although a relatively large number of computer-assisted healthcare interventions have been evaluated in the developed world, the outcomes of such evaluations cannot be assumed to be generalised to the developing world given the differences in context, culture and technological infrastructure.

Overall, there have been limited applications and limited independent evaluations of the computer-assisted healthcare interventions in developing countries (Lucas 2008). Even the modest computer-assisted healthcare interventions implemented in developing countries are mainly donor-funded pilot interventions, which are hardly evaluated.

1.3 Computer-assisted HIV/AIDS Interventions

Computer-assisted healthcare interventions aimed at changing people's health behaviour raise a challenging issue of leaving out disadvantaged populations and individual members of the population who are not interested in accessing health-related information from the internet (Bull et al 2001; Glasgow et al 2007). There are also concerns of the accuracy of information produced and exchanged among users (Adams and de Bont 2007), the capability of users to recognise and make attempts to rectify the wrong information obtained (Coulson and Knibb 2007) and the extent of trust attached to internet-based health information (Moturu et al 2008).

Despite the challenges, compared to traditional health education interventions, behavioural change computer-assisted healthcare interventions are reported to be advantageous.

For example, they can be sources of social support and coping strategies by both peers and experts (Wikgren 2003; Stout et al 2001), offer unlimited accessibility of health information (Coulson and Knibb 2007), enables intervention tailoring (Chiauzzi et al 2003; Kroeze et al 2006; Lustria et al 2009), empower consumers to be actively involved in their health and wellbeing (Norman et al, 2008) and ensure confidentiality of the information (Rhodes 2004).

Using computers offers a significant role in tailoring sexual and HIV interventions according to user needs and preferences (Chiauzzi et al 2003). The opportunity to tailor the intervention according to the needs of the priority audience is vital in HIV intervention, given that HIV/AIDS interventions targeting young people have long been recognised as failing to meet their needs (Kelly and Parker 2000). Though often neglected, adolescents have differing sexual needs and preferences depending on a range of mediators, including demographic details such as age and gender and individual characteristics e.g. level of sexual activity, self-efficacy in adopting HIV/AIDS preventives, HIV/AIDS status, stages of change, level of HIV/AIDS vulnerability and level of sexual health and HIV/AIDS information needs.

In addition, according to Bandura's self-efficacy, individuals are more likely to change their behaviour if they are motivated to change their behaviour, have confidence to perform the behaviour and believe in obtaining the desired outcome by performing the behaviour (Bandura 1988). Bandura notes that self-regulatory skills are prerequisites for developing confidence in adopting health behaviours, and that interactive computer technologies are instrumental tools in developing self-regulatory efficacy.

The literature on the effectiveness of computer-assisted behavioural change interventions reports some success in increasing knowledge (Coumba et al 2005; Murray et al 2005; Campbell et al 2004), changing attitudes and coping self-efficacy (Wikgren 2003; Stout et al 2001; Gustafson et al 2001; Richie et al 2000).

However, computer-assisted behavioural change interventions are reported to have limited success in changing behaviour and yielding quantifiable health benefits (Littlejohns et al 2003; Hersh et al 2001; Campbell 2004; Eysenbach et al 2004; Wofford et al 2005; Howells et al 2002).

Computer-assisted healthcare interventions can be a significant tool in fighting HIV/AIDS by addressing the challenges of confidentiality, stigma and discrimination associated with face-to-face sexuality and HIV/AIDS education (Kalichman et al 2002; Levine et al 2008). Computer-assisted healthcare interventions can be instrumental in anonymously conveying the otherwise taboo messages of HIV prevention. For instance, Coumba et al (2005) report that female adolescents in African countries; including Uganda are instead resorting to the internet to search for the otherwise denied sexuality and HIV/AIDS information.

Although there are issues of accessibility of modern forms of technology, e.g. internet, among the hard to reach populations (Payton and Kiwanuka-Tondo 2009), the use of low cost technologies, e.g. mobile phones, can be significant tools in fighting HIV/AIDS. Using mobile phones can address the challenges of accessibility, confidentiality and stigma associated with face-to-face HIV/AIDS education (Levine et al 2008), motivate people to carry out HIV testing and reduce the constraints of geographical and mobility barriers (Ramey 2007), and can reduce digital divide due to their low cost and wide spread adoption (Ahonen 2008; Forestier et al 2002). Noteworthy however is that Bull et al (2001) report concerns among the HIV/AIDS community about the reliability of HIV prevention information created and exchanged via chat rooms.

Although there are significantly few empirical studies focusing on computer-assisted HIV/AIDS interventions, the modest studies conducted in this area show some positive benefits.

There is evidence that computer-assisted HIV/AIDS interventions increase participants' knowledge of HIV/AIDS (Lou et al 2006; Keine et al 2006; Halpern et al 2008), attitudes and self-efficacy (Gustafson et al 2001; Ashton et al 2005; Coursaris et al 2009). However, the efficacy of such interventions on changing sexual behaviour remains inconclusive (Bull et al 2009; Wantland et al 2004).

Compared to general interventions, individually tailored computer-assisted HIV/AIDS interventions are likely to be more effective (Flicker et al 2004; Wantland et al 2004).

Generally, despite the promising benefits, the application of computer-assisted HIV/AIDS interventions has been given inadequate attention, particularly in developing countries where the pandemic is widespread (Payton and Kiwanuka-Tondo 2009). Moreover, the social and economic burdens created by HIV/AIDS (e.g. carer burdens on affected families, lost output in productivity and burdens on healthcare facilities) are sufficiently severe to justify the need for targeting research and intervention to the prevention of HIV/AIDS.

Murray and colleagues' systematic review of studies that assessed the effects of computer-assisted health communication also pointed out the limited nature of the field in the developed world, and they argue for the need to explore the use of computer-assisted healthcare interventions in developing countries (Murray et al 2005).

Due to limited and unreliable internet connections, Africa, the continent with the highest prevalent rates of HIV/AIDS, relies heavily on traditional forms of information technology, e.g. radio and television, to disseminate AIDS information (Forma, 2004). Thus, in introducing computer-assisted HIV interventions in schools in Uganda, issues of technology readiness cannot be overlooked.

Overall, there are significantly very few empirical studies that have been conducted focusing on the use of computer-assisted interventions for HIV/AIDS prevention. Some of these studies include:

The investigation of the impact of the internet in providing sex education to adolescents in China reports an increase in knowledge of HIV/AIDS (Lou et al 2006). However, since the intervention was entirely knowledge-based, the practical applications of the reported knowledge to the actual adoption of HIV preventive sexual behaviour cannot be assumed.

Although the evaluation of a Comprehensive Health Enhancement Support System (CHESS) for HIV/AIDS patients (Gustafson et al 2001) showed improvements in negative emotions, social support and participation in healthcare, the authors report that these improvements could not be maintained three months after the intervention was removed.

O'Grady's pilot study of the use of a web-based video workshop by the HIV/AIDS community reports significant user resistance (O'Grady 2006). The intervention was never used by participants, to the extent that the research objectives had to be altered. Data was instead collected from only six participants, all of which indicated a lack of interest in using the interventions. This worst case scenario stresses the importance of exploring user perceptions and information needs of the targeted population rather than implementing interventions that are either partially used, or even never used at all. Although O'Grady's intervention was not implemented in developing countries, the economic costs of failure of computer-assisted healthcare interventions can create huge strains on the already over-burdened economies of developing countries.

In addition, Mitchell and colleagues' process evaluation of drama, video, community educators and leaflets as forms of community-based HIV/AIDS education in Uganda reported resistance from community members (Mitchell et al 2001).

Particularly, parents had negative perceptions as they instead expressed their concerns that such interventions instead 'preach the gospel' of prostitution to their children. Related to this point, Payton and Kiwanuka-Tondo (2009) affirm a lack of incorporation of adopters' cultural values in the design and implementation of computer-assisted HIV/AIDS interventions. Thus, exploring people's perceptions of introducing a computer-assisted sexuality and HIV/AIDS intervention will be vital in investigating how various stakeholders interpret the intervention and how their concerns can be incorporated in the design and implementation of such an intervention.

Other forms of computer-assisted HIV/AIDS interventions include the provision of HIV/AIDS information and testing referrals in chat rooms (Benotsch et al 2006; McFarlane et al 2005). However, most HIV/AIDS chat room interventions are never evaluated, apart from a few attempts that have limited their evaluation to merely counting the number of site hits (Benotsch et al 2006).

Nguyen and colleagues' systematic review of evidence of the effectiveness of internet-based patient education and support interventions, in which the HIV/AIDS community was among the population studied, stresses the importance of investigating the needs and perceptions of the targeted population before such interventions are implemented (Nguyen et al 2004). Other researchers of computer-assisted HIV/AIDS interventions further stressed the need for exploring the preferences of the targeted population include Siika et al (2005) and O'Grady (2006). The importance of understanding the needs of target populations and community involvement is also stressed by other HIV intervention reports which are not necessarily based on computers (Beeker et al 1998; Campbell and Williams 1999; Janz et al 1996). These authors contend that such an approach is crucial for obtaining community support and development of culturally accepted interventions.

However, as recently cautioned by Vijaykumar (2007), HIV/AIDS interventions are still being designed and implemented without input from the targeted population.

Evidently, some people are ambivalent about the usefulness and relevance HIV interventions especially those that are computer-based. Investigating people's perceptions and experiences of HIV interventions can generate meaningful insights about the intervention impacts, as well as the motivational and inhibiting mediators for the adoption of computer-assisted HIV/AIDS, thus the need for this thesis.

2. Overview of Models/Theories used in Health Interventions

There is a variety of models and theories used in health promotion and education. These approaches can be divided into broad categories; the single level oriented models, which mainly intervene at one level (e.g. at individual level) and the multilevel oriented models which intervene at both individual and contextual levels.

Single level oriented models include social marketing (Kotler and Roberto 1989) the AIDS Risk Reduction model (Catania 1990), Social Learning Theory (Bandura 1986), the Theory of Planned Behaviour (Ajzen 1988), the Locus of Control Theory (Wallson 1978) and the Health Belief Model (Ronsenstock et al 1974). Examples of multilevel models are ecological models for health promotion (McLeroy 1988).

A variety of researchers argue that individual-oriented behavioural change theories treat behaviour as a rational decision making process without paying attention to the role played by social and environmental contexts (Diclemente et al 2008; Evans and Lambert 2008; Wallson 2005; Exner et al 2003; Wingood et al 2000; Airhihembuwa and Obregon 2000; UNAIDS 1999a; Amaro 1995; Auerbach et al 1994; Bunnell 1996). However, whereas this individualistic conceptualisation of behaviours may be applicable in other health behavioural aspects, sexual behaviours are influenced by interplay of both individual and contextual mediators.

This is because, sexual behaviours require commitment from more than one individual (O'Leary and Jemmott 1995), may not be planned for in advance (Fisher and Fisher 2000), are subjective in nature (Exner, 2003), and are influenced by variety of contextual and social-cultural mediators (Amaro and Raj 2001; Amaro 2000).

The need for broader interventions for HIV/AIDS prevention is also recognised by the UK's AIDS strategy for developing countries, which posits that:

> *"Successful HIV prevention is about enabling individuals, couples and communities to make healthy choices about personal aspects of their lives – particularly sexual behaviour. These are not just based on information and rational choice; they are also influenced by complicated drivers of human action, including gender roles, inequality, norms around sexuality..."*(DFID 2008).

Overall, for health promotions to be effective, interventions should not only focus on one level but intervene at both individual level and contextual level. This review gives an overview of three of the relevant single level models which are most relevant to this study; these models are social marketing, AIDS Risk Reduction model and theory of gender and power. This section also gives a brief overview of the ecological (multilevel) model of health promotion. The current state of application of these models in the context of the two main levels of intervention (single level and multilevel) is discussed below:

2.1 Single Level Models

2.1.1 Social Marketing Model

Kotler and Roberto (1989:24) define social marketing as:

> "a social change technology involving the design, implementation and control of programs aimed at increasing the acceptability of a social idea in one or more groups of target adopters."

The primary aim of social marketing interventions is to change behaviour.

To achieve behavioural change, social marketing employs marketing technologies to analyse, design, implement and evaluate behavioural change interventions. As further demonstrated below, these marketing strategies include consumer analysis, audience segmentation, market analysis, channel analysis, exchange theory and marketing mix (Kotler and Roberto1989).

Social marketing has considerable support as an effective strategy in the promotion of health behaviours. For example, it has been extensively used in smoking prevention campaigns (Worden et al 1988); has proved effective in the prevention of unwanted pregnancies (Population Reports 1980); ensured effective accessibility and consumer satisfaction in public health promotion (Lefebvre and Flora 1988); improved levels of childhood immunisation (Carroll and Van Veen 2002); and audience segmentation encouraged African-American women to have HIV/AIDS tests (Lee et al 2006).

Given the intensity of health problems in developing countries, social marketing has been extensively used in a variety of health-related interventions aimed at either promoting the rejection of unhealthy behaviours or/and promoting the acceptance of healthy behaviours. For instance: the integration of social marketing principles with community and national level participation was successful in rendering drug abuse socially unacceptable in Malaysia (Yusoff 1982), while the application of social marketing principles integrated with multi-sector involvement, mobilisation of political will and deployment of volunteers (local leaders and health promoters) increased immunisation coverage in Colombia (Hurtado 1990). In addition, contraceptive social marketing increased the use of contraceptives in the Dominican Republic (Green 1987); a social marketing-based campaign increased the use of Kinga condoms in Kenya (Black and Harvey 1976); and the application of social marketing campaigns combined with the education of mothers by community leaders and health workers resulted in the adoption of good feeding practice and healthy babies in Indonesia (Manoff Group Inc 1989).

As acknowledged by Kotler et al (2002), social marketing can be used to facilitate acceptance and behavioural adoption among the targeted audience.

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Given the widespread community resistance regarding HIV interventions targeting young people in Uganda (e.g. see Kinsman et al 1999), applying a social marketing approach to the adoption of an HIV/AIDS intervention could be a valuable resource in improving the acceptability and effectiveness of the intervention.

Social marketing can also be used at a policy level to: (1) promote social polices (e.g. see Yusoff 1982); (2) influence policy makers to adopt environmental and social sensitive approaches in the promotion of health behaviours (e.g. see Siegel et al 1998). In this regard, such an approach can be used to influence the formulation and implementation of policies for effective implementation of HIV interventions.

Social marketing's principle of consumer analysis can provide useful information about stakeholders' perceived benefits, costs and barriers in the adoption of the intervention (Kotler et al 2002). Social marketing posits that people are likely to adopt a healthy behaviour when they perceive fewer costs associated with its adoption. People are likely to adopt a healthy behaviour if they perceive positive benefits from its adoption. Other behavioural scientists (e.g. Azjen and Fishbein 1980; Bandura 1986; Rosenstock et al 1988) also acknowledge the influence of perceived benefits on an individual's behavioural adoption decisions. This suggests a need to investigate stakeholders' expectations of behavioural interventions as their expectations can influence their decisions to adopt or not to adopt such interventions.

To minimise the associated costs of intervention adoption, social marketing suggests giving incentives to priority audience and intervention supporters in order to motivate them to adopt healthy behaviour (e.g. see Denovan and Henley 2003; Hill 2001; Dolan et al 2010; Kotler et al 2002). Since delivering the intervention may be seen as extra load to intervention teachers who also have to also carry on their normal academic teaching workloads, their willingness and commitment to participate in the intervention cannot be taken for granted.

Social marketing's principle of market analysis and segmentation can be fruitful in identifying relatively homogenous sub-populations regarding the adoption of behavioural change interventions (Kotler and Roberto 1989). This principle can be helpful in categorising intervention adopters according to their varying perceptions, readiness to adopt the intervention, and their HIV needs and preferences. Tailoring interventions according to user needs can result in implementing interventions that better fulfil the needs and preferences of different population groups (Lefebvre and Flora 1988).

Social marketing's principle of market analysis also includes identification and dealing with competing behaviours or circumstances that interfere with the adoption of the recommended behaviour among the priority audience (Hastings 2003). Hastings points out that the assessment of possible sources of competition is crucial in designing health interventions that can compete favourably with their rivals.

Despite its potential usefulness, several social marketing and communication scientists (Hastings et al 2000; Andreasen 2003; Ling et al 1999) have noted their concerns about the model's individual-blaming behavioural change approach that ignores institutional and societal contexts that powerfully influence the individual's behavioural adoption. In the context of HIV interventions, the importance of this must not be underestimated, given that researchers (e.g. Yoder 1997; Lievrouw 1998; Airhihembuwa and Obregon 2000) stress the importance of considering the social context in the design and implementation of HIV prevention interventions.

As suggested by Ling et al (1992), combining social marketing principles with community education can be an instrumental strategy in shaping behavioural adoption decisions. Besides, evidence e.g. Kalichman (1998) shows that HIV community level interventions are not only influential in fostering individual uptake of HIV/AIDS preventives, but also create a social environment supportive of safer sex.

Given the persistently reported community resistance (e.g. see Mitchell et al 2001) about the adoption of HIV/AIDS interventions, a multilevel intervention that integrates individual level interventions with community sensitisation and participation is indispensable.

In addition to its inappropriate attention to contextual mediators of behavioural adoption, social marketing does not specify relevant HIV-related constructs that should be targeted in evaluating interventions. As discussed below, the AIDS Risk Reduction Model (ARRM) (Catania 1990) fills this gap by specifying the outcome measures that should be the point of focus during the evaluation of HIV interventions.

2.1.2 AIDS Risk Reduction Model (ARRM)

Developed by incorporating some constructs of the Health Belief Model (Ronsenstock et al 1974), Diffusion of Innovation Model (Rogers, 1995) and Social Cognitive Theory (Bandura 1986), the AIDS Risk Reduction model (Catania 1990) provides a basis for understanding motivations and inhibitors regarding the adoption of HIV/AIDS preventive behaviours.

As further discussed below, the ARRM model suggests several mediators that influence the adoption of HIV/AIDS-related health behaviour, including knowledge of risk behaviours, perceived vulnerability, social norms, sexual partner communication and self-efficacy.

Knowledge of HIV/AIDS risk behaviours

According to the ARRM, individual awareness of HIV/AIDS-related behaviours and knowledge of HIV prevention strategies can influence behavioural adoption decisions. Reliable HIV knowledge can potentially help to clear-out misconceptions associated with ways of HIV transmission and prevention. However, the literature provides mixed findings about the application of HIV/AIDS knowledge in the adoption of HIV preventive methods.

For instance, Bazargan et al (2000) report difficulties in practical translation of HIV knowledge into HIV prevention practices, while Mckusick and Coates (1989) affirm people's involvement in risky sexual behaviours despite having the knowledge of HIV preventives.

Despite the persistently reported insignificant contribution of knowledge to the prevention of HIV, such knowledge can be vital in creating awareness of HIV, and as Prochaska and DiClemente (1983) acknowledge, being aware of HIV can motivate individuals to start considering taking precautions in order to avoid HIV infections. Knowledge of HIV is vital because, given the taboo-related nature of HIV/AIDS and public denial; young people in Africa are still living with dangerous misconceptions about the spread and prevention of HIV/AIDS. For instance, in 2001, half of the teenage girls in Sub-Saharan Africa believed that healthy-looking people are free from AIDS, (UNAIDS 2001). Some young people still associate HIV/AIDS with witchcraft and mosquito bites, while others believe that eating fish can cure HIV/AIDS (UNICEF and UNAIDS 2002).

Perception of HIV/AIDS vulnerability

ARRM posits that the extent to which an individual feels at risk of getting HIV/AIDS influences the adoption of HIV preventive measures. Given that people can be HIV/AIDS positive and still look healthy, many people do not seem to care about HIV severity or even feel vulnerable. Perception of vulnerability, as Boyer et al (2000) and Stevens (1998) affirm, plays a significant role in motivating young people to avoid risky sexual behaviours.

The influence of social norms

As posited by the ARRM, values and beliefs prevailing in a certain society influence people's behaviour in adopting HIV preventive measures. As stressed by Innovation Diffusion Theory (IDT) (Rogers 1995), it is important that innovation is compatible with the existing values and beliefs of potential adopters. Varieties of HIV preventive studies (e.g. Clarke 1995; Holtgrave 1995; Janz 1996) affirm that culture compatibility is a critical element in successful HIV/AIDS interventions.

Other researchers (e.g. DiClemente et al and 2008); and Power et al 2004) also stress the importance of tailoring HIV/AIDS interventions to the cultures and needs of the targeted population. Investigating the extent to which HIV interventions are compatible with community values and beliefs can generate insights about contradicting issues to be dealt with.

Self-efficacy

Adopted from Bandura's Social Cognitive Theory, the ARRM's concept of self-efficacy is concerned with belief in one's ability to successfully adopt the intended behaviour (Bandura 1986). Bandura affirms that the more an individual is confident in executing the behaviour, the more the likelihood of adopting it. In HIV prevention, self-efficacy includes the extent to which young people believe in themselves that they can successfully adopt HIV/AIDS preventive behaviour e.g. assertive sexual communication and condom negotiation skills. Empirical studies (e.g. Burns 2005; Rosenthal 1991) report positive correlations between high levels of self-efficacy in safer sex practices and uptake of HIV preventives.

The studies of Paulussen et al (1994), Turner et al (1997) and Power et al (2004) report low levels of self-efficacy associated with sex education. In a longitudinal investigation of community-based heath campaign, Rimal (2000) affirms that utilisation of knowledge of health behaviours depended on individual's self-efficacy beliefs about their ability to adopt health behaviours. This explains the important role played by self-efficacy in adoption of health behaviours, particularly, in closing the knowledge-behaviour gap.

Other studies (e.g. Ogundare 1998; Bianco and Pagani 1988; Oakley1995) affirm that young people are more likely to be confident and open up freely when HIV/AIDS education is provided by peers. Compared to teacher-led HIV education sessions, young people are more receptive to peer-led sessions due to similarities in sexual values, and age group (Stephenson et al 2004). However, the literature reports no difference between the effectiveness of peer-led and teacher-led HIV interventions (Stephenson et al 2004; Kirby et al 1997).

Separating classes into single-sex groups for the entire or part of the intervention curriculum can boost young people's confidence in discussing sexual issues (UNESCO 2009; Kirby 2009).

Generally, given the sensitive and taboo-related nature of sex education, it is important to investigate whether teachers and young people have the ability to confidently and comfortably discuss sexuality issues in class.

For computer-based interventions, adopters need computer self-efficacy in order to be able to use the intervention. Given the low levels of technology in developing countries (Forma 2004), possession of computer skills to deliver and/or use the intervention can have a significant influence on intervention adoption. Rosen (1997) caution that failure to cope with technology may result in adopters suffering from "TechnoStress".

Generally, ARRM tends to take up the *victim-blaming* ideology by mainly focusing on cognitive individual behavioural change approaches. As argued by UNAIDS (1999), over emphasis on cognitive individual behavioural change ignores the social, cultural and economic dimensions that are crucial determinants of sexual behaviours. Although the ARRM may provide a useful frame for HIV prevention, it does not appropriately address contextual determinants of sexual behaviours e.g. it does not address gender-related HIV vulnerabilities and economic constraints. As discussed below, Connell's Theory of gender and power fills this gap by incorporating gender and economic constructs (Connell 1987).

2.1.3 The Theory of Gender and Power

This research adapts Rao-Gupta's definition of gender and sexuality. Rao-Gupta differentiates gender and sexuality by defining gender as "the widely shared expectations and norms within a society about appropriate male and female behaviours, characteristics and roles" and sexuality as "the social construction of a biological drive" (Rao-Gupta 2000).

Connell's social structure theory of Gender and Power (Connell 1987) tries to overcome the individualistic conceptualisation of health behaviours associated by most models and theories of health promotion.

This theory postulates that sexual power imbalances between men and women, the socially condoned sexual norms, and gender-based economic inequalities influence human behaviour; giving men greater power than females in all areas of life, including sexual relationships (Connell 1987).

Empirical studies provide support for application of the theory of Gender and Power in understanding women's health risk mediators. For instance, the theory has been found to be useful in exploring the influence of sexual control and sexual assertiveness on condom use (DiClemente 1995). Although this theory emphasises the influence of gender-biased social norms on increasing women's HIV/AIDS vulnerability, such norms also increase men's vulnerability to HIV/AIDS. The influence of social norms on HIV/AIDS vulnerability of both men and women is as further discussed below:

Social norms and women's vulnerability to HIV/AIDS

Cultural expectations of women's passiveness and ignorance in sexuality constrain their sexual negotiating power, including negotiating for safer sex practices (Phillips 2000; Bowleg et al 2000; Wingood et al 2000; Pearson 2006). Other empirical studies report frequent condom use by young women who can initiate and negotiate condom use with their partner (Sionean et al 2002), who discuss sexual matters with their partner (Crosby et al 2002; Van-der et al 1995), who are not constrained financially or subject to sexual abuse (Evans and Lambert 2008). McGrath et al (1993) report women's perception of being at high risk of getting HIV/AIDS due to their partners' risky sexual behaviours. Piot (1999) reports high prevalence rates of AIDS among married women who claim to have not had any sexual affair outside their marriages.

The persistent disproportionate global increase in feminisation of HIV/AIDS presents a challenge since women can increase HIV devastation by infecting their unborn babies.

Out of 11.8 million young people aged 15-24 living with HIV/AIDS globally, 7.3 of them are young women; in Sub-Saharan Africa, 67% of young women are living with HIV/AIDS, compared to 33% of their male counterparts (UNAIDS and UNICEF 2002).

In Uganda, adolescent girls are 4-6 times more vulnerable to HIV than their male counterparts (Uganda AIDS Commission 2002), and women are highly infected at younger ages (30-34) than men (40-44) (Uganda AIDS Commission, 2008-2009). HIV/AIDS prevalence is higher in women (7.5%) than men (5%), and married/cohabiting/widowed people host the majority of new infections (42%) (Uganda AIDS Commission 2006-2007), mainly due to men's extra-marital practices.

Gender and HIV/AIDS-related studies (e.g. Phillips 2000; and Gavey et al 2001) affirm women's involvement in unwanted sexual encounters due to their inability to assertively refuse such encounters. Women who are more adherent to socially defined sexual norms and beliefs are more likely to experience bad health outcomes (Wingood et al 2000).

In Malawi, over 57% of adolescent girls would rather risk pregnancy and HIV/AIDS than propose the use of preventives to their partners (Helitzer-Allen 1994). Such lack of subjective judgement constrains women's uptake of HIV/AIDS preventives, including abstinence, faithfulness and use of condoms, thus increasing women's vulnerability to HIVAIDS.

Despite these startling figures coupled with persistently reported strong relationship between young women's uptakes of HIV preventive methods and gender constructs, many HIV interventions too often fail to address gender issues in their design and implementation (Exner et al 2003). Without understanding the gender context surrounding individual sexual behaviour, particularly in an African context where gender-related social norms heavily constrain women's sexual behaviour, AIDS will continue to have the "face of a woman" as put by Kofi Annan, the former Secretary-General of the United Nations, on 29th Dec.2002.

As cautioned by O'Leary and Jemmott (1995) and Kalichman (1998), despite the high HIV vulnerability of women in developing countries, their sexual behavioural skills have been inadequately researched.

Few studies have focused on understanding the influence of social norms on the adoption of HIV preventives. Besides, even these few studies have mainly been based in industrialised countries where the concept of gender ideologies may take a different perspective. Scarcity of research on gender-based HIV vulnerabilities has starved policy in many African countries of good practice for tackling the increasing feminisation of HIV. Investigating HIV/AIDS gender-related risks can provide useful information for designing interventions that address the prevailing disproportionate vulnerability and burden of HIV/AIDS on women.

Social norms and men's vulnerability to HIV/AIDS

Although research on the influence of social norms on HIV risk behaviour has mainly focused on women, social norms do not put women alone at a high risk of HIV/AIDS; they also increase men's vulnerability to HIV/AIDS contraction. Gender ideologies shape men's sexual behaviour. These norms include approval of men having multiple partners (Umeh 1997; Fullilove et al 1990), and associating masculinity and heroism with men's sexual experience (Thomson and Holland 1998; Campbell 1995).

Men's belief in a variety of sexual partners greatly exposes them to being infected with HIV. It is not surprising that in Uganda, the married population hosts the highest rate of HIV/AIDS infection, (Uganda AIDS Commission 2006-2007), which is mainly attributed to men's infidelity practices (Bohmer and Kirumira 2000).

Norms of masculinity that praise men for their sexual experience drive young men into unsafe sexual experimentation and practice in order to affirm their sexual experience and prove their manhood (UNAIDS 1999b).

Such norms constrain condom use since condoms are believed to interfere with their sexual performance (Thomson and Holland 1996). Society's expectation of men to be more knowledgeable constrains their capacity to seek information about HIV protection, and contributes to their denial of HIV risk (Rao-Guta 2000).

Despite its relevance and potential advantages in addressing people's HIV risk mediators, the Theory of Gender and Power has only received small attention by HIV preventive researchers and interventionists. Furthermore, even the few existing studies that have employed this theory in exploring HIV/AIDS risk mediators tend to limit its potential by restricting it to understanding women's HIV risk mediators. Much as it can be argued that the HIV vulnerability attributed by gender constructs influences men's and women's sexual behaviour in differing degrees, both men and women are put at risk of HIV infection by the cultural normative beliefs prevailing in a certain society.

Overall, although the Theory of Gender and Power provides useful insights about the social and environmental determinants of human behaviour, the theory ignores individual level mediators that can influence human behaviour. Whereas it is true that an individual can be motivated to adopt healthy behaviour depending on adoption supportiveness provided by society and environment, it is unrealistic to entirely attribute individual behaviour to these externalities.

Overall, it is evident that both individual level and contextual level mediators influence prevention decisions. Yet, none of the models discussed above effectively accounts for both individual and contextual determinants of sexual behaviours.

On one hand, employing individual level models of health behaviour inhibits the understanding of social and environmental drivers of HIV risk-taking behaviours.

On the other hand, emphasising social and environmental determinants of health behaviours ignores cognitive mediators that are significant in the actual adoption of HIV preventives.

This suggests a shift from behavioural change interventions that address one aspect of behaviour to multilevel approaches (e.g. ecological models (McLorey 1988), and Precede Proceed model (Green and Kreuter 1999)) that aim not only at understanding and changing individual behaviours, but also focuses on understanding and changing the social structure and environment that can shape individual behaviours.

2.2 Multilevel Models/Theories

2.2.1 Ecological models for Health Promotion

Ecological models for health promotion suggest a multi-level approach to changing health behaviour by intervening at individual, interpersonal, organisational, community and public policy levels (McLorey 1988).

Individual-level context

McLorey (1988) posits that intervening at an individual level is important in improving individual knowledge, attitudes, adoption intentions, perceived benefits, behavioural lifestyles and skills necessary to adopt healthy behaviour. Applied to the context of HIV, such interventions can aim at influencing individual level mediators e.g. knowledge of the HIV/AIDS prevention, changing individual HIV/AIDS risky behaviours and lifestyles, improving an individual's perception of adopting healthy sexual behaviours and equipping individuals with skills necessary to prevent themselves from contracting HIV/AIDS.

However, intervening at individual level alone does not appropriately address mediators beyond the individual level that can interfere with behavioural adoption (McLeroy et al 1988).

Institutional Context

As posited by the ecological models for health promotion (McLeroy 1988), institutional settings e.g. churches, schools and workplaces can be used as intervention sites for health interventions targeted at the population within these institutional settings.

However, this can raise a lot challenges given that the goals and objectives of these organisations may be different from the goals and objectives of health interventions they host. Successful implementation, adoption and maintenance of such health promotional interventions implemented in institutional settings, depends on management support, staff training, and compatibility with institutional goals and objectives (Shepherd et al 2010; Buston et al 2002; Goodman 1987).

Social-cultural context

McLorey (1988) posits that these include interpersonal level interventions aimed at influencing individual behaviours by changing the norms and values prevailing in an individual's social networks of peers, families, sexual relationships and religious groups. The social structure (e.g. partners, family and peers) influences individual behaviours and beliefs about HIV/AIDS by establishing and enforcing norms regarding sexual behaviour, as well as providing social influence for behavioural adoption. For instance, partner attitude towards condom use influences its adoption (Kelly & Parker 2000; MAYISHA II Collaborative Group 2005), parental attitudes and support influence young people's sexual behaviours (Dilorio et al 2003; Li et al 2000), and peers influence an individual's decisions to adopt HIV preventive measures (Selikow et al 2009; Perkel et al 1991).

Religious influences on the adoption of HIV/AIDS interventions and subsequent HIV prevention measures are also recognized (Mosley 2003; Parker and Kelly 2000).

Overall, social-cultural and religious norms and values, partner attitudes, familial mediators, peer pressure, and economic dependency, can inhibit or facilitate individual efforts at HIV/AIDS prevention. Yet, such contexts are rarely investigated by HIV/AIDS researchers (Airhihembuwa and Obregon 2000; Wallson 2005; Exner 2003; Diclemente et al 2008; Evans and Lambert 2008).

Public/community context

McLeroy (1988) defines a community in three different ways, two of which are relevant to this research; One, as "mediating structures or face-to-face primary groups to which an individual belongs". In this definition, families, churches, social networks and neighbourhoods can be regarded as communities. The norms and values prevailing in ones mediating structures (community), e.g. in families, churches and neighbourhoods, can influence adoption of HIV interventions and subsequent health behaviours. Two, community can be defined as "relationships among organisations and groups in a defined area. In this definition, relationships existing between local health organisations, schools can be called communities.

Relationships and collaborations between schools, local organisations and parent communities can play a significant role in improving the accessibility and acceptability of HIV/AIDS interventions. Such relationships can also be useful in coordinating efforts among local organisations to encourage the acceptability and the diffusion of HIV interventions (Perry 1992). Complementary HIV/AIDS interventions can also be implemented in community settings in order to change social norms that condone risky sexual behaviours (Mavedzenge et al 2010; UNAIDS 2004; Auerbach et al 2009).

Public level context

McLeroy (1988) suggests that this includes putting in place policies for prioritising health interventions, health awareness policies, and national level policies for prioritising implementation of health interventions.

Overall, unlike single level oriented behavioural change strategies, an ecological approach appreciates the interrelationships between individual behaviour and the environmental mediators that can shape individual behaviour. In so doing, the individual's unhealthy behaviour is not seen solely as a personal failure, but rather as a result of intertwined individual and environmental mediators (McLeroy et al 1988). However, although the model gives an overview of the various interventional levels, it does not specify the particular constructs that should be considered in each level and how such constructs should be investigated.

2.2.2 PRECEDE PROCEED model

The PRECEDE-PROCEED model (Green and Kreuter 1999) is reported to be useful in public health contexts when planning, designing, implementing, and evaluating diverse health behavioural change programs such as HIV/AIDS prevention interventions (Darrow et al 2004), breast cancer screening interventions (Mickey et al 1995) and in interventions promoting nutritional habits and physical activity (Slawta et al 2006). It emphasises the practical evaluation of healthcare interventions within communities.

PRECEDE is an acronym for Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis and Evaluation. PRECEDE demonstrates processes that should precede or that are initially conducted before an intervention is implemented. PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development. It details processes that cover the implementation of the intervention.

PRECEDE has four formative phases that adopt a bottom-up approach which logically starts from health needs assessment, to administrative and policy issues that should be addressed in order to implement the intervention successfully.

- The first phase is social assessment, which involves identifying, describing and prioritising health needs, quality of life, priority population and setting the desired output for the intervention.

- The second phase is an epidemiological assessment phase that consists of identifying the distribution (prevalence and incidence rates) and determinants of the health problems identified in the priority population. This includes identifying behaviors, lifestyles, and environmental (e.g. physical, social and economic) factors that interfere with the health of the priority audience and/or that interfere with the desired intervention output.

- The third phase is an educational and an ecological assessment phase that consists of identifying predisposing (individual level), reinforcing (interpersonal) and enabling (environmental and personal) factors that influence the identified health problem (behaviours and life styles).

- The fourth phase is the administrative and policy assessment phase that identifies administrative and policy issues that must be addressed prior to the implementation of the intervention. They include resource assessment, organisational issues, intervention compatibility issues, budge development and allocation, development of intervention implementation time table, and intervention design issues.

The first phase of PROCEED, is the fifth in the model (considering the four phases in the PRECEDE stage). Thus:

- The fifth phase is an implementation phase where the intervention is implemented.

- The sixth phase is the process evaluation phase which evaluates the implemented intervention in order to find out whether the intervention is being implemented as planned. This includes determining whether the predisposing, reinforcing and enabling factors identified in phase 3 are being addressed.

- The seventh phase is the impact evaluation phase that investigates the immediate observable impacts (on behaviours, and environmental factors identified in phase 2) of the intervention on the priority population.

- The eighth phase is the outcome evaluation phase that investigates the long-term effects of the intervention (desired quality of life outcome identified in phase 1 and 2) on the priority audience. If the evaluation finds out that the desired out are not attained, the model repeats all the eight phases again while incorporating the lessons learnt from the first implementation cycle.

3. Overview of School-based HIV/AIDS Interventions

Schools, being centres for many young people of diverse backgrounds, who are at high risk of contracting HIV, can be used as intervention sites for HIV/AIDS prevention. Such interventions are likely to be sustainable due to opportunities to utilise the existing infrastructure, including buildings, management, teachers and formal curricula (Gordon 2008).

Although there is some evidence from previous studies of increased HIV/AIDS knowledge and attitudes from school-based HIV/AIDS intervention (Cheng et al 2008; Jahanfar et al 2009), impacts on sexual behaviour remain inconclusive as the same studies report no differences in young people's behavioural scores. Out of 49 interventions to prevent HIV/AIDS and pregnancy in the United States, only four interventions increased the use of condoms or other contraceptives (Kirby et al 1991). Another review of 26 pregnancy prevention interventions (including 10 school-based ones) reported no effect on sex abstinence, condom use or unplanned pregnancy (DiCenso et al 2002).

It can be argued that the absence of significant effects on behavioural change is a result of limited behavioural-gap due to the shortness of follow-up assessments that are normally allowed by school-based evaluation.

However, results from Walker et al (2006) defeat this argument, since even the increase in condom use reported immediately after the intervention could not be maintained one year after the intervention. In addition, in a long follow-up, Wight et al (2002) report no statistically significant difference on young people's rate of contraception uptake.

Noteworthy, however, is that some reviews indicate that school-based interventions can decrease young people's HIV/AIDS risky behaviour (Lonczak et al 2002; Siegel et al, 1998). Those school-based HIV interventions that reported positive impacts on the young people's sexual behaviour appear to have been comprehensive interventions, which were implemented with emphasis on skills building through role plays and interactive assignments.

Overall, whether or not school-based HIV/AIDS interventions influence young people's sexual behaviour remains highly controversial. In addition, school-based HIV/AIDS behavioural and knowledge evaluation studies have largely been conducted in developed countries, leaving little known about the effectiveness of such interventions in low resource settings, which moreover host the majority of HIV/AIDS infections.

Regarding their implementations, school-based HIV interventions are often constrained by poor timetabling, lack of administrative support, and cultural resistance (Shepherd et al 2010; Smith et al 2003; Buston et al 2002; Kinsman et al 1999; Mitchell et al 2001; Kelly and Parker 2000; and Power et al 2004; Hyde et al 2002; UNAIDS IATT 2006). School teachers' inability to deliver HIV/AIDS interventions without feelings of embarrassment is a widely reported problem, experienced by both poor and rich countries including the USA (Smith et al 2003; Shepherd et al 2010; Power et al 2004; Wight and Abraham 2004; Paulussen et al 1994; Turner et al 1997). Teachers' lack of confidence is normally attributed to inadequate training (Kirby 2009; Smith et al 2003; Buston et al 2002). In addition, Wight and Abraham (2000) report young people's lack of confidence in discussing sexuality and HIV/AIDS issues in a school environment.

Recent meta-analyses persistently caution of a lack of rigorous evaluation of school-based HIV/AIDS interventions in Africa (Magnussen et al 2004; Paul-Ebhohimhen et al 2008), while a recent literature review of 87 studies, 70% of which were school-based, affirms a lack of evaluated sexuality and HIV interventions in developing countries (UNESCO 2009). A review by Shepherd and colleagues also recommends rigorous impact and process evaluation of school-based HIV prevention interventions targeting young people (Shepherd et al 2010).

Apparently, school-based HIV/AIDS interventions are being designed and implemented without input from the targeted population, intervention contents are normally inadequately defined, and barriers to implementation are rarely investigated.

Overall, the effectiveness of school-based sexuality and HIV interventions particularly in developing countries remains unclear. Assessing the effectiveness of school-based sexuality and HIV interventions provides an evidence-based platform upon which the design and implementation of such interventions can be based.

4. Country Specific Context of HIV/AIDS in Uganda

4.1 Background to HIV/AIDS in Uganda

67% of the world's HIV/AIDS infected population lives in Sub-Saharan Africa (UNAIDS 2008). Uganda is one of the sub-Saharan African countries that have been badly hit by the HIV/AIDS pandemic since around 1982. Although Uganda claims HIV rates have declined since the mid 1990's, a report by the Country AIDS Policy Analysis project managed by AIDS Policy Research Center at the University of California San Francisco (Garbus et al 2003) warns that such success claims must be interpreted with caution, since the claims are based on a few urban surveillance sites.

Thus they cannot be generalised to rural areas of the country where 88% of Ugandans live, and yet urban dwellers normally move to rural areas for social support when they become HIV positive.

It is argued that HIV/AIDS prevalence rates are threatening to increase again (Biraro et al 2009). The introduction of anti-retroviral drugs is one of the reasons speculated to have caused this increase in the HIV rate, due to the perception of the availability of HIV/AIDS treatment, which seems to have reduced the severity of the disease. Adams (1995) argues that each person can naturally tolerate some level of risk.

Applying Adams' argument in relation to the introduction of anti-retroviral drugs implies that due to people's natural readiness to tolerate some level of risk, the availability of anti-retroviral drugs causes some people to feel that it is no longer a fatal punishment to get HIV/AIDS. Thus they are no longer bothered with taking precautions. This indicates the need to explore people's perceptions regarding a certain intervention, in order to properly understand the target population in terms of how they perceive the intervention as well as how they tolerate risks. This will assist in developing interventions that limit the emergence of such problematic, counterproductive and compensating behaviours.

In Uganda, HIV/AIDS prevalence is increasing among young people aged 15-24 (Ministry of Health Uganda 2005), mainly due to involvement in risky sexual behaviour. One in four adolescent females aged 15-24 in Western Uganda admitted having sexual relationships with people whom they knew had other concurrent sexual partners (Busulwa and Neema 2000). The practice of multiple sexual partnerships is often associated with cross-generational sex where females are engaged in often unprotected sex in exchange for money and other favours (Bohmer and Kirumira 2000).

In 2001, although 53% of females aged 15-19 knew a source of male condoms; only 36% admitted that they could obtain condoms, while 50% reported using condoms at their last sexual encounter (UDHS and ORC Macro 2001). Unsurprisingly, it is argued that HIV/AIDS risk sexual behaviour among the youth in Uganda started increasing again from early 2000 (Biraro et al 2009).

The wider gap between knowledge of safe sexual behaviour and its actual adoption is of great concern in Uganda (Hulton et al 2000). This suggests a need to evaluate the extent to which HIV/AIDS interventions are effective in narrowing the knowledge-behaviour gap among the youth.

In 2001, 48% of adolescents aged 15-19 were not aware that a healthy-looking person can be living with HIV/AIDS (UDHS and ORC Macro 2001), compared to 41% in 1995 which indicates a decline in knowledge of HIV/AIDS (Uganda Ministry of Finance and Economic Planning and Macro International Inc 1995). Although it can be argued that the difference in these two datasets is due to the difference in geographical coverage, it remains evident that misconceptions about HIV/AIDS still prevail.

A recent report from the Uganda Bureau of Statistics contends that only 33% of young people aged 15-26 in Uganda can correctly identify two HIV/AIDS prevention methods and reject HIV transmission misconceptions. Yet, between 2000-2001, 76% of females and 57% of males aged 15-19 were sexually active (UDHS 2006). These prevailing misconceptions can be stumbling blocks in the fight against the disease. Yet young people in Uganda are still being denied sexual health and HIV/AIDS information due to parents' misconceptions that educating them can hasten the onset of their sexual activity (Mitchell et al 2001). Besides, resistance and de-campaigning of condom advocacy due to the possibility of encouraging promiscuity in Uganda is not uncommon (Slutkin et al 2006).

Out of 11.8 million young people aged 15-24 living with HIV/AIDS globally, 7.3 of them are young women. In Sub-Saharan Africa, 67% of young women are living with HIV/AIDS compared to 33% of their male counterparts (UNAIDS and UNICEF 2002). In Uganda, adolescent girls are 4-6 times more vulnerable to HIV than their male counterparts (Uganda AIDS Commission 2002); and women are highly infected at younger ages than men (Uganda AIDS Commission 2008-2009). HIV/AIDS prevalence is higher in women (7.5%) than men (5%), and married/cohabiting/widowed people host the majority of new infections (42 %), mainly due to men's extra-marital practices (Uganda AIDS Commission 2006-2007).

Despite these startling figures of increased feminisation of HIV/AIDS in Africa, gender-related sexual behaviours have been inadequately researched (Jemmott 1995; Kalichman 1998). The few existing gender-related HIV/AIDS studies have mainly been based in industrialised countries where the concept of gender ideologies may take a different perspective. Scarcity of research on gender-based HIV vulnerability has starved policy in many African countries of good practice in tackling the increasing feminisation of HIV/AIDS. Efforts to address the HIV pandemic in Africa may remain ineffective unless the prevailing social norms that shape individual HIV risk taking behaviours are explored and dealt with. Clearly, without understanding the gender context surrounding individual sexual behaviour, particularly in the African context where gender-related social norms heavily constrain women's sexual behaviour, AIDS will continue to have the "face of a woman".

4.2 School-based HIV/AIDS Interventions in Uganda

In response to the high prevalence of HIV/AIDS in Uganda since the early 1990's, Uganda adopted a comprehensive HIV/AIDS prevention strategy that acknowledged HIV as a threatening problem and involved the government and civil society in advocating Abstinence, Be faithful, Condom use (ABC), encouraged HIV testing & status disclosure, and tackled the gender-related vulnerabilities of HIV (Uganda AIDS Commission 2008; Green et al 2006; STD/AIDS Control Program 2003).

The commonly used electronic modes of communicating messages of HIV/AIDS education and prevention are radio and printed materials.

The increased vulnerability of young people to HIV/AIDS obliged the government of Uganda to consider implementation of HIV/AIDS interventions in schools. However, the only government-initiated school-based HIV/AIDS intervention yielded no improvement in sexual behaviours and attitudes, mainly due to teachers' lack of confidence in classroom discussion of sexuality and condom use, and low prioritisation of the interventions (Hyde et al 2002). The rest of the school-based HIV/AIDS interventions ever implemented in Uganda were mainly donor-funded pilot interventions, which are rarely carefully evaluated for economic reasons. Those that conduct evaluation only demonstrate 'success' stories in their self-published findings. For political reasons results from failed interventions are never published.

Overall, there is a scarcity of lessons learnt from school-based HIV/AIDS interventions, which hinders policy formulation and potential replications and improvements in subsequent computer-assisted HIV/AIDS interventions.

4.2.1 The World Starts With Me (WSWM) Intervention in Uganda

The intervention being evaluated by this study is known as the World Starts With Me (WSWM). The WSWM is a school-based computer-assisted World Population Foundation (WPF)-sponsored sexual and reproductive health and rights intervention, developed by Butterfly Works, SchoolNet Uganda and local experts in Uganda.

First implemented in Uganda in 2003, the intervention has also been adapted to the local context and implemented in Kenya, India, Thailand, Indonesia, and Vietnam. Since 2003, the intervention has been implemented in over 200 secondary schools in Uganda in collaboration with the ministry of education, the SchoolNet Uganda, and the World Population Foundation (WPF).

In 2008, over 8,000 young people in Uganda had accessed the web-based version of the WSWM intervention while 2000 young people had accessed the hard copy version of the curriculum. Figure 3 below shows a scanned copy of country coverage of the WSWM intervention from 2003-2008.

Figure 3: WSWM intervention country coverage from 2003- 2008

The Ministry of Education and Sports in Uganda obliges each school to implement the intervention across the routine curriculum. Schools have to make a formal request to the WPF explaining the prevailing sexual health and HIV/AIDS challenges faced and how the intervention can help. After this, head teachers of successful schools attend a 2-day sensitisation.

In addition, two teachers and peer educators from each successful school attend a 5-day training workshop to equip them with the knowledge and skills required to deliver the intervention. The intervention is then launched at each school.

Although the WSWM intervention team of Sexual Reproductive Health (SRH) Consultants and Teacher Support Specialists (TSS) offer on-going support to schools, schools are expected to devise an effective way of implementing the intervention with maximum impact, and to motivate and facilitate intervention teachers as they guide young people through the 14 lessons of the intervention. The intervention curriculum can be completed in 7-10 months, depending on the amount of time the teachers allocate to delivering the intervention. The intervention is normally implemented from February of each year. In Uganda, the academic year starts in February, thus starting the intervention in February targets to enrol new entrants to senior one and senior five.

Available on the World Wide Web (http://www.theworldstarts.org), on CD-ROM and in printed form, the intervention's overall objective is to improve sexual and reproductive health and rights of young vulnerable populations and to prevent HIV/AIDS. See appendix C7 for an example screen from the WSWM website. The intervention curriculum has 14 lessons, available in both teachers' and young people's online and offline formats. In addition to the 14 lessons of the WSWM website, the intervention has an online counselling and support centre (http://schoolnetuganda.sc.ug/wswmonlinesupport/) that enables the exchange of sexual health and HIV/AIDS-related information between sexual reproductive health counsellors and young people. See appendix C8 for an example screen from the WSWM online support centre.

Delivering the 14 lessons includes the use of virtual peer educators; 'Rose' and 'Davis' as main sources of knowledge, games meant to assist young people to be actively involved and explore options, e.g. safer sex quiz and creative assignments (e.g. about safer sex), story board creation, and sexual harassment role plays.

Other information technology issues include the use of videos to demonstrate different sexual reproductive issues; the use mailing list (wswmteam@schoolnetuganda.sc.ug) to facilitate communication between intervention leaders, teachers and students; the provision of an email address (counselor@schoolnetuganda.sc.ug) to students and teachers who wish to access online counselling services.

Specifically, the 14 lessons of the intervention are as listed in table 1 below:

Table 1: The 14 lessons of the WSWM intervention

No	Lesson Title
1	The World Starts With Me
2	Emotional Ups and Downs
3	Is Your Body Changing Too?
4	Friends and Relationships
5	Boys and Girls, Men and Women
6	Fight for your Rights!
7	Sexuality and Love
8	Pregnancy: 4 Girls and 4 Boys!
9	Protect Yourself: STIs and HIV/AIDS
10	HIV/AIDS: U have a role 2 play 2
11	Love shouldn't Hurt
12	Your Future, Dreams and Plans
13	My Top Tips peer book
14	Exhibition

The WSWM intervention curriculum also embeds issues like self-efficacy, gender roles, sexual abuse and drug abuse. The impact evaluation of this study is mainly focused on two lessons of the WSWM intervention. These are lesson 9 (Protect Yourself: STIs and HIV/AIDS), and lesson 10 (HIV/AIDS: U have a role 2 play 2).

5. Chapter Summary and Research Gaps Identified

A review of the literature about the implementation of computer-assisted healthcare interventions indicates two major critical issues of concern in the implementation of such interventions; the technical issues and the social and organisational issues. This literature indicates that unlike technical aspects, social-organisational issues are normally given less attention in the design and implementation of computer-assisted healthcare interventions, yet social and organisational aspects are germane to the successful implementation of such interventions.

Analysis of the literature about computer-assisted healthcare interventions in developing countries concludes that the application of computer-assisted healthcare interventions in low resource countries is in its infancy and that the effectiveness of such interventions remains unclear.

The analysis of computer-assisted healthcare interventions for behavioural change, including specific applications such as interventions for HIV prevention, contends that there is limited research about the adoption of such interventions in the context of low resource countries, including Uganda. There are significantly few empirical studies that have been conducted focusing on the use of computer-assisted HIV/AIDS interventions in developing countries.

The review of the models commonly used in health education and promotion indicates that with the notable exception of ecological models for health promotion, the commonly used models are cognitive single level focused models, which give less or no attention to contextual dimensions that are crucial determinants of individual adoption of healthy behaviour. Although this study is not necessarily based on a particular model, it acknowledges the potentials of the four models/theories discussed above (i.e. the ecological models for health promotion, and the PRECEDE PROCEED model, the social marketing theory, the AIDS Risk Reduction Model and the theory of gender and power).

Justifications of why none of these models/theories could be employed alone in this research have been discussed above.

The review of the literature on school-based sexuality and HIV/AIDS interventions indicates a lack of rigorously evaluated studies about the effectiveness of school-based HIV/AIDS interventions, particularly in developing countries.

This chapter also analysed the specific Uganda context of HIV/AIDS. This includes an overview of school-based HIV interventions, among which the intervention investigated by this study is presented.

The specific Uganda context of HIV/AIDS indicates that HIV/AIDS among young people in Uganda remains a challenge. The only government-initiated school-based HIV intervention yielded no positive impacts, while the remaining interventions are mainly international donor-initiated and funded, the effectiveness of which remains unclear.

Clearly, an evaluation of the integration of the computer-assisted sexuality and HIV/AIDS intervention in schools' curriculum in Uganda is appealing for many reasons:

1. Being a health intervention implemented in an educational sector, questions of organisational readiness cannot be over-looked.

2. Given the limited technological facilities in Uganda, the extent to which schools are technologically ready to implement the intervention cannot be assumed.

3. The prevailing social-cultural norms that regard sexual education as taboo and associate it with sex experimentation may contradict the intervention's objectives.

4. The sensitive nature of sexuality education may present challenges in teaching and discussing the subject in school environments.

5. Given the reported current increase in HIV infections among young people in Uganda, insights from the present study can help in fighting HIV among this age group, given that young people are the future of every nation.

Following this chapter is a methodology chapter which discusses and justifies the methodology employed in this study.

CHAPTER 3: RESEARCH METHODOLOGY

1. Introduction

1.1 Overview

Remenyi et al (2002) define research methodology as:

> "A procedural framework within which the research is conducted. It describes an approach to a problem that can be put into practice in a research program or process."

The aims of the research in this thesis were to: (1) understand the effects of the WSWM intervention on Ugandan young people; (2) investigate the nature of mediating influences on the intervention implementation process. The research methodology involved a mixed methods approach, using both quantitative and qualitative methods. The primary use of quantitative methods was to assess the level of statistical significance of the impacts of the intervention on the young people, while qualitative methods were used to obtain in-depth understanding of intervention impacts as well as stakeholder behaviours, experiences and attitudes towards the intervention.

The aim of this introduction is to give an overview of the research: more detailed explanations of design and methods will follow.

Five data collection sites were involved. Tables from 2 - 7 show, for each site, the participant stakeholders, the data collection events and time periods, and the data collection methods employed. Table 7 shows that, overall, this research involved 584 quantitative questionnaires answered by 292 participants, 53 interviewees and 2 focus group discussions comprising 50 participants. Figure 4 summarises the data collection events and methods for each site against a timeline.

Figure 4: Data collection sites, investigations and time periods
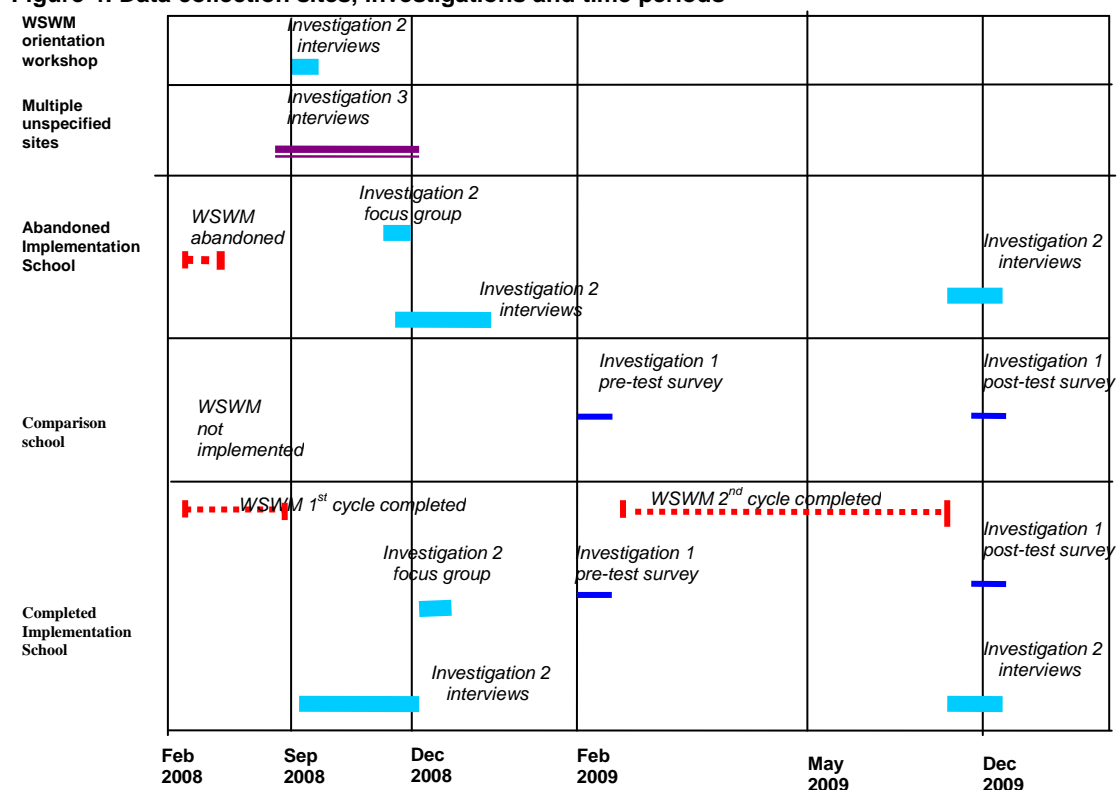
1.2 Investigations

Three separate but related investigations were carried out, and figure 4 above shows which data collection sites and events are linked to which investigations.

1.2.1 Investigation 1: Quantitative Controlled Before-After Intervention Study

This investigation consisted of a quantitative, controlled before-after study involving young people (students) in the Completed Implementation School (CIS) and the Comparison school. Students in the CIS were the intervention group (the group that received the intervention) while students in the Comparison school were the comparison group (the group that did not receive the intervention - the comparison school had never had the intervention). The study involved the simultaneous administration of the same survey questionnaires to both the intervention group (n=146) and the comparison group (n=146) at pre-test and at post-test. The pre-test assessment was conducted in February 2009, one week before the intervention group was exposed to the intervention.

The post-test questionnaire was administered in December 2009, one week after the intervention group completed the intervention. This is summarised in tables 2 and 3 below. The collected pre-test and post-test data was coded, entered in SPSS and analysed using paired sample t-tests and inferential statistics.

1.2.2 Investigation 2: Qualitative Cross-Case Analysis Study

This investigation consisted of three studies: (1) at the CIS where the 2008 intervention was completed, (2) at the Abandoned Implementation School (AIS) which had abandoned the 2008 intervention before its completion, (3) at a WSWM teachers' orientation workshop in Kampala, Uganda in September 2008.

The investigation aimed to carry out a cross-case analysis to understand reasons for the completion and non-completion of the intervention in the CIS and the AIS. Data was collected between September 2008 and December 2009 and involved semi-structured interviews with 4 heads of schools, 4 intervention teachers, 12 parents, 10 in-school young people, and 3 intervention leaders. In addition, there were two focus group discussions involving 50 in-school young people. This is summarised in tables 2, 4 and 6 below. Data was analysed using a broad grounded theory approach (Strauss and Corbin 1990).

1.2.3 Investigation 3: Qualitative Out-of-School Multiple Case Study

In this investigation, the major aim was to assess how out-of-school young people were practically putting to use the knowledge, skills and attitudes obtained from the intervention to overcome real world HIV challenges. This investigation also aimed to identify contextual mediators of HIV/AIDS prevention as well as the exploring the benefits of the computer-based nature of the WSWM intervention. It involved young people who had previously completed the intervention while they were still in secondary schools at multiple unspecified sites.

Using semi-structured telephone interviews, data was collected from 20 out-of-school young people between September 2008 and December 2008. This is summarised in table 5 below. Data was analysed using a broad grounded theory approach (Strauss and Corbin 1990).

Table 2: Completed Implementation School (CIS)

Data Collection Site	Data Collection Events & Methods	Participant Stakeholders
The CIS is a government owned-army founded school based in the semi-urban western part of Uganda WSWM completed intervention in 2008 (1st year of intervention) and 2009	Qualitative in-person 1-1 interviews Sep 2008 – Dec 2008	1 head teacher 2 teachers 1 deputy head teacher 1 parent
	Focus group Dec 2008	In-school young people n=25 that had completed the WSWM intervention
	Qualitative in-person 1-1 interviews Dec 2009 – completed 2nd year of intervention	10 in-school young people just completed intervention 5 parents of in-school young people just completed intervention
	Quantitative controlled before-after study (Intervention group) Feb and Dec 2009	n=146 in-school young people

Table 3: Comparison school

Data Collection Site	Data Collection Events & Methods	Participant Stakeholders
The Comparison School is a government owned-army founded school based in the rural northern part of Uganda. No WSWM intervention ever	Quantitative controlled before-after study (Comparison group) Feb and Dec 2009	n=146 in-school young people

Table 4: Abandoned Implementation School (AIS)

Data Collection Site	Data Collection Events & Methods	Participant Stakeholders
The AIS is a government owned girls'-only school situated in rural western	Qualitative in-person 1-1 interviews Dec 2008-Jan 2009	1 head teacher 2 teachers 1 deputy head teacher 1 parent

Uganda WSWM intervention in 2008 – abandoned on the 7th of 14 lessons (1st year of intervention)	Focus group Nov 2008	In-school young people n=25 who had stopped attending the intervention for one month due to program termination
	Qualitative in-person 1-1 interviews Dec 2009	5 parents (of in-school young people who had attended the 2008 intervention)

Table 5: Multiple unspecified sites

Data Collection Site	Data Collection Events & Methods	Participant Stakeholders
Unspecified sites, all having previously undergone the WSWM intervention in years 2003-2006	Qualitative telephone 1-1 interviews with out-of-school young people (ages 18-24) Sep 2008 – Dec 2008	n=20 out-of-school young people

Table 6: WSWM orientation workshop

Data Collection Site	Data Collection Events & Methods	Participant Stakeholders
WSWM teacher's orientation workshop in Kampala, Uganda	Qualitative in-person 1-1 interviews Sep 2008	3 intervention leaders that had visited the CIS and the AIS: Executive and Training Director (ETD) Sexual Reproductive Health Consultant (SRHC) Teacher Support Specialist (TSS)

Table 7: Data collection methods summary and relevant participant stakeholders

Interviews	Focus group discussions	Quantitative survey	Reviews of documents
53 interviews: 12 parents 8 teachers/head teachers 10 in-school young people 20 out-of school young people 3 intervention leaders	2 Focus Groups discussions comprising 50 participants	584 quantitative questionnaires answered by 292 respondents (in-school young people)	emails, intervention documents, WSWM website

The arrangement of this chapter is as follows: the first section has introduced the chapter including giving a brief overview of investigations and data collection sites involved. This section also presents and justifies the research strategy employed. Section 2 discusses the quantitative controlled before-after intervention study. Section 3 discusses and justifies the use of the qualitative case study design. The fourth section demonstrates the qualitative cross-case analysis study.

Section 5 discusses the qualitative out-of-school multiple case study. The sixth section discusses qualitative research quality issues and the seventh section discusses the mixing of qualitative and quantitative methods.

1.3 Research Strategy and Epistemological Assumptions

Research strategy is concerned with general epistemological assumptions underpinning a particular research study (Remenyi et al 2002), and epistemology refers to beliefs about how knowledge can be acquired (Hirschheim and Klein 1994). It is generally accepted (Remenyi et al 2002; Hirschheim and Klein 1994; Klein and Myers 1999; Denzin 1978) that there are two basic epistemological approaches through which knowledge can be acquired. These approaches are positivism and interpretivism.

In positivism, it is believed that knowledge or reality can be objectively acquired and measured using quantitative methods. These methods include quantifiable measurement of variables, hypothesis testing involving concepts of truth and falsehood, and the development of universal laws and regularities (Wyatt and Wyatt 2003; Klein 1994).

In interpretivism, it is believed that knowledge can be acquired through subjective interpretations of the social world using qualitative methods. This includes direct contact with actors in order to obtain first-hand knowledge (Walsham 1995; Burrell and Morgan 1979).

However, as Klein and Myers (1999) point out, research undertaken using qualitative methods may take a positivist stance; similarly, quantitative research may be interpretivist. The terms quantitative and qualitative should perhaps more appropriately refer to the methods used to generate and analyze data, with no epistemological assumptions implied.

Epistemological clarification may help in providing a general overview of a researcher's beliefs about 'acceptable' knowledge. However, the demarcation between positivism and interpretivism should not be too heavily emphasised since research practices can exhibit characteristics of both approaches (Denzin 1978). Using positivist approaches in interpretivist research is not uncommon (Klein and Myers 1999).

This research may be seen as utilising positivist approaches as it employs quantifiable measurement of variables and seeks to quantitatively assess the level of significance of the impact of the WSWM intervention. But it does not have other positivist characteristics, such as aiming to develop universal laws. It also utilises interpretivist approaches as it employs qualitative methods, including person-to-person semi-structured interviews for data collection and grounded theory (Strauss and Corbin 1990) for data analysis, to gain understanding of stakeholder meanings.

Thus, although this research may be seen as having elements of both positivism and interpretivism, employing both quantitative and qualitative methods, the research strategy adopted places itself more closely to interpretivism rather than positivism, since its major aim is to understand people's experiences, behaviours and attitudes relevant to the WSWM intervention.

2. Investigation 1: Quantitative Controlled Before-After Intervention Study Design

Easterby-Smith et al (1991:21) define research design as a demonstration of:

> *"What kind of evidence is gathered from where, and how such evidence is interpreted in order to provide good answers to the basic research question(s)."*

Quantitative research designs typically use questionnaires to collect quantifiable data and employ statistical techniques to analyse the quantitative outcomes of interventions (Remenyi et al 2002; Oppenheim 1992; Pallant 2007; Iivari 1991).

Quantitative designs are useful in understanding quantifiable outcomes of computer-assisted interventions (Benbasat and Weber 1996; Orlikowski and Baroudi 1991; Iivari 1991). The aim of the quantitative research described in this investigation was to employ quantifiable measurement of variables and to assess the level of significance of the impact of the WSWM intervention.

The quantitative research design employed is the controlled before-after intervention design. In addition to describing and justifying this overall experimental design, this section discusses seven design procedures that were followed: gaining access, selection of the intervention and comparison schools, selection of the participants, questionnaire design and outcome measures, pre-test and post-test data collection, pre-test and post-test data analysis, and quality issues.

2.1 Before-After Experimental Designs

Quantitative research designs can be passive or experimental (Remenyi et al 2002). In passive research designs, rather than conducting an experiment, the researcher collects data (e.g. using questionnaires) from the prevailing evidence. As acknowledged by Remenyi and colleagues, the major limitation of this approach is that the relationship between 'cause' and 'effect' cannot be guaranteed.

Experimental quantitative research designs involve the collection of evidence from more than one variable/group and often in different periods of time (Remenyi et al 2002; Wyatt and Wyatt 2003). The authors affirm that this approach improves the reliability of the relationship between 'cause' and 'effect'.

As the aim of this quantitative research was concerned with the effects of an intervention currently being delivered to school students, an experimental field study was appropriate. In the specific context of research in computer-assisted healthcare interventions, Wyatt and Wyatt (2003) acknowledge three experimental quantitative designs that can be used to evaluate computer-assisted healthcare interventions.

These designs are:

- Simple before-after intervention design
- Controlled before-after intervention design
- Randomised controlled trial

All the three designs involve a before-after intervention study element. According to the authors, a before-study (pre-test) refers to a baseline or pre-study assessment of the outcome measures of interest in order to document their status before the implementation of the intervention. Findings from the before-study assessment can be used for later comparisons. After-study (post-test) refers to the post-study assessment of outcome measures of interest in order to determine the impacts of the intervention.

2.1.1 Simple Before-After Intervention Design

In this design, pre-test and post-test are conducted on the intervention group (the group receiving the intervention) only. Although this approach can help in assessing the impacts of the intervention, it has some potential biases.

As the assessment is only based on the intervention group, the identified impacts cannot be confidently attributed to the intervention, since such impacts may have resulted from factors other than the intervention itself, for example mass media or the passage of time (Remenyi et al 2002; Wyatt and Wyatt 2003).

2.1.2 Controlled Before-After Intervention Design

In this design, in addition to assessing the intervention group, a 'similar' group that never had the intervention is also assessed at both pre-test and post-test (Friedman and Wyatt 1997). This group is known as the control or comparison group. Employing a controlled before-after intervention design can improve the reliability of the extent to which the identified impacts can be attributed to the intervention (Wyatt 2000). However, despite its advantages, the challenge of ensuring homogeneity between intervention and comparison groups cannot be overlooked.

Potential differences between the intervention and comparison groups can limit the extent to which the identified results can be attributed to the intervention. Wyatt and Wyatt (2003) recommend two ways of minimising this challenge.

One way is to investigate demographic details of participants at pre-test to determine whether there are any significant differences between the intervention and the comparison groups. The other approach is to use randomised controlled trials.

2.1.3 Randomised Controlled Trial (RCT)

In this design, systematic procedures (e.g. the use of randomisation) are used to allocate a candidate participant randomly either to the intervention group or to the comparison group (Wyatt and Wyatt 2003; Friedman and Wyatt 1997). The authors contend that such systematic allocation improves reliability of the findings by minimising allocation bias as well as ensuring that the intervention and comparison groups are as 'similar' as possible.

Despite the advantages of RCTs, systematic approaches to intervention allocation are only applicable in instances where the researcher has control over the implementation procedures of the intervention (Remenyi et al 2002). In addition, in RCTs, the intervention and comparison groups are normally recruited from within the same locality, thus, the comparison group may not be completely controlled from being contaminated by the intervention group (Stephenson et al 2008; Yin 2009).

2.2 The Choice of Controlled Before-After Intervention Design

In the present research, the research design adopted is a survey-based field experiment which fits the controlled before-after intervention design. Composed of the intervention and the comparison groups, this investigation aimed to assess the level of significance of the impacts of the intervention on young people's sexual behaviours, HIV knowledge, attitudes and self-efficacy.

The decision to use the controlled before-after intervention design instead of the simple before-after intervention design or the randomised controlled trial is justified by three major reasons:

- Unlike the simple before-after intervention design, the controlled before-after design improves the reliability with which the identified intervention impacts can be attributed to the intervention, rather than to external factors. This approach also helps to determine the level of significance of the impacts of the intervention.

- Using a randomised controlled trial design was not feasible since the researcher had no control over the implementation procedures of the intervention. The choice and number of participants depended on the schools' fixed implementation procedures for the intervention. Although participant allocation never followed any formal 'systematic' approach, the pre-assessment of the demographic details showed no statistically significant differences between the two groups. This is shown later in table 8 of section 2.2.5.

- In addition, since students openly interact with one another in a school environment, drawing the comparison group from within the same school that had the intervention implemented would have meant that the comparison group would not have been completely controlled from intervention effects. This potential methodological bias is also acknowledged by Stephenson et al (2008).

2.2.1 Gaining Access to the Intervention and Comparison Schools

Acquiring authorisation to access and investigate an organisation's intervention is a major challenge and a crucial step in experimental-based research (Remenyi et al 2002).

In May 2008, consent to gain access to the WSWM intervention was obtained from the intervention leader (Mr. Kakinda), known as the Executive and Training Director (ETD) of the intervention. This was through email communications (see appendix C9).

To further discuss authorisation issues, the researcher had an informal face-to-face meeting with the ETD in Kampala, Uganda in September 2008. This was during a five-day training workshop aimed at capacity building of the WSWM intervention teachers. During this meeting, the objectives of this study were introduced to the ETD, who informally authorised this research to be based on the WSWM intervention. As a condition for gaining access to the intervention, it was agreed not to mention the real names of schools/studies/cases and interviewees. The researcher was also given a list of all the schools in Uganda that had implemented the intervention. In addition, the ETD introduced the researcher to intervention teachers of different schools that were represented in this workshop. It was during this workshop that the researcher got to know of the school (and its intervention teachers) from which the intervention group was to be selected.

In January 2009, access to a comparison school was obtained from the head of school (Mr. Tumushabe). The researcher first consulted the head of school on the phone, from which an appointment for a face-to-face meeting was arranged. During this meeting, the researcher introduced the objectives of this study and requested to administer questionnaires to a group of senior one entrants in February 2009 and in December 2009. Permission was granted by the head of school, who then introduced the researcher to senior one teachers who later helped the researcher to organise the participants for questionnaire administration.

2.2.3 Selection of Intervention and Comparison Schools

This research involved a before-after intervention assessment aimed at investigating the level of significance of the impacts of the WSWM intervention. The research design required two schools, a school whose young people had access to the intervention (the intervention school), and a relatively homogenous school that did not implement (and had never implemented) the intervention (the comparison school).

Three reasons were relevant to the selection of the intervention school:

- The researcher's initial contacts with intervention teachers during the training workshop created a gateway to investigating this particular school. School teachers expressed strong interest in this study and promised to offer any assistance the research would require.

- Being a school in a military barracks with many war-orphaned students and children from soldiers' separated families, young people in this school were particularly vulnerable to HIV/AIDS. Thus, the researcher was keen to investigate the impact of the intervention on such a vulnerable population.

- The intervention school was within the proximity of the researcher's residence and was therefore an economically viable study.

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After selecting the intervention school, efforts were taken, for design purposes, to select a comparison group that had relatively similar characteristics to the intervention group. The comparison school was chosen because it was similar to the intervention school with regard to the following characteristics:

- The comparison school was also an army-founded government-owned school located in a military barracks.

- Young people in the comparison group were similarly vulnerable to HIV/AIDS since many of them were war-orphans and/or came from soldiers' separated families.

- The intervention school was a mixed-gender school located in an economically deprived semi-urban area. The difference regarding locations was that the intervention school was located in the western part of Uganda, while the comparison school was in a rural area in the northern part of Uganda. Such a difference in location helped to ensure that participants in the comparison school were controlled from interacting with those in the intervention school, and did not have access to intervention materials.

The intervention school was completing the first cycle of the intervention (February 2008-September 2008) at the time this research started. The controlled before-after intervention study is based on the second cycle of the intervention that ran from February 2009-December 2009. The intervention teachers used three computers connected on the internet, one Television set that used an intervention CD, and computer print-outs to deliver the intervention. The comparison school did not implement the intervention at any time prior to or during the period of this research.

2.2.4 Selecting the Participants: the Intervention and the Comparison Groups

The researcher had no control regarding the implementation procedures of the intervention including the enrollment of young people into the intervention. Thus, this investigation relied on groups that pre-existed in schools. The school's fixed implementation procedures and timetables of the intervention dictated the choice and the number of participants. For those secondary schools in Uganda that implement the intervention, senior one and senior five entrants are requested to enroll. The intervention school had ten young people in senior five, eight of whom had enrolled in the intervention. Since the researcher wanted participants in a relatively similar age group, the eight senior five entrants were excluded from this study. Instead, the researcher considered senior ones since the class had many young people of relatively similar age groups. The intervention school had a total of 180 young people in senior one, 83 of whom were in stream A, while 77 were in stream B.

In February 2009 when this study started, 152 young people had registered their names to attend the intervention, all of whom were involved in the pre-test assessment of this study. The comparison group had a total of 218 young people in senior one in three streams i.e. 72 young people in stream A, 76 in stream B and 70 in stream C.

In order to get a relatively equal number of participants in the intervention and comparison groups, stream A and stream B (148 participants) were involved in the present study. In both schools, participants were requested by intervention teachers to enroll for this study and were also informed that their participation had no impact on their academic assessment.

2.2.5 Social-Demographic Details of Participants

Demographic details of participants collected during the pre-test assessment were analysed using descriptive statistics. Details are shown in table 8 below.

Table 8: Social-demographic variables for the intervention and the comparison groups at pre-test (Feb. 2009)

Survey Schedule					
Design	Controlled before-after intervention design of self-administered questionnaires to the intervention and the comparison group				
Number of respondents	146 in the intervention group and 146 in the comparison group				
Pre-intervention questionnaire date	Feb 2009 (one week before the intervention)				
Post-intervention questionnaire date	Dec 2009 (one week after the intervention)				
Social-demographic characteristics					
Variable (questions 1-6)	Intervention group (Max n = 146)			Comparison group (Max n = 146)		
Sex	Male =61(42%)	Female =85(58%)	Total =146(100%)	Male =46(32%)	Female =100(68%)	Total =146(100%)
Age (years)						
11-13	24(16%)	17(12%)	41(28%)	14(10%)	23(15%)	37(25%)
14-16	37(25%)	68(47%)	105(72%) n=146(100%)	32(22%)	77(53%)	109(75%) n=146(100%)
Religion						
Christian	47(32%)	80(55%)	127(87%)	44(30%)	89(61%)	133(91%)
Muslim	14(10%)	5(3%)	19(13%) n=146(100%)	2(1%)	11(8%)	13(9%) n=146(100%)
Parental status One or both parent dead Both parents alive						
	49(34%)	57(39%)	106(73%)	34(23%)	63(43%)	97(66%)
	12(8%)	28(19%)	40(27%) n=146(100%)	12(8%)	37(25%)	49(34%) n=146(100%)
Parent occupation[1]						
Non-professionals	50(34%)	67(46%)	117(80%)	43(30%)	85(58%)	128(88%)
Professionals	11(8%)	18(12%)	29(20%) n=146(100%)	3(2%)	15(10%)	18(12%) n=146(100%)

Max n = Maximum number of participants.
[1] Professional occupations include engineers, lawyers, and teachers. Non-professional occupations include soldiers, shop keepers, and farmers.

The majority of young people were within the age range of 14-16 years, were Christians, orphans, and had parents with non-professional jobs. Family background e.g. a lack of parents or poverty may explain the wide age range in senior one.

2.2.6 Questionnaire Design and Outcome Measures

This investigation employed a questionnaire-based controlled before-after intervention design with an intervention and comparison group in order to assess the level of significance of the impacts of the intervention on the in-school young people's sexual behaviours, HIV awareness, attitudes and self-efficacy.

Questionnaires were used since they are quick and convenient in collecting large amounts of data from many participants (Yin 2009; Remenyi et al 2002; Oppenheim 1992). Note that although questionnaires allow the collection of quantifiable forms of evidence (e.g. 'how much', 'how many' kinds of evidence), such evidence may not provide detailed insights into the subject of interest (Yin 2009; Remenyi et al 2002).

The survey questions used were extracted from previously validated surveys obtained from the AIDSquest survey library (Population Council 2008). Using previously developed and tested questions ensures reliability of findings (Wyatt and Wyatt 2003). Details of the employed questionnaire are in appendix 1. The following are the outcomes that this investigation measured.

Sexual behaviours

There were three main measures for sexual behaviours: abstinence, number of sexual partners and condom use, which were measured using 5 statements. Respondents were asked to select the appropriate options from questions 7 and 8.

Participants were also asked in question 8d to state reasons for use or non-use of condoms at last sex.

HIV/AIDS awareness and perception of vulnerability

Seven statements were employed to measure these variables (Question 9c). The questions were extracted from a questionnaire that had been specifically previously developed by the Centre for AIDS Prevention Studies, California and pilot-tested on junior high school students in California (Population Council 2008). Some questions on AIDS-related knowledge that the present study rendered culturally inappropriate were excluded. Each statement was assessed using a four point Likert scale measuring the degree of agreement or disagreement with the statement, ranging from "strongly agree" to "strongly disagree" including an option for "no answer".

In addition, questions 9a and 9b asked whether participants knew anyone who had HIV/AIDs, and how would participants know that a person has HIV/AIDS.

Gender-biased social norms

The impact of the intervention on two gender-biased social norms was assessed using nine statements. Two outcome measures were assessed: gender equity in HIV/AIDS and pregnancy control (question 10a) and adherence to men's infidelity-related norms (question 10b).

- ### *Gender equity in HIV/AIDS and pregnancy control*

  Eight statements adapted from previously validated questionnaires obtained from the AIDSquest survey library were employed to assess participant attitudes to female initiation and negotiation of condom use. The full questionnaire from which the eight statements were adapted was developed, validated and used in a programme for HIV prevention in Thai schools (Population Council 2008). Only statements related to attitudes towards young women's condom use were adapted.

  Minor adjustments were made to statements in order to emphasise girls' initiation and negotiation of condom use. This was done by introducing the word "girl" in many of the statements. For example, a statement such as: "If I carry a condom, my partner will think that I am planning to have sex", was adjusted to "If a girl carries a condom, her partner will think that she is planning to have sex." Each statement was assessed using a four point Likert scale measuring the degree of agreement or disagreement with the statement, ranging from "strongly agree" to "strongly disagree" including the option for "no answer".

- ### *Adherence to men's infidelity-related norms*

  Participants were asked the extent to which they believe in the statement:

"Whereas it is ok for boys/men to have more than one sexual partner at the same time, girls/women should only have one sexual partner at the same time".

A four point Likert scale was used to measure the degree of agreement or disagreement with the above statement, ranging from "strongly agree" to "strongly disagree", including the option for "no answer".

Girls' perceptions of condom assertiveness self-efficacy

Girls' perceptions of condom assertiveness self-efficacy were assessed by the Sexual Assertiveness Scale (SAS) (Morokoff et al 1997; Population Council 2008), which has a proven reliability among diverse female populations. SAS was developed and validated from four studies that sampled 513 young women of at least 18 years of age. SAS has three subscales; one that assesses women's efficacy in initiating sexual intercourse, the second scale that measures women's assertiveness in refusing unwanted sex, and the third subscale that assesses women's assertiveness in initiating and negotiating contraceptives for pregnancy or HIV/AIDS prevention. Since the aim of the present study was to assess young people's assertiveness in the uptake of HIV/AIDS preventives, only the sub-scale for Pregnancy-STD prevention was adapted for the present study (Question 10d, Appendix A1).

No major modifications were made to the statements apart from replacing the term "latex barrier" with the term "condom" as it was anticipated to be confusing to respondents, since it was realised from pilot tests of the questionnaires that the majority of respondents had never heard about latex barriers.

Five statements were assessed using a four point likert scale measuring the degree of agreement with each statement, ranging from "strongly agree" to "strongly disagree", including the option for "no answer."

2.2.7 The Pre-Test and Post-Test Data Collection of the Intervention and Comparison Groups

The pre-test and post-test studies consisted of the simultaneous administering of the same questionnaire to both the intervention and comparison groups at pre-test in February 2009, one week before the intervention group was exposed to the intervention, and at post-test in December 2009 one week after the intervention group was exposed to the intervention. The questionnaire is shown in Appendix A1.

The pre-test questionnaire was aimed at exploring the initial status of young people's sexual behaviours, HIV/AIDS knowledge, HIV-related self-efficacy and attitudes. These results were later used as a basis for comparison when explaining the impacts of the intervention.

The post-test questionnaire was aimed at exploring the immediate impact of the intervention on young people's sexual behaviours, HIV/AIDS knowledge, self-efficacy and attitudes. Both the pre-test and post-test questionnaires were the same in content, except that demographic questions were only included in the pre-test questionnaires.

The pre-test involved 300 participants, of whom 152 were in the intervention group and 148 in the comparison group. However, the post-test involved 292 participants, of whom 146 belonged to the intervention group, while 146 were in the comparison group. 300 participants were initially involved in this study, but given that the period between pre-test and post-test was around 10 months (February-December), and that the study aimed at assessing the same participants at both pre-test and post-test stages, eight participants did not attend the post-test and were therefore excluded from the study. These eight participants were absent from their respective schools during the post-test assessment. Thus, for both pre-test and post-test, 292 participants were involved, 146 in the intervention group and 146 in the comparison group.

Generally, the high commitment of students to attend both the pre-test and the post-test of this study may have been attributed to the fact that the intervention teachers (on behalf of the researcher) requested the students to participate in this study.

At both post-test and pre-test, questionnaires were administered by peers (who were class leaders) rather than the researcher. For both the pre-test and post-test of the intervention and comparison groups, participants were gathered in one hall where questionnaires were distributed and collected immediately after completing them.

Given the sensitive nature of sexual issues, it was anticipated that participants were more likely to open up while filling in the questionnaires when peers administered them rather than teachers or the researcher. Prior to administering the questionnaires, the researcher introduced the objectives of the questionnaire to the participants. This introduction involved assuring participants of the confidentiality of the information being collected, and giving them codes that were to be used as reference points during the post-study follow-up. Peers were briefed about the contents of the questionnaire as well as about questionnaire administering. The researcher remained within the school environment while peers administered the questionnaires in order to attend to any queries that peers would not be able to answer. Pens and sweets were given to participants as modest incentives for their participation. These modest incentives were given in order to motivate participation in the study, given that it was necessary to maintain the same participants at both pre-test and post-test. The total duration taken by participants to fill in the questionnaire ranged between 15-30 minutes.

2.2.8 The Pre-Test and Post-Test Data Analysis of the Intervention and Comparison Groups

The pre-test and post-test data collected from the groups was coded, entered and entered into SPSS version 16.0 for analysis.

Responses to Likert-scaled statements were treated as ordinal/ranked variables and assigned codes; code 1 for "strongly agree" to code 4 for "strongly disagree", and 5 for "no answer". None of the respondents selected the "no answer" option, thus, this option was ignored.

Wilcoxon Signed Rank Test was employed to assess the level of significance of impacts of the intervention on sexual behaviours. Wilcoxon Signed Rank Test requires two nominal variables and one measurement variable (Pallant 2007). In this PhD, pre-test and post-test scores represent the first nominal variable, assessment statements represent the second nominal variable, while percentages represent measurement variable (e.g. see McDonald 2008). Response for the assessments of sexual behaviours were given numerical codes, treated as nominal variables and summarised using descriptive statistics (percentages). See appendix A2 for coding of responses. The percentages were then treated as continuous variables and analysed using Wilcoxon Signed Rank Test. This approach is recommended by (McDonald 2008) for "ambiguous variables" which seem not to perfectly qualify for continuous, nominal or ordinal/ranked variables, as is the case in the variables used for assessment of sexual behaviours.

Paired-sample t-tests were applied to assess the impacts of the intervention by comparing the, HIV/AIDS knowledge, attitudes and self-efficacy at the pre-test and post-test assessments of the intervention group. The paired samples t-test (also referred to as repeated measures) is a statistical measure used to assess the level of significance in mean scores of a group, or more than one group, investigated at pre-test and at post-test (Pallant 2007). Wilcoxon Signed Rank Test and paired sample t-tests calculate the probability (p) values of responses in each statement for pre and post assessments to determine the level of significance. $P \leq 0.05$ implies a statistical significance difference, while $P \geq 0.05$ denotes an insignificant difference (Pallant 2007). Paired sample t-tests have also been effectively used by other researchers (Jahanfar et al 2009) evaluating HIV interventions that involved the pre-test and post-test assessments.

The between-group significance comparison of the intervention and comparison groups was also assessed using paired sample t-tests. This approach helped in justifying the extent to which the identified impacts can be attributed to the intervention, rather than to other factors (Wyatt and Wyatt 2003).

Descriptive statistics were also used to demonstrate percentages differences in the intervention group.

The results of this analysis are demonstrated in chapter 4 of this thesis.

2.2.9 Quality Issues for the Quantitative Investigation

In quantitative investigations, quality issues of a research design are generally considered under two headings: internal and external validity. *Internal validity* is concerned with whether or not an experimental treatment or condition makes a difference, and whether there is sufficient evidence to support the claim; while *external validity* refers to the generalizibility of the treatment or condition outcomes (Cook and Campbell 1979).

In this investigation, generalizability of the results to wider populations was not a research objective, hence the question of external validity was not an issue. However, internal validity is discussed below in terms of attrition, reliability of the survey instrument, pilot of the survey instrument, social desirability, validating responses through comparisons and reliability of findings.

Attrition

"Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. If there are high levels of attrition, the initial equivalence of the intervention and comparison groups may be compromised and the effect size estimates may be biased." (IES 2008).

Attrition is common in longitudinal studies but there are no standards for determining when it seriously threatens study validity. Schulz and Grimes (2002) suggest that an attrition rate of 5% or lower is unlikely to introduce bias, but a rate of 20% or greater introduces the possibility of bias, although rates of between 5% and 20% may still be a source of bias.

In the quantitative investigation in this research, attrition rates (from pre-test to post-test) were 4% and 1% respectively in the intervention and control groups, a differential attrition rate between groups of 3%.

IES (2008) propose that if the overall attrition rate is less than 10%, then a differential attrition rate of 6% or less (assuming random participant loss) will not pose a threat to validity.

Reliability of the survey instrument

As previously mentioned, this research employed previously validated assessment statements obtained from the AIDS survey library (Population Council 2008). This approach of using previously developed and tested questions assists reliability of findings (Wyatt and Wyatt 2003).

According to Pallant (2007), a reliability coefficient (Cronbach's alpha) which is equal or greater than 0.7 is an acceptable measure of internal consistency reliability. The survey instruments obtained from the Population Council (2008) are reported to have good proven internal consistency and predictive reliability. In particular, when applied to this research, measures of sexual behaviours had a reliability coefficient of 0.59, which may have implications on the findings of sexual behaviours in this investigation since it is less than the recommended 0.7. Knowledge assessment statements had a Cronbach's alpha coefficient of 0.71. The statements used to assess gender-biased social norms had a Cronbach's alpha coefficient of 0.75. The Sexual Assertiveness Scale (SAS) (Morokoff et al 1997) had a coefficient alpha average of 0.76.

Pilot of the survey instrument

In January 2009 a pilot test of the questionnaire was conducted before it was formally administered.

The major aim of this pilot test was to ensure that possible ambiguities were rectified in time (Remenyi et al 2002; Oppenheim 1992). To identify and deal with possible ambiguities, the researcher pilot tested the questionnaire on five purposively selected respondents. This testing resulted in some questions being refined to ensure understandability. For instance, results of this pilot test indicated the inability of participants to understand the term "latex barrier". Thus, the word condom rather than "latex barrier" was used.

Minimising social desirability

Given the sensitive nature of questions exploring sexual behaviours, the following basic measures were undertaken to minimise social desirability and to validate participant responses.

1. To minimise social desirability associated with self-reported assessments, after the researcher had explained the survey to participants, the questionnaires were distributed and collected by class leaders rather than teachers or a researcher. Thus, the possibility of giving wrong answers due to the presence of adults was minimised since class leaders were not only participants' peers, but were also participants themselves.

2. Participants were not required to put their names on the questionnaires; they were only given codes for easy follow-up at post-test. It was clearly indicated on the questionnaires and verbally emphasised during the initial introduction that participants' answers were to be kept private, that their answers would not be graded, and that their answers would only be used to help in developing effective sexual health interventions.

Reliability of findings

The pre-testing and post-testing the intervention groups together with the comparison group helped in justifying the extent to which identified impacts could be attributed to the intervention, rather than to any other external factors e.g. mass media or passage of time.

Thus, the results from the quantitative evaluation are reliable outputs that provide meaningful results for implementation and effects of HIV/AIDS interventions in the two schools.

3. Qualitative Case Study Design

Qualitative designs typically employ semi-structured interviews, focus group discussions and/or participant observation to collect data (Wyatt and Wyatt 2003; Remenyi et al 2002). Collected data is analysed using qualitative methods e.g. grounded theory, in order to obtain in-depth subjective interpretations of the subject of interest (Strauss and Corbin 1990).

Qualitative designs are useful in exploring how users interact with interventions, including complexities of actions and social processes undertaken in response to the intervention (Bryman 2001; Walsham 1995; Klein and Myers 1999; Husserl 1946). This is vital for understanding social and organisational contexts including perceptions and values that users attach to an intervention (Kaplan and Duchon 1988). In the context of computer-assisted healthcare interventions, insufficient attention to social and organisational contexts is the major cause of implementation failure (Young 2007; Brender et al 2000; Hare 2006).

In this research, a qualitative research design was used to understand stakeholder meanings and behaviours concerning the effects of the WSWM intervention, and to investigate stakeholder perceptions of mediating influences on the intervention implementation process.

There were two major objectives: (1) to obtain deep insights into the impacts of the intervention on out-of-school youths' sexual behaviours, HIV/AIDS knowledge, attitudes and self-efficacy; (2) to obtain rich insights into the facilitating or inhibiting influences on the implementation of the intervention by investigating why the intervention implementation was completed in one school but abandoned in another.

To achieve these objectives, this research employed a case study design. This section describes and justifies the use of this research design.

3.1 The Choice of Case Study Design

Yin (1984) defines a case study as:

> *…an empirical inquiry that investigates a contemporary phenomenon within its real life context, …, and in which multiple sources of evidence are used. It is particularly valuable in answering who, why and how questions.*

Case study design is the most commonly used research design in information systems (Bryman 2001; Remenyi et al 2002; Orlikowski and Baroudi 1991; Schramm 1971).

Generally, the term case study is an 'umbrella' term used to describe research designs aimed at conducting in-depth investigations of contemporary issues of a subject of interest in its natural setting without controlling the behaviours of research participants (Yin 2009; Remenyi et al 2002). From this description, it is apparent that case study research design distinguishes itself from other research design methods in two major ways:

1. The case study's focus on in-depth investigations distinguishes it from other methods of research e.g. surveys. For example, rather than using surveys that take the 'how many' or 'how much' line of inquiry, which does not provide detailed insights into the subject of interest, case studies take the 'how' and 'why' line of inquiry to obtain rich insights into the phenomenon. In-depth investigations in case study designs are often conducted using interviews, focus group discussions and reviewing of current documents (Yin 2009).

2. The case study's focus on contemporary issues of a subject of interest in its natural setting distinguishes it from other methods of research e.g. historical analysis that does not focus on contemporary events, and experimental designs that involve controlling a phenomenon from its context.

Due to the above distinctions and advantages of case study design over other research designs, this research employed the case study design. Specifically:

1. Using a case study research design allowed the collection of real-time and in-depth information based on contemporary issues of the implementation of the WSWM intervention in its natural context.

2. Rather than using one case study that might limit the understanding of the phenomena to a particular organisational context, this study investigated multiple cases to widen the context.

Using more than one case study allowed in-depth understanding of the meanings attached to the intervention as well as stakeholder experiences of using the intervention within different social and organisational settings.

Generally, this research took the view of Yin (2009), who stresses that the essence of a case study is to obtain detailed answers to the why and how questions using multiple sources. Following this, the research conducted two investigations using interviews, focus group discussions and document review.

The investigations were:

(1) The cross-case analysis study (investigation 2)

(2) The out-of-school multiple case study (investigation 3).

The greatest challenge of case study design is ensuring that systematic procedures are followed so that reliable evidence is generated (Yin 2009). The present research justifies the reliability of the evidence generated in section 6 of this chapter. Six design procedures, to be described in more detail below, were followed in the two investigations: gaining access, selection of the case studies, selection of participants, data collection, data analysis, and quality issues.

3.2 Use of Theory in Data Collection and Analysis

There are two major approaches to the use of theory for data collection and analysis within qualitative research: abductive and retroductive (Chiasson and Davidson 2004; Blaikie 2000; Blaikie 2007; Remenyi et al 2002; Buchanan and Bryman 2009). In the retroductive approach, an initial set of themes generated from existing theories and literature ('sensitizing theory') is used to guide the research process. Such themes may, for example shape the design of interview topics or questions, or may suggest categories to be used in data analysis.

In contrast, in the abductive approach, there are no predefined themes or pre-existing theories employed but rather, it is intended that themes and theories should emerge only during the process of data collection and analysis, emphasising stakeholder concepts, in their own languages, rather than researcher concepts and language.

A disadvantage of the retroductive approach is that it may hinder generation of new themes by relying on pre-existing themes, and may result in forcing collected data to fit into selected themes. In contrast, the abductive approach generates relevant themes from the collected data. In so doing, it facilitates the researcher to obtain stakeholder meanings and behaviours associated with the meanings. Such an approach enables the capturing of the dynamism of social and organisational contexts. The usefulness of this approach in investigating IS implementation is documented in the literature (Bowker et al 1995; Orlikowski 1993; Yoong 1996; Barnes 1998; Patokorpi and Ahvenainen 2009). However, the abductive approach relies on sensitive engagement with stakeholders over a period of time sufficient to gain stakeholder trust and insight into their meanings and behaviours.

Note that contrary to common misconceptions, although the abductive approach does not rely on pre-defined theories, researchers are hardly "theory-free" (Silverman 1997), and there is a need to be informed of relevant literature and to develop tentative questions (Strauss and Corbin 1990).

In the present study, the researcher reviewed literature from which preliminary research ideas were developed to inform the research process. This research acknowledges in particular the potential of ecological models of health promotion, which contend that health behaviours are shaped by a variety of influences at both individual and contextual levels (McLorey 1988). Other theories/models acknowledged by this research include the social marketing theory (Kotler and Roberto 1989), the AIDS Risk Reduction Model (Catania 1990) and the theory of gender and power (Connell 1987).

The inapplicability of many of the prevailing theories of health education and promotion in the context of HIV/AIDs prevention has been discussed in chapter 2 of this thesis. In particular, there is no qualifying integration theory to propose influences on the integration of computer-assisted sexuality and HIV interventions in schools. Further more, the dominant technology-driven perspectives overemphasise technical aspects while giving little or no attention to social and organisational contexts. In addition, for information technology interventions, where user experience and knowledge may increase with increasing exposure to technology, prevailing theories based on user experience may be outdated. Chapter 2 also demonstrated how the prevailing frameworks for assessing the impacts of health interventions have long been criticised for over-emphasising individual level determinants of behaviour at the expense of contextual mediators.

Therefore, rather than relying on such theories, this research aimed at exploring in-depth contemporary reality from the field and took an abductive approach to the use of theory. Stakeholder perceptions, experiences and behaviour towards the intervention may change over time (Leonad and McAdam 2001), and such dynamics can easily be captured by grounding a theory from the data collected, rather than imposing the theory on the data.
The use of the abductive approach helped in generating relevant themes for understanding different contexts that interact to influence the implementation and impacts of the intervention.

3.3 Units of Observation and Analysis

In case study design, units of analysis and units of observation depend on research aims and scope (Yin 2009). This research aimed to investigate stakeholder experiences regarding the implementation and impacts of the WSWM intervention. Thus, individual stakeholders such as young people, parents and teachers were the units of observation. Units of analysis were mainly individual stakeholders.

However, to address the deficiencies of prevailing frameworks in their overemphasis on individual level determinants of behaviour at the expense of contextual mediating influences, more abstract units of analysis, such as the institutional and social-religious contexts, were also considered.

4 Investigation 2: Qualitative Cross-Case Analysis Study

This investigation aimed to carry out a cross-case analysis to understand reasons for the completion and non-completion of the WSWM intervention. It consisted of two case studies, based on:

1. The Completed Implementation School (CIS) where the 2008 intervention had been completed.
2. The Abandoned Implementation School (AIS) that had abandoned the 2008 intervention before its completion.

There were three data collection sites involved in this investigation:

1. The CIS.
2. The AIS.
3. The WSWM teachers' orientation workshop in Kampala, Uganda in September 2008.

4.1 Gaining Access to the Case Study Organisations

Gummesson (1991) acknowledges that being able to get access to potential research sites and participants is the biggest problem facing a researcher. This problem is particularly felt when a researcher aims to evaluate a new intervention implemented in an organisation. This is because the outcome of the evaluation may have implications for the reputation of the organisation and/or the intervention founders/sponsors.

In May 2008, consent to gain access to the WSWM intervention was sought from the intervention leader, known as the Executive and Training Director (ETD) of the intervention.

This was through email communications (see appendix C9). In September 2008, an informal person-to-person meeting with the ETD took place in Kampala, Uganda. This was during the five-day orientation workshop of the intervention. During this meeting, the objectives of this research were introduced to the ETD, who informally authorised the research to be based on the WSWM intervention. As a condition for gaining access to case study schools it was agreed not to mention the real names of schools or interviewees.

The ETD showed strong interest in the research and even suggested that it be extended to explore the impacts/benefits of the intervention on out-of-school young people. Although this was originally not among the objectives of the study, such an assessment had the potential to investigate how former students of the intervention were practically employing the skills and knowledge from the intervention to overcome real world challenges of HIV prevention.

The ETD also introduced the researcher to other leaders of the intervention, made available workshop documents to the researcher, and provided further information regarding schools that had implemented the intervention.

Information about which schools had implemented the intervention successfully and which ones had problems with implementation was also obtained from intervention leaders during this meeting.

4.2 Selection of the Case Study Organisations

Study organisations were selected based on the research questions, as Eisenhardt (1989) recommends. The first case study to be selected was the CIS. Although there were many schools that had completed implementation of the intervention, the CIS was of particular interest for three major reasons: One, the researcher had made initial contacts with the intervention teachers of the CIS during the 2008 workshop. These teachers expressed much interest in the research and promised to help the researcher in any way possible.

Two, being a school in a military barracks with many war-orphaned students and children from soldiers' separated families, these students were particularly vulnerable to HIV/AIDS. Three, this study was within the proximity of the researcher's residence and was therefore economically viable.

This school was also used for the quantitative controlled before-after study discussed previously. It is a government-owned army-founded school based in the urban western part of Uganda. The school has around 900 students, both girls and boys, some of whom are boarders while others are day-scholars. The school had completed the 2008 intervention implementation cycle at the time (September 2008) this research started (see figure 4 above). The implementation cycle ran from Feb.08-Sept.08. Teachers and student peer educators delivered the intervention using computers/internet website, CDs, printouts.

Next was the selection of a school suitable for taking part in a cross-case analysis. The three options specified by Yin (1984) provided a basis for selecting the next case/study.

These options are:

1. Select a study to identify more themes for the extension of the emerging theory, and/or
2. Select a study to replicate the already selected cases in order to confirm the themes identified in the previous cases, or
3. Select an extreme study that has opposing characteristics to the previous cases for the extension of the theory that is emerging.

The third option above was adopted in this research, and a second case study - the Abandoned Implementation School (AIS) - was a polar opposite study that was selected mainly to confirm to the previously identified themes. This method of polar case study selection is also recommended by Eisenhardt (1989). Moyyaed and Mohamed (2003) state that investigating polar or contrasting cases is "an effective way to enhance the generalizability of the results of case study research…"

Particularly, after formulating an initial framework of influences for the successful implementation of the intervention from findings of the CIS, the researcher was keen to investigate how the identified influences manifested themselves in an opposite case where the implementation of the intervention was abandoned. Generally, given that the intervention in the AIS was abandoned halfway through its implementation, exploring this case created an opportunity to compare its abandoned story with the completed story in the CIS.

The AIS is a government-owned, Protestant Church-founded girls' only school situated in rural western Uganda. This school had around 1000 students, all of whom were boarders. The students came from relatively stable middle-income families. The intervention was implemented up to the 7th lesson and abandoned before completing all 14 lessons.

The implementation of the intervention begun in Feb.08, suffered many irregular attendances from both teachers and students, and was terminated in Oct.08. By the time this research started (Dec 2008), around two months had passed since its abandonment. Before its abandonment, the intervention was delivered using a combination of intervention handouts, CDs and the Internet.

There was more than one school where the implementation was abandoned, but the AIS was selected on the basis of characteristics that sharply differed from that of the CIS. For instance, unlike the CIS which was urban-based and military-founded, the AIS was a rural-based Church-founded school. Thus the case was chosen in order to explore the distinction between rural and urban respondents and between government/military-founded and Church-founded, due to anticipated differences in institutional organisations, cultures and beliefs, which may be central to implementation decisions.

4.3 Selection of Participants

The major objective was to qualitatively investigate from experiences of various case study stakeholders why the implementation of the intervention was completed in the CIS and abandoned in the AIS.

To achieve this objective, it was necessary to select participants on the basis of their relationships with the intervention in the different schools. Such purposive sampling is the commonly used sampling technique in qualitative research (Kaplan 2001; Bryman 2001).

Two different types of participants were selected: internal stakeholders and external stakeholders. Internal stakeholders were involved in the intervention from inside the context of schools. These participants were:

- Heads/deputy heads of schools that had implemented the intervention
- Intervention teachers who delivered the intervention.

- In-school young people (1) enrolled for and participating in the intervention (CIS) and (2) those who had enrolled in the abandoned intervention (AIS).

External stakeholders refer to participants whose relationships within the intervention were outside the context of schools. These participants were:

- Parents whose children were 1) enrolled for and participating in the intervention (CIS) and (2) those who had enrolled in the abandoned intervention (AIS). In both the CIS and the AIS, parents to be interviewed were recommended by the intervention teachers and students, and their selection depended on their homes' proximity to the school and/or involvement in the intervention activities.

- External leaders of the intervention, known as intervention leaders, who had visited both CIS and AIS.
  They had attended the WSWM teachers' orientation workshop in Kampala and were responsible for training intervention teachers and peer educators, offering on-going intervention support and overseeing all the activities of the intervention.

Participants were informed about the initial consent obtained from the intervention leaders to base this research on their intervention. All the participants that were requested to participate in this research accepted and participated.

Note that the same school i.e. CIS was used as both the intervention school during the quantitative before-after study and as the Completed Implementation School during the qualitative study. The quantitative before-after study involved young people who had enrolled in/completed the 2009 intervention implementation cycle. 10 of these young people (of the 2009 intervention cycle) also served as interview participants in December 2009 in the assessment of the implementation of the WSWM intervention.

Participants of focus group discussions were young people who were involved in the 2008 intervention implementation cycle.

4.4 Social-Demographic Details of Participants

The demographic details of internal and external participants are shown below in tables 9-14 within their respective data collection sites.

Table 9: Interview schedule and social-demographic characteristics of heads of school, teachers and students of the CIS

Interview Schedule	
Design	Semi-structured interviews
Interview date	Sept 2008-Dec 2009
Interview duration	30 minutes to 60 minutes
Total participants	14

Social-demographic characteristics			
	Gender		
Stakeholder group	Male=7	Female=7	Total=14
Head teachers/teachers			
Title			
Head teacher	1	0	1
Deputy head teacher	1	0	1
Intervention Teachers	1	1	2
Age			
35-37	1	1	2
38-40	2	0	2
Religion			
All were Christians	3	1	4
Students			
Age			
11-13	2	3	5
14-16	2	3	5
Religion			
All were Christians	4	6	10

Table 10: Interview schedule and social-demographic characteristics of heads of school and teachers of the AIS

Interview Schedule	
Design	Semi-structured interviews
Interview date	Dec 2008-Jan 2009
Interview duration	30 minutes to 60 minutes
Total participants	4

Social-demographic characteristics			
	Gender		
Stakeholder group	Male=2	Female=2	Total=4

Head teachers/Teachers			
Title			
Head teacher	0	1	1
Deputy head teacher	1	0	1
Intervention Teacher	1	1	2
Age			
35-37	1	1	2
38-40	1	1	2
Religion			
All were Christians	2	2	4

Table 11: Interview schedule and social-demographic characteristics of young people in focus group discussions of the CIS and the AIS

Focus group discussion Schedule	
Design	2 focus group discussions
Interview date	Nov 2008-Dec 2008
Interview duration	One hour
Relationship with WSWM Intervention	Students from the CIS who had completed the 2008 WSWM intervention Students from the AIS who had stopped attending the 2008 WSWM intervention for two months due to intervention abandonment
Total participants in each group	25 students in CIS and 25 students in AIS

Social-demographic characteristics			
	CIS=25		**AIS**=25
	Gender		Gender
Stakeholder group	M=15	F=10	F (all Females)
Young people			
Age			
11-13	7	5	20
14-16	8	5	5
Parental status			
Orphans	10	7	6
Not Orphans	5	3	19
Parents occupation			
Professional jobs	4	3	17
Non-professional jobs	11	7	8
Religion (All were Christians)	15	10	25

Table 12: Interview schedule and social-demographic characteristics of parents of the CIS

Interview Schedule	
Design	Semi-structured interviews
Interview date	Sept 2008-Dec 2009
Interview duration	30 minutes to 60 minutes
Total participants	6
Involvement in the intervention activities	3 parents were involved in the intervention activities

Social-demographic characteristics	
	Gender

Stakeholder group	Male= 3	Female= 3	Total= 6
Parents			
Age			
38-48	2	2	4
49-59	1	1	2
Religion			
All were Christians	3	3	6

Table 13: Interview schedule and social-demographic characteristics of parents of AIS

Interview Schedule	
Design	Semi-structured interviews
Interview date	Sept 2008-Dec 2009
Interview duration	30 minutes to 60 minutes
Total participants	6
Involvement in the intervention activities	None of the parents was involved in the intervention activities.

Social-demographic characteristics			
Stakeholder group	Gender		
	Male= 3	Female= 3	Total= 6
Parents			
Age			
38-48	3	2	5
49-59	0	1	1
Religion			
All were Christians	3	3	6

Table 14: Interview schedule and social-demographic characteristics of intervention leaders

Interview Schedule	
Design	Semi-structured interviews
Interview date	Sept 2008
Interview duration	30 minutes to 60 minutes
Total participants	3

Social-demographic characteristics			
	Gender		
	Male=3	Female=0	Total=3
Intervention **leaders**			
Title			
Intervention Executive and Training Director	1	0	1
intervention Sexual Reproductive Health consultant	1	0	1
Teacher Support Specialist	1	0	1

4.5 Data Collection

4.5.1 Overview of Data Collection

In-depth semi-structured qualitative interviews were conducted with heads of schools, intervention teachers, intervention leaders, parents, and in-school young people (including focus group discussions). Overall, this qualitative investigation involved interviews with 18 participants and two focus group discussions comprising 50 participants, and was aimed at investigating influences that motivated or inhibited the implementation of the intervention.

Data from individual face-to-face interviews and focus group discussions was also supplemented by reviewing secondary data sources. These included intervention workshop documents (e.g. appendix C6), the intervention website (http://www.theworldstarts.org) (e.g. appendix C7) and the intervention's online support centre (http://schoolnetuganda.sc.ug/wswmonlinesupport/) (e.g. appendix C8).

Data from the CIS and the AIS was collected in two major phases. The first phase of data collection in the CIS was conducted between September and December 2008. The first phase of data collection in the AIS was carried out between Dec 08 and Jan 09. In both the CIS and the AIS, the second phase of data collection took place in Dec 09. Telephone interviews with the out-of-school young people were conducted between Sept.08 and Dec. 08. Interview appointments were made depending on participant convenience. The researcher used a strategy of proposing a date and time and then inquiring from the participant if the proposed date/time was convenient for her/him. This helped the researcher to fix more than one interview in one day, which reduced travel costs for face-to-face interviews and enabled a focus on themes as they freshly emerged from data.

4.5.2 Semi-Structured Face-to-Face Interview Guides

Face-to-face interviews were used for data collection due to their advantage of allowing collection of in-depth data from participants' natural settings (Yin 2009).

Rather than less flexible structured interviews, the present study employed semi-structured interviews which allowed the researcher to pose questions according to replies of participants and to ask participants for rich explanations and meanings (Remenyi, 2002). Generally, semi-structured in format, this study used predetermined tentative questions with possibilities of alterations (Robson 2002). However, as Oppenheim (1992) acknowledges, the main challenges that the present researcher experienced are that semi-structured face-to-face interviews are liable to geographical mobility constraints and produce huge amounts of data that takes time to analyse.

The researcher pilot tested initial interview questions on three purposively selected respondents to ensure their clarity. This testing resulted in some questions being refined to ensure clarity as well removing questions that seemed to have been duplicated.

The revised interview guide was then used simply as a guide, the results of which provided a basis for following interview questions that were then rephrased depending on the emerging themes (see appendices C2 and C3 for the interview guides).

In the early interviews, emphasis was put on questions related to the process of intervention integration. Examples of such questions included: what motivated schools to implement the system and how the system was implemented. After capturing questions relating to the system integration process, more focused questions were posed that aimed at exploring stakeholder experiences of using the intervention, including problems encountered during the integration and how they could be overcome. Themes that emerged from the previously collected and analysed data informed the next set of data to be collected.

4.5.3 Internal Stakeholder Face-to-Face Semi-Structured Interviews and Focus Groups

Interviews

Data collection in the CIS involved 14 interviews with 2 heads of school (1 head teacher and 1 deputy head teacher), 2 intervention teachers, 10 students, and one focus group discussion with 25 students. Data collected from the CIS was screened and themes that emerged from this analysis were used to guide data collection from the AIS. Data collection in the AIS involved four interviews with 2 heads of school (one head teacher and one deputy head teacher), 2 intervention teachers and one focus group discussion with 25 students. Tables 9, 10 and 11 show the interview schedules of the CIS, the AIS and the focus group/interview schedules respectively.

Students, heads of schools and intervention teachers were interviewed at their respective schools. Interviews with heads of schools and teachers were conducted at their offices during normal school hours. Interviews with young people were conducted over the weekends in a free classroom that was made available to the researcher by the intervention teachers.

All interviews were digitally recorded between September 2008 and December 2009 with consent from participants. Each interview lasted from 30-60 minutes.

Focus Group discussions

A focus group discussion is an evidence collection method where a group of individuals are led by the researcher to debate a subject of interest (Remenyi et al 2002). The present research employed focus group discussions due to the following reasons:

1. The use of focus group discussions provided a quick way of collecting data from a large number of participants at the same time (Remenyi et al 2002).

2. Focus group discussions were employed in order to enable the young people to interactively discuss their experiences of the intervention including drivers and inhibitors for intervention adoption (Flores and Alonso 1995).

3. As Remenyi and colleagues acknowledge (Remenyi et al 2002), focus group discussions were not used as primary evidence collection methods but rather, they were used to supplement results from interviews.

Despite the advantages, given the sensitive nature of sexuality education, the focus group discussions were not very productive, as the young people felt shy to openly share their experiences. As Gray et al (2005) suggests, rather than mixed gender, convening single-gender focus group discussions might have enabled young people to open up.

The researcher conducted two focus group discussions with student participants from both the CIS and the AIS comprising 50 stakeholders, conducted between November and December 2008. In both the CIS and the AIS, intervention teachers and class leaders helped in selecting and gathering students in classrooms where the discussions were to take place.

For the CIS, the group was composed of 25 young people in senior one who had completed the intervention in the first intervention cycle that took place between February 2008 and September 2008. The group in the AIS was composed of 25 young people in senior one who had covered the seven lessons of the intervention before its abandonment. In the selection, teachers requested students who wished to participate in the discussion to raise their hands. Out of those who raised their hands, the teachers purposively selected 25 of them. Responses from focus group discussions were digitally recorded with participant consent. Each focus group discussion lasted for one hour. The researcher gave each participant a pen and a notebook as modest incentives for their participation.

4.5.4 External Stakeholder Face-to-Face Semi-Structured Interviews

External stakeholders were parents of the CIS and the AIS, and the intervention leaders who had visited both the CIS and the AIS. The major objective was to qualitatively investigate the perceptions of external stakeholders regarding the facilitating and the inhibiting mediators for the intervention implementation. In Uganda, some parents discourage young people from adopting HIV interventions claiming that such interventions instead promote promiscuity (Mitchell 2001). Thus, as key stakeholders of schools, it was anticipated that parents' perceptions can influence young people's decisions to adopt or not to adopt school-based HIV interventions. In this regard, it was anticipated that investigating parents would help to further explain reasons for intervention completion or abandonment. The three intervention leaders had visited both the CIS and AIS in addition to having heard from experiences of other schools. Thus, it was anticipated that investigating them would provide fruitful insights regarding reasons for intervention completion and abandonment.

In both the CIS and the AIS, the interviewed parents were recommended by the intervention teachers and students and their selection depended on their homes' proximity to the school and/or involvement in the intervention activities.

Six parents were interviewed from the CIS and six parents from the AIS. All the parents had their children completed/enrolled for the intervention. Four of the six parents of the CIS were directly involved in the activities of the intervention, while the remaining two were selected due to their close proximity to the school. Parents in the AIS were not involved in the intervention. None of the six parents interviewed from the AIS was involved in the activities of the intervention, thus their selection depended on their close proximity to the school. Interview appointments were made depending on parent convenience. Parents were interviewed at their homes.

Three intervention leaders were interviewed; the Executive and Training Director (ETD), the Sexual Reproductive Health (SRH) consultant and the Teacher Support Specialist (TSS).

Intervention leaders were interviewed during the WSWM orientation workshop (September 2008) in Kampala, Uganda attended by the researcher. Interviews were conducted during lunch breaks of this workshop. The first to be interviewed was the Executive and Training Director (ETD) who was the senior figure in leading the activities of the intervention. The ETD then recommended and introduced the researcher to two other intervention leaders who were interviewed.

Interviews from parents and intervention leaders were digitally recorded with their consent. Each interview lasted from 30-60 minutes. Interview guides for parents and intervention leaders are in appendices C4 and C5 respectively.

Overall, this investigation involved interviews with 15 external stakeholders. Tables 12, 13 and 14 above demonstrate the interview schedules of parents of the CIS, parents of the AIS and intervention leaders respectively.

4.6 Data Analysis: Overview and Coding Process

Data analysis followed the analysis procedures of grounded theory (Strauss and Corbin 1990), a methodology employed in the qualitative assessment of this research.

As further described below, the three coding processes of grounded theory i.e. open coding, axial coding and selective coding were manually employed in data analysis. Despite being more time-consuming, manual analysis enabled the researcher to take an active decision in the formulation of themes, sub-themes and properties, rather than relying on software decisions. Transcribing of interviews was conducted by the researcher. This enabled the researcher to become familiar with emerging themes from different interviewees before the actual data analysis began (Bryman 2008).

Analysis was done using grounded theory's three-stage coding process; open coding, axial coding and selective coding. Results of this analysis are indicated in tables 28 and 29 in chapter 6 for the results of teachers/head teachers and students respectively. The generated stakeholder results are shown in tables 30 and 31 in chapter 7 for results of parents and intervention leaders respectively.

The researcher sought to analyse stakeholder behaviours and meanings concerning the implementation of the WSWM intervention. Details of the analysis/coding process for both internal and external stakeholders in this investigation are now described.

Open coding

Open coding is the first phase of grounded theory data analysis that involves developing themes from the transcribed data through microscopic line-by-line comparisons (Strauss, 1987: 20-30). Through critical line-by-line data examination, 10 major themes initially emerged.

These themes included "perceived need for the intervention", "confidence and consuming skills", "management support and priorities", "match with routine workflow", "institutional climate", "technological issues", "teaching motivation", "culture compatibility with sex education", "religious compatibility with condom advocacy", and "public/parent sensitisation and involvement".

To ensure that all the data effectively fitted within these identified ten categories, verbatim sections of all the interview transcripts were extracted on separate documents and arranged according to these categories.

Axial coding

Axial coding was employed to systematically examine the themes developed during open coding, develop sub-themes and properties, and establish relationships between themes and sub-themes. This process involved both revisiting the already collected data as well as collecting new data to confirm emerging themes or fill in the gaps in the emerging framework.

Further questions asked included; do you feel confident to discuss the contents of the WSWM in class? what makes you uncomfortable to discuss the lessons of WSWM in class? What can be done to help you build your confidence in discussing the contents of the WSWM? What other influences do you think have facilitated or impeded the implementation of the WSWM in the school? Apart from parents, who else do you think can be involved to better maximise the impacts of the WSWM? How can they be involved?

Analysis of responses to these questions together with re-examination of the themes already developed during open coding resulted in refinement of the previously developed themes. This process involved grouping the previously identified themes into three more abstract conceptual labels; individual level mediating influences, institutional mediating influences, and social-religious influences. Consequently, all the 10 previously identified themes became sub-themes that were then fitted into the three newly developed abstract themes.

All the critical mediating influences that operated at an individual level became sub-themes of the "individual level context" theme.
These sub-themes are: "perceived need for the intervention", and "confidence and consuming skills".

The "institutional context" theme consists of the sub-themes of all the mediators that influenced the completed implementation of the intervention within the context of the school.

These sub-themes are: "management support and priorities", "match with routine workflow", "institutional climate", "technological issues", and "teaching motivation".

The theme of "social-religious context" included sub-themes of mediators that directly or indirectly influenced the completed implementation and adoption of the intervention beyond the school environments. These mediating influences included "culture compatibility with sex education", "religious compatibility with condom advocacy", and "public/parent sensitisation and involvement".

Selective coding

Selective coding involved establishing relationships between themes and sub-themes and organising the sub-themes around one central theme. This is indicated in figure 6, which is presented and discussed in chapter 8.

5 Investigation 3: Qualitative Out-of-School Multiple Case Study

In this investigation, a qualitative research design was used to obtain in-depth understanding of the impact of the intervention on the out-of-school young people's sexual behaviours, HIV knowledge, attitudes and self-efficacy obtained from the WSWM intervention, and to investigate mediating influences on the adoption of HIV preventive behaviours, as well as to explore the benefits of the computer-based nature of the WSWM intervention.

At the Kampala WSWM orientation workshop the ETD had suggested that it would be interesting to investigate the views of former students of the intervention on intervention effectiveness in passing on the skills and knowledge to overcome real world challenges of HIV prevention. Compared to the in-school quantitative before-after investigation, evaluating the impacts of the WSWM intervention on young people who had left school offered many advantages:

- Compared to the before-after evaluation that only focused on immediate (one week after the intervention) impacts of the intervention, the out-of-school assessment provided an opportunity to evaluate the impacts of the intervention on participants where a reasonable period of time (2-5 years) had elapsed since the completion of the intervention.

- It offered an opportunity to evaluate the impacts of the intervention on young people who were outside the behavioural protective context of secondary schools, who were older than the in-school young people and whose sexual exposure and experience was likely to be greater than those of the in-school young people.

- Compared to the before-after evaluation, which was limited in depth due to its quantitative nature, this qualitative assessment could provide rich insights into the impacts of the WSWM intervention.

5.1 Case Study Design

Case study design has been explained and justified in the previous section. It became apparent, from contact with intervention teachers, that access to out-of-school young people in a single-site was impossible. Therefore, for this investigation, a multiple case study design was chosen as most appropriate, viewing each out-of-school young person as an individual case study. The abductive approach to theory use was again taken.

5.2 Access to and Selection of Participants

The researcher was introduced to several intervention teachers from different schools across the country by the intervention leaders during the orientation workshop attended in 2008. During this workshop, 13 contact telephone numbers of potential out-of-school participants were obtained from intervention teachers of their former schools. The researcher managed to access 10 participants out of the thirteen contact telephone numbers. Two contact telephone numbers appeared not in use while one contact appeared invalid.

Each of the 10 identified participants were then requested by the researcher to identify one of her/his peers with whom s/he had completed the WSWM intervention. The researcher provided small telephone credits of approximately £1 in order to enable the telephone tracing of their peers. This peer-to-peer identification resulted in the identification of 10 more participants. Overall, 20 participants were identified. Using telephone communication, all the participants were informed about the objectives of this investigation and were requested to participate in the research by the researcher. They all consented to participate.

5.3 Social-Demographic Characteristics of Participants

Participants were 20 former students of the intervention. Eleven were males, while 9 were females, aged between 18-25 years. Of the 20 participants, 11 were either enrolled in or had completed university education, while 9 were either enrolled in colleges or had completed college education. 13 out of 20 participants were former peer educators of the intervention.

The amount of time that had elapsed since they had completed the intervention ranged from 2-5 years. Table 15 demonstrates the interview schedule and social-demographic characteristics of participants.

Table 15: Interview schedule and social-demographic characteristics of participants in the out-of-school investigation (%)

Interview Schedule			
Stakeholder group	**Out-of-school young people**		
Design	Telephone-based semi-structured interviews		
Interview date	Sept 2008 to Dec 2008		
Interview duration	30 minutes to 90 minutes		
Elapsed time since the intervention	2-5 years after completing the intervention		
Total participants	20		
Social-demographic characteristics (%)			
Gender	Male=11 (55%)	Female=9 (45%)	Total=20 (100%)
AGE (years)			
18-21	4(20)	4(20)	08(40)
22-25	7(35)	5(25)	12(60)
Education			
University	4(20)	7(35)	11(55)
College	7(35)	2(10)	9(45)
Marital status (All were not married**)**	11(55%)	9(45%)	20(100%)
Religion (All were Christians**)**	11(55%)	9(45%)	20(100%)

5.4 Data Collection: Telephone-based Semi-Structured Interviews

Rather than using face-to-face interviews, data collection was conducted using telephone-based interviews due to two major reasons:

1. It was not possible to get participants in a single site since they were attending colleges and universities in different parts of the country. Reaching participants by mobile telephone communication was the only time saving and economically feasible method.

2. Given the sensitive nature of investigating self-reported sexual behaviours and sexual-related information, compared to face-to-face interviews or self-administered interviews, telephone interviews can reduce bias and social desirability constraints (Davis et al 2004; Bajos et al 1992).

3. Other researchers (Simoes et al 2006; Des Jarlais 1999) affirm that the use of remote methods, e.g. audio computer-assisted self-interview rather than researcher administered interviews, improves reporting of sensitive information regarding personal sexual behaviours.

Despite the advantages experienced in this research, telephone-based interviews can be challenging in cases where the contact telephone numbers of potential participants are no longer in use.

Interview appointments were made by telephone. Between Sept.08 and Dec 08, the researcher employed telephone interviews to collect data from 20 former students of the intervention. Participant responses to interview questions were written on paper by the researcher. These responses were then word processed into interview transcripts after the interview. Each interview lasted from 30 to 90 minutes.

To stimulate their retrospective thinking, participants were asked how they thought the WSWM intervention impacted on HIV/AIDS-related attitudes, self-efficacy, and sexual behaviours. Also, in order to identify influencing contextual mediators for the adoption of HIV/AIDS preventive measures, participants were asked how easy/hard it is for them to sustainably adopt the sexual behaviours reported to have been obtained from the intervention (see appendix B for interview guide). Generated according to the area of investigation (Strauss and Corbin 1990: 33-40), this interview guide was tentative and only served to create some focus to data collection.

The collected data was based on specific practical real world experiences of the young people in the context of adopting and maintaining motivational efforts to prevent HIV/AIDS. Sometimes the researcher posed indirect non-personal questions to interviewees (Laukkanen 1994). This approach encouraged participants' openness on sensitive issues, thus helping in capturing data that would otherwise be missed.

5.5 Data Analysis

5.5.1 Coding Process for Qualitative Data Analysis

The data analysis iteratively followed grounded theory's three-stage coding process; open coding, axial coding and selective coding to generate the results indicated in table 25 of chapter 5.

Open coding

Open coding is the first phase of grounded theory data analysis, and involves developing themes from the transcribed data through microscopic line-by-line comparisons (Strauss 1987: 20-30). Through critical line-by-line data examination, four major themes were generated as shown in table 25 of chapter 5. These themes are "sexual behaviours", "knowledge and attitudes", "self-efficacy skills" and "contextual mediating influences".

To ensure that all the data effectively fitted into these themes, verbatim sections of all the interview transcripts were extracted on separate documents and arranged according to these themes.

Axial coding

Axial coding involved re-examining data in order to discover sub-themes and properties of the themes developed during open coding. This process was aided by both further revisiting the already collected data, and collecting more data by asking a variety of questions to participants that aimed to explore the impacts of the intervention and the influencing mediators for sustainable adoption of HIV risk reduction measures.

Such questions included; do you think the intervention influenced your sexual behaviours? How did the intervention influence your sexual behaviours? What makes it easy/hard for you to adopt and maintain the reported sexual behaviour? Responses to these questions and the results obtained by re-examining themes that emerged out of the already collected data helped in identifying sub-themes and properties, and in establishing of relationships between themes and sub-themes.

As indicated in table 25 of results in chapter 5, in axial coding, the sub-themes and properties of the previously developed themes were identified, and their properties defined.

The identified sub-themes of "sexual behaviours" includes "engaged in sex abstinence", "fidelity and condom use", and "fidelity without condom use". "Engagement in sex abstinence" included properties of "Remaining virgin till marriage", and "stopping sexual activities and abstaining".

"Fidelity and condom use" consisted of "Sticking to one partner and using condoms consistently".

"Fidelity without condom use" consisted of "sticking to one partner but without using condoms".

Three sub-themes emerged under the theme of "knowledge and attitudes". First, there were "awareness and perception of vulnerability to HIV/AIDS", which had properties of "improved awareness and personal perception of HIV vulnerability from sexual activities", "improved awareness and perception of HIV vulnerability from multiple sexual partners" and "improved awareness and perception of HIV vulnerability from unprotected sex." Second, there was "Adherence to infidelity norms" with a property of "reduced adherence to norms that condone multiple sexual partners for men". The third sub-theme was "Perception of gender equity in HIV & pregnancy prevention" which had properties of "improved perception of men's active role in pregnancy prevention", and "positive attitudes towards females' condom negotiations".

Two sub-themes emerged under the theme of "self-efficacy skills". These were: "Sexual assertiveness skills" and "Condom negotiation/use skills".

In addition, the study revealed that there are varieties of "influencing contextual mediators for HIV prevention" (theme) that motivate or inhibit individual adoption of HIV/AIDS preventive measures. These mediators can be interpersonal, social, economic and religious in nature.
Interpersonal mediators include: "Sexual relationship characteristics" e.g. "negative partner attitudes towards condoms" (reduction of sexual pleasure, condoms remaining in a woman, condoms' failure to be 100% effective in HIV prevention); and "partners' perceptions of low HIV risk in long term relationships that constrain condom use";

"Familial mediators" e.g. "lack of parental sexual guidance" yet, parents seen as source of reliable sexual information, "lack of parental role models", "lack of parent-child sex communication", and "perception of family protective environments."

"Peer influence" e.g. "positive peer role models can set a good example for abstinence" while "negative peers can discriminate and discourage abstinence through intimidating labels."

In addition, moving beyond the interpersonal level, there exist social structures that influence individual adoption of HIV/AIDS risk reduction strategies through "gender-biased social norms" e.g. "norms condoning multiple sexual partners for men", "norms interpreting girls' condom initiation as prostitution", and through "norms associating girls' virginity with marital social gains".

Beyond the social structures are "economic constraints" that can "drive young people into unwanted sexual encounters" through exchange of sex for gifts and money, which can constrain safer sex negotiations, and increases possibilities of sexual abuse.

"Christian religious beliefs" also influence adoption of HIV preventive strategies through the "Christian condemnation of sex before marriage" which encourages sex abstinence, the "Christian condemnation of infidelity" which encourages fidelity, while the "Christian condemnation of condom advocacy" constrains condom use.

The computer-related benefits that emerged from the data were: privacy and confidentiality, unlimited accessibility (geographical), accessibility of the otherwise denied sexuality information, interactivity, and social support.

Overall, this data analysis not only indicates the impacts of the intervention, but also demonstrates how contextual mediators influence the impacts of HIV interventions by either motivating or constraining adoption of HIV preventive behaviours advocated by interventions. In addition, the results indicated the benefits of using computer-assisted sexuality and HIV/AIDS interventions compared to traditional face-to-face interventions.

Selective coding

During selective coding, the developed themes were comparatively re-examined to identify possible similarities in order to avoid overlaps.

This resulted in renaming and moving some sub-themes to their most appropriate themes. For instance, initially "associating girls' virginity with marital gains" was placed under individual level mediators, but after realising that it was more of a social entity than an individual aspect, it was relocated under "gender-based social norms" and renamed "norms associating girls' virginity with marital social gains". The result of selective coding was a framework figure 5, which is presented and discussed in chapter 8.

5.5.2 Quantitative Data Analysis

The application of descriptive statistical measures to quantify the qualitatively collected evidence is not uncommon (Remenyi et al 2002). In addition to the main use of grounded theory, for purposes of quantification, percentage counts of the occurrences of themes were calculated. This involved coding themes and using SPSS to generate their percentage counts. Results from this analysis are presented in tables 26 and 27 of chapter 5. This quantification helped in roughly identifying which impact was most influenced by the intervention, and which contextual influences were perceived as greater or lesser.

6 Quality Issues in Qualitative Investigation

Ensuring quality of a research study is a key issue to its success. Hammersley (1992) stresses the importance of having research findings that accurately reflect the phenomena being studied. This can be achieved by minimising research methodological errors (Murphy et al 1998). Quality assurance in the qualitative investigations of this study has been based on the quality criteria formulated by Lincoln and Guba (1985). These criteria specify 4 quality strategies for assessing qualitative research. These strategies are: credibility, transferability, dependability and conformability.

Credibility

This includes demonstrating that results have been generated through an appropriate research process. As shown in the sections above, the research methodologies used have been described and justified. The research participants were found in their own 'natural settings': heads of schools, intervention teachers and young people were studied from their own schools while parents were interviewed from their own homes. Thus, the findings are based on real contexts rather than being influenced by an artificial research environment.

The population studied was treated as research participants rather than research subjects. Requests for their consent to participate were sought and confidentiality of information collected ensured. For instance, reference codes instead of interviewee names were used, the transcribed data was stored in a confidential place, and the names of interviewees were not published or written in the findings of the study.

Digital recording of the interviews was done with the consent of the interviewees. Interviews and focus group discussions were more informal meetings rather than formal meetings, thus participants seemed more relaxed. Since the researcher was an external investigator, participants were less mistrustful concerning the information they were providing. The researcher maintained a healthy relationship with participants. This included email communications with participants about the updates of this research and the intervention activities including researcher invitations to intervention workshops.

Transferability

Transferability explains the extent to which the identified results can be generalised to a wider context. Extensive literature has been reviewed (chapter 2). Some findings confirmed the literature, while others added new insights.

However, the case studies in this research focus on "the plausibility and cogency of the logical reasoning used in describing the results from the case, and in drawing conclusions from them" (Walsham 1993: 15), and, following the abductive approach chosen, generalize to theory, rather than to wider populations. Noteworthy, comparing the findings with the extant models (e.g. ARRM, social marketing, ecological models and PRECEDE PROCEED model) gives some degree of generalisation to the findings of this research.

Results from the qualitative impact investigation with the out-of-school young people (chapter 5) should be treated with some caution.

This is because the selection of participants could have been biased by intervention teachers, who were the major source of participants' telephone contacts, 13 of these participants were former peer educators, and a relatively long period had elapsed (2-5 years) since the completion of the intervention.

Dependability

This includes explaining the extent to which results can be relied upon or trusted. Based on recommendations suggested by grounded theory, the relationships between categories and subcategories have been verified from the incoming data. The resulting refinements of old categories, development of new categories, and revision of the relationships between categories have been documented. The cross comparison of the school that completed the implementation of the intervention with the school that abandoned the implementation enabled the comparison of a success story with a failure story. This made it possible to understand how the implementation mediators manifested themselves in these two opposite cases. It enabled the identification of important insights that would otherwise not have been identified from one case. Considering different schools made it possible to obtain stakeholder perspectives and experiences from different organisational contexts.

Bias from participants was minimised by using multiple sources of evidence (appendices C6-C9). For instance, interview responses were cross-checked with secondary sources.

As Remenyi et al (2002) argue, collaborative evidence was obtained from several different informants within a school e.g. some of the responses from heads of schools and intervention teachers were confirmed from interviews and focus group discussions with students. Also, by getting opinions from external stakeholders, parents helped further the idea of evidence triangulation, as parents were more likely to express themselves freely, unlike teachers and students whose disclosures may have depended on the schools' political climate.

In addition, the use of telephone-based interviews with the out-of-school case study reduced reporting bias due to social desirability associated with self-reported sexual behaviours and sexual-related information (Davis et al 2004; Bajos et al 1992).

Conformability

Conformability deals with the extent to which similar results can be obtained by a different researcher given the same research question(s) and contexts. Investigating the same case studies explored in this research by a different investigator requires systematic documentation of the research procedures employed (Yin 2009). The research questions of this study are clearly stated. The data collection sources have been explicitly disclosed. Data analysis systematically followed a well documented procedure of grounded theory (Strauss and Corbin 1990). It is anticipated that, given the same situation with exactly similar conditions that generated the findings, the same findings could be obtained by a different researcher. However, it is noteworthy that such exactly similar conditions are rare in social science studies.

7 Mixing Quantitative and Qualitative Methods

Research in computer-assisted interventions has long been criticised for its over-emphasis on quantitative methods (Benbasat and Weber 1996; Orlikowski 1993). While it may be important to quantify some outcomes, this approach may not properly address social and organisational issues (e.g. user perspectives) involved in intervention implementations (Brender et al 2000; Hirschheim and Klein 1994; Galliers 1993). Understanding social and organisational issues in computer-assisted implementations requires the use of qualitative methods (Robey 1996; Iivari 1991).

However, neither quantitative nor qualitative methods may be effective on their own (Hirschheim and Klein 1994).

For example, in a mixed methods approach to a healthcare intervention, Kaplan and Duchon (1988) found that, unlike the results from their quantitative method that had assumed that users with similar jobs had similar perceptions about the system, qualitative methods identified differences in perceptions. The comprehensive nature of mixed methods may enable the identification of important insights that would not otherwise have been identified by a single method (Esterberg 2001; Silverman 2004; Creswell et al 2006; Mingers 2003; Tashakori and Teddlie 2002; Bryan 2001; Kaplan et al 2004; Lee and Baskerville 2003).

This present research acknowledges the advantages of utilising mixed methods. This research aimed at both obtaining the levels of significance of the impacts of the intervention as well as conducting in-depth explorations of the social and organisational issues in the intervention implementation process. To achieve this objective, mixed quantitative and qualitative methods were employed in a separate but complementary fashion. This methodological combination enabled the concurrent exploitation of potentials from both methods; e.g. the potentials of qualitative methods in obtaining in-depth meanings of events, complemented with the potential of quantitative methods for quantifying the identified meanings.

Robson (2002) suggests two major approaches when employing mixed methods: (1) qualitative methods can be used to explain results from quantitative methods; (2) qualitative results can be used to identify initial themes that can then be quantitatively measured and validated. The present study has elements of both approaches as mixed methods were used to provide answers to each of the research questions and to compare and complement each other's findings.

Having in mind that each method can be effective in answering different research questions, the criteria for selecting the method mainly depended on its likelihood to appropriately answer the questions (Myers and Avison 2002). In particular, the following justify the use of mixed methods in this research:

- Mixed methods enabled the researcher to appropriately answer the research questions by providing independent answers to each of the research questions. No single research approach would have determined the level of significance of the intervention impacts while at the same time obtaining deep explanations of intervention implementation mediating influences. For instance, quantitative methods assessed the level of significance of the impacts of the intervention in a way that would not have been possible using qualitative methods. The use of a before-after intervention design helped in justifying the extent to which identified impacts can be attributed to the intervention rather than to any other external mediators (Wyatt and Wyatt 2003; Friedman and Wyatt 1997; Wyatt 2000).

- The investigation of the impacts of the intervention on the out-of-school young people employed qualitative methods in order to obtain in-depth details of some of the outcome measures that were assessed quantitatively in the in-school assessment. Qualitative data from the out-of-school evaluation not only added explanations to the results of the quantitative impact assessment but also enabled the identification of new insights regarding the contextual mediators influencing young people's adoption and maintenance of HIV preventive behaviours.

  Since these insights emerged during the semi-structured qualitative data collection, identifying such important insights would not have been possible with quantitative methods given their inflexible structured nature.

- Due to the explanatory nature of one of the research questions that was concerned with mediating influences on the implementation of the intervention, qualitative methods were employed. This approach made it possible to get in-depth understanding of stakeholder experiences, behaviours and attitudes towards the intervention. Such deep insights could not have been generated from quantitative methods.

Some of the themes that emerged from this qualitative investigation helped in explaining some of the results obtained from the quantitative intervention evaluation.

- The initial themes that emerged from the qualitative interviews and focus group discussions provided guidance on the selection of outcome measures for the quantitative before-after surveys.

8 Summary

This chapter has discussed and justified the research methodology employed in the present study. This research may be seen as utilising positivist approaches, as it employs quantifiable measurement of variables and seeks to quantitatively assess the level of significance of the impact of the WSWM intervention. But it does not have other positivist characteristics, such as aiming to develop universal laws. It also utilises interpretivist approaches, as it seeks to gain understanding of stakeholder meanings and behaviours by employing qualitative methods, including person-to-person semi-structured interviews for data collection and grounded theory for data analysis.

Justifications for the use of mixed methods have been demonstrated. Three investigations and five data collection sites involved in this research have been discussed. These investigations are: the quantitative controlled before-after intervention study, the qualitative cross-case analysis study and the qualitative out-of-school multiple case study.

The research designs and steps followed in each of these investigations have been systematically documented and justified. Overall, this research involved 584 quantitative questionnaires answered by 292 participants, 53 interviewees and 2 focus group discussions comprising 50 participants.

Following this chapter are the four chapters presenting the results of this thesis.

CHAPTER 4: THE QUANTITATIVE BEFORE-AFTER INTERVENTION INVESTIGATION

1 Introduction

This chapter documents the results of the before-after design that aimed to assess the level of significance of the impacts of the intervention on the in-school young people's sexual behaviours, knowledge of HIV/AIDS, attitudes and perceived self-efficacy.

The format of this chapter is as follows: the first section gives the background of this study. The second section presents the findings. Finally, the third section summarises the results of this study.

1.1 Background to the Quantitative Before-After Intervention Investigation

The aim of this background is to give an overview of this investigation. More detailed explanations of the employed research design were in demonstrated in section 2 of chapter 3. The major objective of this investigation was to assess the level of statistical significance of the impacts of the WSWM intervention on the in-school young people. To achieve this objective, this investigation involved the intervention group (the group that had the intervention) and the comparison group (the group that never had the intervention). Permission to investigate the intervention school was obtained from the intervention leader (the Executive and Training Director-ETD) between May and September 2008. Authorisation to investigate the comparison school was obtained from the head of school in January 2009.

The intervention school was selected due to the researcher's initial contact with the intervention teachers, the anticipated high HIV vulnerability of young people since it was a school in a military barracks with many war-orphaned young people, and the school's close proximity to the researcher's residence.

The comparison school was selected due to the anticipated similarities with the intervention school since it was also located in a military barracks with many war-orphaned young people. As shown in table 8 of chapter 3, that there was no statistically significant difference in the demographic characteristics of the intervention and comparison groups at pre-test.

Selection of participants to the intervention group depended on the school's fixed implementation procedures for the intervention. All the young people in senior one that had enrolled for the intervention by February 2009 were involved in this study. In the comparison school, all the young people in senior one (stream A and B) were involved in this study.

This assessment involved the simultaneous administration of the same questionnaires to both the intervention group (n=146) and the comparison group (n=146) at pre-test and at post-test. The survey questions used were extracted from previously validated surveys obtained from the AIDSquest survey library compiled by the Population Council (2008). Details of the employed questionnaire are in appendix A1. The pre-test assessment was conducted in Feb.2009, one week before the intervention group was exposed to the intervention. The post-test questionnaire was administered in Dec.2009; one week after the intervention group completed the intervention. The impacts assessed were: sexual behaviours (sex abstinence, condom use and number of sexual partners), HIV/AIDS awareness and perception of vulnerability, gender-biased attitudes (i.e. gender equity in HIV/AIDS and pregnancy control and adherence to men's infidelity-related norms) and girls' perception of condom assertiveness self-efficacy.

The collected pre-test and post-test data was coded, entered in SPSS and analysed using paired sample t-tests and descriptive statistics (Pallant 2007).

1.2 Basic Behavioural Characteristics of the Intervention and the Comparison Groups at Pre-test

As indicated in table 16 below, the descriptive statistics paired sample t-tests were employed to assess the pre-test scores of the level of significance of the differences/similarities in basic behavioural variables between the intervention and comparison groups.

Table 16: Basic behavioural characteristics of the intervention and control groups at pre-test

Variable (questions 1-6, 7b, 9a & 9b)	Intervention group (Max n = 146)			Comparison group (Max n = 146)		
Sex	Male =61(42%)	Female =85(58%)	Total =146(100%)	Male =46(32%)	Female =100(68%)	Total =146(100%)
Age at first sex 5-10 11-16	11(08%) 34(23%)	9(06%) 28(19%)	20(14%) 62(42%) n=82(56%)[2]	8(05%) 29(20%)	4(03%) 41(28%)	12(08%) 70(48%) n=82(56%)[3]
Knowing someone with HIV/AIDS Yes No	41(28%) 20(14%)	47(33%) 37(25%)	88(61%) 57(39%) n=145(99%)[4]	27(18%) 19(13%)	76(52%) 24(16%)	103(70%) 43(30%) n=146(100%)
How to know someone with HIV/AIDS By symptoms By test results	53(36%) 8(6%)	79(54%) 6(4%)	132(90%) 14(10%) n=146(100%)	36(25%) 10(7%)	95(65%) 5(3%)	131(90%) 15(10%) n=146(100%)

The average age at first sex was 11 years. The majority of participants knew someone with HIV/AIDS. The majority would know that a person has HIV/AIDS by simply looking at the symptoms e.g. skin rashes, loss of weight, coughing, and red lips. Females were more likely to perceive HIV/AIDS status by looking at symptoms than males.

2. Results

2.2 Impact on Sexual Behaviours

2.2.1 Descriptive Overview of the Intervention Group

Table 17: Descriptive statistics of sexual behaviours of the intervention group at pre and post intervention

Sexual behaviours	Assessment statements	Intervention pre-test n=145			Intervention post-test (n=145)		
		Male	Female	Total	Male	Female	Total
Number of partners/abstinence (Question 7)	Not had sex in the last three months	33(23%)	55(38%)	88(61%)	41(28%)	65(45%)	106(73%)
	Had sex with 1 partner in the last 3 months.	13(09%)	19(13%)	32(22%)	06(04%)	11(08%)	17(12%)
	Had sex with 2 or more partners in the last 3 month	15(10%)	10(07%)	25(17%)	13(09%)	08(05%)	21(14%)
	Ever used condom	30(21%)	35(24%)	65(45%)	31(22%)	35(24%)	66(46%)
Condom use (Question 8)	Used condom at last sex	15(10%)	19(13%)	34(23%)	16(11%)	20(14%)	36(25%)

At post-test, more females (45%) than males (28%) were more likely not have had sex in last three last months. More males (10%) than females (5%) were more likely to have had sex with two more persons in the last three months.

The percentage of participants who reported "ever used condom" (45%) at pre-test increased by only 1% at post-test (46%).

2.2.2 Assessment by Wilcoxon Signed Rank Test

Wilcoxon signed rank test (also known as Wilcoxon matched pairs signed rank test) is a non-parametric test statistics version of paired samples t-test which analyses "subjects measured on two occasions or under two different conditions…or in situations involving matched subject design, where subjects are matched on specific criteria" (Pallant 2007).

Table 18: Wilcoxon Signed Rank Test demonstrating the differences in sexual behaviours between pre-test and post-test for the intervention and the comparison groups

Sexual behaviours	Assessment statements	Intervention group (n = 145)			Comparison group (n = 145)			Paired intervention & comparison (n=145)	
		Pre(%)	post(%)	P	Pre(%)	post(%)	P	Pre(P)	post(P)
Number of partners/abstinence (Question 7)	Not had sex in the last three months	61	73	0.00	59	58	0.16	0 16	0.00
	Had sex with 1 partner in the last 3 months.	22	12	0.00	23	21	0.16	0.32	0.00
	Had sex with 2 or more partners in the last 3 month	17	14	0.05	15	17	0.08	0.83	0.05
Condom use (Question 8)	Ever used condom	45	46	0.32	43	44	0.60	0.08	0.57
	Used condom at last sex	23	25	0.64	21	23	0.26	0.08	0.64

As indicated in table 18, the intervention had a statistically significant influence on sex abstinence, number of sexual partners as indicated by P-values which are less or equal to 0.05, but no significant influence on condom use (P-values greater than 0.05).

The intervention group had a significant (P=0.00) increase in young people who reported not having had sex in the last three months from a pre-test percentage of 61 to a post-test percentage of 73. In contrast, the comparison group had an insignificant (P=0.16) decrease in young people's involvement in sexual activity in the last three months from 59% to 58%. Between-group paired-samples demonstrated significant differences between the intervention and comparison groups (P=0.00) at post-test, despite the insignificant difference at pre-test (P=0.16).

The intervention within-group assessment indicated significant decreases in young people's number of sexual partners over the previous three months, from 22% at pre-test to 12% at post-test; (P=0.00) for engagement with one person, and from 17% to 14%; (P=0.05) for involvement with multiple persons.

This compares to the decrease in the comparison group from 23% to 21%; (P=0.16) for engagement with one person, and an increase from 15% to 17%; (P=0.08) for involvement with multiple persons. Between-group assessments indicate insignificant differences at pre-test (P=0.32) and (P=0.83), and significant differences at post-test (P=0.00) and (P=0.05) for engagement with one or with multiple persons respectively.

The intervention had no significant impact on young people's condom use i.e. 45% at pre-test, and 46% at post-test; P=0.32, and no significant (P=0.64) increase in young people's condom use at last sex from 23% at pre-test, to 25%; at post test.

2.2.3 Reasons for Use and Non-use of Condoms at Last Sex

Tables 19 and 20 below illustrate themes that emerged from intervention group responses to an open question (Question 8d) that asked them reasons for their use or non-use of condoms at last sex.

Table 19: Reasons for non-use of condoms in the intervention group at post-test (percentages are rounded off)

Reasons for non-use of condoms at last sex (Question 8c by gender)	Intervention pre-test (n=84)			Intervention post-test (n=86)		
	Male 54 (64%)	Female 30 (36%)	Total 84 (100%)	Male 59 (69%)	Female 27 (31%)	Total 86 (100%)
Do not know how to use condoms.	21(25%)	0(0%)	21(25%)	21(25%)	0(0%)	21(25%)
Still too young to fit in condoms and condoms can remain in a girl's body.	4(5%)	2(2%)	6(7%)	4(5%)	2(2%)	6(7%)
Condoms cause cancer and its fluid contains germs	4(5%)	4(5%)	8(10%)	4(5%)	2(2%)	6(7%)
One can still get AIDS even if condoms are used since they not 100% effective	6(7%)	6(7%)	12(14%)	6(7%)	5(6%)	11(13%)
Embarrassing to buy and suggest condoms use.	4(5%)	13(15%)	17(20%)	7(8%)	11(13%)	18(21%)
Condoms are expensive to buy	3(4%)	0(0%)	3(4%)	5(6%)	2(2%)	7(8%)
Wanted to know whether I can make a girl	7(8%)	0(0%)	7(8%)	8(9%)	0(0%)	8(9%)

pregnant						
Knew that we didn't have HIV/AIDS	2(2%)	4(5%)	6(7%)	3(4%)	2(2%)	5(6%)
Condoms interfere with sexual pleasure	3(4%)	1(1%)	4(5%)	2(2%)	2(2%)	4(4%)

As shown in table 19 above, three factors strongly contributed to young people's non-use of condoms at last sex: lack of knowledge of using condoms (25%); feelings of embarrassment associated with buying and suggesting condom use (21)%; and perceptions that one can still get HIV/AIDS even if condoms are used (3%). Females were more likely to feel embarrassed at buying and suggesting condom use than males at both pre- and post-test.

Table 20: Reasons for use of condoms in the intervention group at post-test (percentages are rounded off)

Reasons for use of condoms at last sex (Question 8d by gender)	Intervention pre-test (n=19)			Intervention post-test (n=25)		
	Male 8(42%)	Female 11(58%)	Total 19(100%)	Male 10(40%)	Female 15(60%)	Total 25(100%)
To prevent pregnancy	3(16%)	07(37%)	10(53%)	5(20%)	9(36%)	14(56%)
To prevent STDs e.g. HIV/AIDS	3(16%)	01(05%)	04(21%)	03(12%)	02(08%)	05(20%)
To prevent pregnancy and STDs e.g. HIV/AIDS	02(10%)	03(16%)	05(26%)	02(08%)	4(16%)	06(24%)

Table 20 shows that condoms were used for three major reasons: to prevent pregnancy, to prevent sexually transmitted diseases (STDs), and to prevent both pregnancy and STDs.

2.3 Impact on HIV/AIDS Awareness and Perception of Vulnerability

Paired samples t-test is an appropriate parametric statistical tool used in instances where there is a need to assess groups subjected to two different conditions at pre-test (time 1 or before the intervention) and pro-test (time 2 or after the intervention) (Pallant 2007). According to Pallant (2007), paired samples t-test assesses each group on some variable either continuous or ordinal/ ranked linkert. This is done by comparing the level of significance of the mean differences at pre-test and at post-test.

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To assess whether the intervention influenced knowledge of HIV/AIDS, paired sample t-tests were employed to explore the mean differences and level of significance in knowledge scores at both pre- and post-tests of the intervention and control groups.

Table 21: HIV/AIDS knowledge scores for the intervention and comparison groups at pre-test and post-test

Knowledge assessment statements (question 9c)	Intervention group (n = 146)				Comparison group (n = 146)				Paired intervention & comparison (n=146)	
	M1	M2	SD	p	M1	M2	SD	p	p1	p2
Showering, or washing one's private parts after sex keeps a person from getting HIV/AIDS	3.33	3.51	0.38	0.00	3.25	3.30	0.47	0.22	0.07	0.00
Eating healthy foods can keep a person from getting HIV/AIDS	3.42	3.58	0.36	0.00	3.37	3.38	0.83	0.32	0.25	0.00
Taking the Birth Control Pill keeps a woman from getting HIV/AIDS	3.24	3.61	0.56	0.00	3.18	3.23	0.32	0.07	0.06	0.00
A person with HIV/AIDS can look and feel healthy	2.62	2.34	1.41	0.02	2.55	2.56	0.33	0.62	0.06	0.05
There is a vaccine that can cure people from HIV/AIDS	3.17	3.50	0.51	0.00	3.16	3.21	0.57	0.39	0.32	0.00
A person can get HIV/AIDS even if she or he has sex with another person only one time	2.22	1.69	0.88	0.00	2.22	2.19	0.42	0.44	0.32	0.00
People are likely to get HIV/AIDS by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV/AIDS	2.60	2.24	0.76	0.00	2.64	2.56	0.57	0.66	0.20	0.00

M1= Mean at pre-test; M2= Mean at post-test; SD=Standard Deviation; p= Within-group p-value, p1= Between-group p-value at pre-test; p2= Between-group p-value at post-test; n=number of responses

The intervention p-values indicate that young people showed significant improvements in HIV/AIDS knowledge of all the seven statements used for knowledge assessment.

Table 21 shows that all p1 values were >0.05, indicating that at pre-test, there were no statistically significant differences between the intervention and comparison groups regarding their knowledge of HIV/AIDS before the intervention. However, after the intervention, all p2 values were <=0.05, indicating statistically significant differences in HIV/AIDS knowledge between the two groups.

After the intervention, the intervention group experienced statistically significant mean increases in the likelihood of participants to disagree with misconceptions of associating HIV/AIDS cure with washing ones private parts (M1=3.33 to M2=3.51; SD=0.38; p=0.00), eating healthy foods (M1=3.42 to M2=3.58; SD=0.36; p=0.00), taking birth control pills (M1=3.24 to M2=3.61; SD=0.56; p=0.00), and existence of vaccination for HIV/AIDS cure (M1=3.17 to M2=3.50; SD=; p=0.00).

The intervention group also experienced statistically significant mean decreases in participants' likelihood to disagree that a person can get AIDS from having sex only once (M1=2.22 to M2=1.69; SD=0.88; p=0.00), can get AIDS from deep kissing (M1=2.60 to M2=2.24; SD=0.76; p=0.00), and that a person with HIV/AIDS can feel and look healthy (M1=2.62 to M2=2.34; SD=1.41; p=0.02).

For the comparison group, there were no statistically significant differences regarding their knowledge of HIV/AIDS at pre- and post-test, as indicated by the p-values that are greater than 0.05.

2.4 Impact on HIV/AIDS-related Attitudes

2.4.1 Attitudes towards Gender Equity in HIV/AIDS and Pregnancy Prevention

To assess whether the intervention influenced young people's attitudes towards gender equity in condom use initiation and negotiation, paired samples t-tests were employed.

This enabled exploring the mean differences and levels of significance of young people in both the intervention and comparison groups before and after the intervention. Table 22 below demonstrates the within-group and between-group comparisons of the intervention and comparison groups for attitudes towards gender equity in condom use initiation and negotiation at pre-test and post-test.

Table 22: Attitudes towards gender equity in condom use initiation and negotiation scores for the intervention and comparison groups at pre-test and post-test

Statement for assessing gender equity in condom negotiation (questions 10a, and gender comparison)	Intervention group (n = 146)				Comparison group (n=146)				Paired intervention & comparison (n=146)	
	M1	M2	SD	p	M1	M2	SD	p	P1	P2
If a girl carries a condom, her partner will think that she is planning to have sex.	2.13	2.26	0.67	0.02	2.13	2.12	0.19	0.66	0.32	0.02
A girl loses a man's respect if she asks him to use a condom	2.74	2.83	0.44	0.02	2.72	2.74	0.14	0.08	0.08	0.02
It is embarrassing for a girl to buy or ask for condoms	2.14	2.09	0. 33	0.05	2.16	2.14	0.50	0.61	0.25	0.05
Using a condom is a sign of girls not trusting their partner	2.33	2.21	0.53	0.00	2.35	2.36	0.17	0.32	0.32	0.03
Condom use initiation should only be done by boys	3.13	3.18	0.30	0.05	3.12	3.11	0.08	0.32	0.32	0.02
If a girl carries a condom it means they are experienced in sexual matters	2.37	2.44	.0.42	0.05	2.35	2.36	0.08	0.32	0.18	0.02
Girls who carry condoms and insist on using them are prostitutes and such girls are not respected	2.39	2.47	0.42	0.02	2.40	2.42	0.17	0.32	0.32	0.05
It is okay for a girl to suggest condom use	1.72	1.62	0.43	0.00	1.74	1.75	0.08	0.32	0.18	0.00

Between-group paired sample t-tests indicate that there were statistically significant differences between the intervention and comparison groups regarding their attitudes towards gender equity in condom use initiation and negotiation, after the intervention (p2-values<=0.05) compared to before intervention (p1-values>=0.05). This implies that the intervention had a significant effect on young people's attitudes towards gender equity in condom use initiation and negotiation.

The intervention group experienced a significant mean decrease in the like hood of young people to associate girl's condom carrying and negotiation with planning to have sex (M1=2.13, M=2.26; SD=0.67; p=0.02), loss of respect (M1=2.74, M2=2.83; SD=0.44; p=0.02), embarrassment (M1=2.14, M2=2.09; SD=0.33; p=0.05), lack of trust (M1=2.33, SD=0.53; M2=2.21; p=0.00), sexual experience (M1=2.37, M2=2.44; SD=0.42; p=0.05), and prostitution (M1=2.39, M2=2.47; SD=0.42; p=0.02). They significantly disagree that condom use initiation should only be done by boys (M1=3.13, M2=3.18; SD=0.30; p=0.05), and significantly agree that girls can suggest condom use (M1=1.72, M2=1.62; SD=0.43; p=0.00).

In contrast, the comparison group did not experience any significant difference in perceptions towards all above statements, as indicated by the p-values which are greater than 0.05 (table 22 above).

2.4.2 Attitudes towards Men's Infidelity-related Norms

To assess whether the intervention influenced young people's attitudes towards norms that condone multiple sexual partners for men, paired samples t-tests were employed to explore the mean differences and levels of significance of young people in both the intervention and comparison group at pre and post-tests. Table 23 below compares (within-group and between-group) the intervention and comparison groups for attitudes towards norms that condone multiple sexual partners for men at pre-test and post-test.

Table 23: Attitudes towards norms that condone multiple sexual partners for men for the intervention and comparison groups at pre-test and post-test

Statement for assessing attitude towards norms condoning men's multiple sexual partners (question 10b, and gender comparison)	Intervention group (n=145)				Comparison group (n=145)				Paired intervention & comparison (n=145)	
	M1	M2	SD	p	M1	M2	SD	p	P1	P2
Whereas it is ok for boys/men to have more than one sexual partner at the same time, girls/women should only have one sexual partner at one time	2.56	2.75	0.81	0.00	2.55	2.57	0.60	0.68	0.78	0.03

At pre-test, p1=0.78 indicated that there was no statistically significant differences between the intervention and comparison group regarding their perceptions about norms that condone multiple sexual partners for men while constraining women's sexuality. However, after the intervention, p2=0.03 indicated statistically significant differences between the two groups.

Unlike the comparison group (M1=2.45, M2=2.57; SD=0.60; p=0.68), the intervention group experienced statistically significant mean increases (M1=2.56, M2=2.75; SD=0.81; p=0.00) in the likelihood of participants to disagree that men should have multiple sexual partners while at the same time women should have only one partner.

2.5 Impact on Girls' Sexual and Condom Assertiveness Self-efficacy

To assess whether the intervention influenced girls' perception of condom assertiveness self-efficacy, paired sample t-tests were employed to explore the mean differences and levels of significance in condom assertiveness self-efficacy scores before and after the intervention for both intervention and control groups. Table 24 below compares the within-group and between-group paired samples of both the intervention and comparison groups for the condom assertiveness self-efficacy scores at pre-test and post-test.

Table 24: Girls' perceived condom assertiveness self-efficacy scores for the intervention and comparison at both pre-test and post-test

Statements used to assess girls' perceived condom assertiveness self-efficacy (question 10c)	Intervention group (n =84)				Comparison group (n =84)				Paired intervention & comparison (n=84)	
	M1	M2	SD	p	M1	M2	SD	p	P1	P2
I could have sex without a condom if my partner doesn't like them, even if I want to use one.	3.05	3.39	1.05	0.00	3.03	3.01	0.22	0.32	0.32	0.00
I could make sure my partner and I use a condom when we have sex.	2.09	1.48	1.26	0.00	2.11	2.09	0.15	0.16	0.16	0.00
I could have sex without using a condom if my partner wants	3.00	3.43	1.11	0.00	2.98	2.97	0.11	0.32	0.32	0.00
I could insist on using a condom even if my partner doesn't want them	2.76	2.45	0.73	0.00	2.77	2.75	0.15	0.16	0.32	0.00
I could refuse to have sex if my partner refuses to use a condom	2.16	1.55	0.96	0.00	2.18	2.20	0.15	0.16	0.32	0.00
Note: This question was only meant for girls.										

Before the intervention, all p1-values are >0.05, indicating that there were no statistically significant differences between the intervention and comparison groups regarding their perceived condom assertiveness self-efficacy. However, after the intervention, all p2-values are <=0.05, indicating statistically significant differences. This implies that the intervention had a significant effect on girls' perceived condom assertiveness self-efficacy. For example, participants significantly agreed that they would make sure that they use condoms (M1=2.09, M2=1.48; SD=1.26; p=0.00), insist on using condoms (M1=2.76, M2=2.45; SD=0.73; p=0.05), and refuse to have unprotected sex (M1=2.16, M2=1.55; SD=0.96; p=0.03).

In contrast, the comparison group did not experience any significant difference in perceptions towards all above statements, as indicated by the p-values which are greater than 0.05.

3 Summary

This chapter conducted a quantitative before-after intervention study aimed at investigating the impacts of the computer-assisted sexuality and HIV/AIDS intervention implemented in schools in Uganda. To achieve this aim, the previously developed and validated questionnaire was administered to both the intervention group (n=146) and the comparison group (n=146) at pre-test (February 2009) and at post-test (December 2009).

The results indicate that the intervention significantly improved young people's sex abstinence and reduction in number of sexual partners, improved knowledge and perception of vulnerability to HIV/AIDS, improved their attitudes towards gender equity in HIV/AIDS and pregnancy prevention, reduced adherence to men's infidelity-related norms and improved girls' perception of condom assertiveness self-efficacy. However, Condom use appeared to be unaffected by the intervention.

Three reasons significantly contributed to non-use of condoms: lack of skills in using condoms, feelings of embarrassment associated with buying and suggesting condom use and perceptions that one can still get HIV/AIDS even if condoms are used.

Following this chapter is chapter 5 that aimed to obtain the in-depth details of the impacts of the intervention through a qualitative evaluation of the intervention impacts on the out-of-school young people that had completed the intervention when they were still in secondary schools.

CHAPTER 5: THE QUALITATIVE OUT-OF-SCHOOL INVESTIGATION

1 Introduction

The major objective was to obtain in-depth understanding of the impacts of the WSWM intervention from experiences of the out-of-school former students of the intervention, while taking into account contextual mediators influencing the adoption of HIV preventive behaviours. This approach provided an opportunity to investigate how the young people are practically putting to use the HIV knowledge, attitudes and skills gained from the intervention to deal with real world challenges of HIV/AIDS amidst contextual mediators. In addition, this investigation also explored the benefits of the computer-based nature of the WSWM intervention.

The format of this chapter is as follows: Section one gives some background to this study. The second section presents the findings. Finally, the third section summarises the results of this study.

1.1 Overview to the Out-of-School Investigation

The 20 participants (aged between 18-25 years) involved had completed the intervention between 2-5 years ago by the time (Sept.08 to Dec.08) this research was conducted. The involved participants were scattered in different parts of the country and could not be found in one place. Thus, using telephone interviews was the only time saving and economically feasible method. The intervention teachers (met in intervention workshop that the researcher attended in 2008) assisted in the identification of the initial 10 participants. The identified participants then assisted to identify 10 more telephone contacts of their peers with whom they had completed the intervention.

Between Sept.08 to Dec.08, data was collected from 20 out-of-school young people using semi-structured telephone interviews, (see appendix B for interview guide). Each interview lasted from 30-90 minutes. The researcher wrote on paper participants' responses during the interview and later word processed them. Data was then analysed, based on grounded theory's three-stage coding process; open coding, axial coding and selective coding (Strauss 1987: 20-30) to generate the results indicated in section 2 below. More details about this investigation were discussed in section 5 of chapter 3.

2 Results from the Telephone-based Semi-structured Interviews with the Out-of-School Young People

2.1 Overview of Results

The results suggest that the intervention positively influenced young people's sexual behaviours, HIV knowledge and perception of vulnerability, attitudes and self-efficacy. From the results, it can be posited that although HIV/AIDS is always considered as chiefly a behavioural problem, contextual mediators can provide fertile grounds for the prevention of HIV/AIDS by influencing individual decisions on the uptake of HIV preventives, thus influencing the effectiveness of HIV prevention strategies. The results also indicate that being computer-assisted; the WSWM offers benefits of confidentiality of information, unlimited accessibility, interactivity and source of the otherwise denied sexuality information. Tables 25, 26) and 27) below demonstrate the results of this investigation.

Table 25: Relating themes to sub-themes and properties developed during axial coding

Themes	Sub-themes	Properties
sexual behaviours (Question 1)	Engaged in sex abstinence	Remaining virgin till marriage Stopping sexual activities and abstaining
	Fidelity and condom use	Sticking to one partner and using condoms consistently
	Fidelity without condom use	Sticking to one partner but without using condoms
Knowledge and attitudes (Question 2)	HIV/AIDS awareness and perception of vulnerability	Improved awareness and personal perception of HIV vulnerability from sexual activities Improved awareness and perception of HIV vulnerability from multiple sexual partners Improved awareness and perception of HIV vulnerability from unprotected sex
	Adherence to infidelity norms	Reduced adherence to norms that condone multiple sexual partners for men
	Perception of gender equity in HIV & pregnancy prevention	Improved perception of men's active role in pregnancy prevention Positive attitudes towards females' condom negotiations
Self-efficacy skills (Question 3)	Sexual assertiveness skills	Improved assertiveness to reject unwanted sexual advances Improved assertiveness to refuse unprotected sex
	Condom negotiation/use skills	Improved skills to insist on condom use
Contextual mediators (Question 4)	Sexual relationship characteristics	Negative partner attitudes towards condom use constrain condom use Perception of trust in long term relationships constrain condom use
	Familial mediators	Lack of parental-child sexual guidance denies young people reliable information Lack of parental role models e.g. parents who practise infidelity, and those who seduce young people into sexual practices Perception of family protective environments motivates abstinence Personal negative experiences of polygamous families motivates fidelity
	Peer influence	Positive peer role models can set a good example for abstinence Negative peers that discriminate and discourage abstinence through intimidating labels.
	Gender-biased social norms	Norms interpreting girls' condom buying and negotiation as prostitution Norms condoning multiple sexual partners for men Norms associating girls' virginity with marital social gains
	Economic constraints	Economic constraints can drive young people into unwanted (often unprotected) sexual encounters
	Christian religious beliefs	Christian condemnation of sex before marriage motivates abstinence. Christian condemnation of infidelity motivates faithfulness among partners Christian condemnation of condom advocacy constrains condom use
Computer-related benefits	Technological issues	Privacy and confidentiality of the other sensitive information Unlimited accessibility Source of the otherwise denied sexuality information Interactivity and engagement Social support and coping strategies

In addition, the frequencies of the reported impacts of the intervention and the mediating contextual mediators were generated as shown in table 26 and 27 below.

Table 26: Frequency counts of the impacts of the intervention on sexual behaviours based on themes that emerged from data analysis (percentages are rounded off)

	Gender		
	Gender	Male=7	Female=6	Total=13
Sexual behaviours (Question 1) n=13	Engaged in sex abstinence	2(15%)	4(31%)	6(46%)
	Fidelity and Condom use	3(23%)	2(15%)	5(38%)
	Fidelity without condom use	2(15%)	0(00%)	2(15%)

Table 27: Frequency counts of the impacts of the intervention on knowledge, attitudes and self-efficacy, and contextual mediators based on themes that emerged from transcripts (percentages are rounded off)

	Gender	Male=11	Female=9	Total=20
Knowledge and attitudes (Question 2) n=20	HIV/AIDS awareness and perception of vulnerability	6(30%)	7(35%)	13(65%)
	Adherence to men's infidelity norms	8(40%)	7(35%)	15(75%)
	Perception of gender equity in HIV & pregnancy prevention	2(10%)	4(20%)	6(30%)
Self-efficacy Skills (Question 3) n=20	Sexual assertiveness skills	1(5%)	6(30%)	7(35%)
	Condom negotiation/use skills	7(35%)	6(30%)	13(65%)
Contextual mediators (Question 4) n=20	Sexual relationship characteristics	4(20%)	9(45%)	13(65%)
	Familial mediators	7(35%)	9(45%)	16(80%)
	Peer norms	8(40%)	4(20%)	12(60%)
	Gender-biased social norms	7(35)	6(30)	13(65%)
	Financial constraints	0(0%)	2(10%)	2(10%)
	Christian religious beliefs	7(35%)	8(40%)	15(75%)

What follows is the presentation of the details of the themes illustrated in tables 25, 26 and 27 above in the context of the impacts of the WSWM intervention and the contextual mediators influencing the adoption of HIV preventive behaviours.

2.3 Impacts of the WSWM Intervention

2.3.1 Impact on HIV/AIDS-related Sexual Behaviours

As indicated in table 26) above, the intervention influenced young people's adoption of HIV/AIDS preventives in three ways; sex abstinence, fidelity and condom use. 6 (46%) of young abstained from sex, 5 (38%) adopted fidelity and condom use practices, 2 (15%) adopted fidelity without condom use.

Engaged in sex abstinence

After completing the intervention, 6 (46%) of young abstained from sex or delayed their onset of sex.

Some young people that were already sexually active decided to abstain from sex due to the highlighted role of abstinence in avoiding the HIV/AIDS-related dangers of sexual activities. For instance, the following quotation demonstrates a participant's adoption of abstinence, as well as his advice of condom use to young people who can not abstain:

> *…I mean I have opted for abstinence. I was moving around by the time the intervention was introduced at our school. But after learning the dangers, I decided to abstain and I have no sexual partner now, and I always advise my friends that if they can't abstain and they have to do it, it should be protected [female participant].*

The same participant continues to narrate how it would have been difficult for her to abstain from sex without the knowledge and skills gained from the intervention. She anticipates similar difficulties in abstaining from sex for young people who never got exposed to the intervention:

> *Abstinence wouldn't be easy for me but given the knowledge and skills I gained from the WSWM, I can make it, but I think it is very tough for fellow young people who never had the opportunity to the go through the WSWM lessons [female participant].*

Self expression, self control, and knowledge of HIV/AIDS risk involved in sexuality obtained from the intervention, coupled with a quest for a healthy future motivated some participants to adopt sex abstinence as on male participant reports:

> *From the WSWM, I have learnt how to express myself and control my sexual behaviours. Though I had kind of started getting involved in sex, I am now abstaining because I want to have a healthy future. The WSWM informed of the dangers involved in that business; I would rather wait than do and die [male participant].*

After the completion of the intervention, participants reported changes in social life styles, withdrawn sexual relationships, and realised the need to post-pone involvement in sexual activities in order to avoid sexual-related dangers involved. One female participant for instance reports withdrawing herself from sexual relationships and advocating faithfulness for those who can not abstain:

> *After going through the WSWM lesson for relations, yes, my social life took a different route, I decided to take it slow and give myself a break from sexual relationships. Because there are many risks involved and there is no need to hurry anyway. I should advise one to abstain, if you can't, then, be very faithful, and hey, simply be very careful with love; it is sensitive and it shouldn't hurt [female participant].*

Sex abstinence is likely to be easier for young people who have never been involved in sexual activities than for those who have ever been sexually active. The following narrative demonstrates how a participant's lack of previous involvement in sex helps her to maintain her decision to abstain till marriage despite the prevailing temptations:

> *Life is too tempting but it has been possible for me to reserve sex for marriage because I know what I want and the WSWM gave me the hints of living a responsible life. Also, it is more possible for me because I have never been involved in any sex, so I can assume I am not missing anything by not having sex [female participant].*

There were reluctances to get involved in sex before marriage, due to fear of HIV/AIDS-related risks.

For fear of the killer AIDS, participants employ the self control and skills gained from the intervention to reject sexual advances:

> *… I decided to remain virgin till I get married and I got the skills and control to reject sex when some one disturbs me because I am not ready for it. AIDS makes me very hesitant to get involved in sex. I have never had sex and I don't want to have sex till marriage because I know I can catch AIDS and die [female participant].*

While one male participant reports overcoming peer pressure to engage in sex before marriage after having been convinced about the effectiveness of the abstinence option by the intervention:

> *Although my friends try to convince me to get involved in sex, I just can't change my mind because from the WSWM, I became very sure beyond doubt that delaying sex is the best option. I am not having sex at all [male participant].*

However, despite the above reported adoptions of sex abstinence, seven participants reported no behavioural change:

Two orphan female participants reported failure to adopt sex abstinence as they engaged in sexual activities in order to get money for their upkeep: One of them for example reports:

> *...but sometimes it [abstinence] becomes hard because I don't have money and another thing is that I am an orphan; when my parents died its like I lost hope and I find myself into sex because of survival[female participant] .*

One male participant started engaging in sexual activities due to peer pressure that discouraged him from abstinence claiming that abstinence is associated with future barrenness, partner sexual boredom due to lack of experience, and the possibility of getting wrong partners:

> *…my friends kept saying that I will be barren; that I will be boring to my wife when I get married because I won't have any experience; and that I will never get a good girl because am not trying them first, so many things they say, so I kind of find myself giving up on abstinence [male participant].*

Four participants, three males and one female, appreciated the importance of the WSWM intervention but admitted that they are gradually trying to change their behaviours, e.g. one of them reported his efforts to separate himself from friends that drive him to bad sexual behaviour:

> It was a nice intervention really but you know like I will not deceive that I have already changed my sexual behaviour. It is now two years since I completed the WSWM and I am working hard to cut off some of my friends that kind of drive me to those things. I am sure that with time, I will make it really [male participant].

Condom use and fidelity

5 (38%) of young people reported having adopted fidelity and condom use practices after completing the intervention:

Young people reported condom use and fidelity practices after the intervention due to improved perceptions of risk of HIV/AIDS infections from unprotected sex and multiple sexual partners:

> After the intervention, I realised I was taking a big risk to go live [unprotected]. Nowadays, I am a reformed person and I live responsibly, and I make sure I am protected, and zero graze [stick to one partner]. I don't afford cutting my life shorter with slim [AIDS] [male participant].

> …since learning about STDs, I always make sure that he uses condoms to protect from HIV/AIDS. Before, I could close my eyes sometimes take some small risks but now, I can't allow him if he is not protected. Yea, unless if him is not faithful but for me I am faithful [female participant].

Girls' insistence on condom use seems to be associated with their knowledge of high levels of vulnerability to HIV/AIDS and pregnancy compared to their boy's counterparts:

> …I have one boy friend, and I am not afraid to say no to unsafe sex and stick to it. My no means no, so I can't fall into problems like that because in any case, apart from AIDS, it us girls who fall into big problems e.g. carrying unwanted pregnancy [female participant].

One male participant, who used to have many girlfriends and aimed at targeting virgin girls, adopted being faithful to his partner as well as consistently using condoms after the intervention:

> *I used to have more girls, in fact there is a time when me and my friend decided to compete and finish all the girls who we thought were still virgin in my village… I now have one girl friend …. So I can't risk with AIDS by getting more than one girl friend. Of course we also use condoms…of course we condomise every time [male participant].*

The same participant claims that he would put on two condoms if he had more than one sexual partners:

> *… so, I cant risky having more than one partner, and I play it safe; I always make sure we use CDs. May be I would use two condoms at the same time if I was sleeping around but I can't cheat anyway [male participant].*

From the intervention, young people understood the importance of valuing each other life in a relationship, and ensuring that their lives are not put at risk. Consequently, they adopt condom use in order to avoid the HIV/AIDS and pregnancy-related dangers of unprotected sex:

> *Since the WSWM, I learnt how to behave and value my life and the life of my partner... Me and my girl friend ensure that what we are doing will not cost anything from any of us in the end…We weigh between doing it unprotected or going safely by evaluating whether say we can handle the consequences e.g. unintended pregnancy and also the issue of STDs including HIV. Of course the answer is simple; we just can't afford to go unprotected at this time, so we go for condoms, Period [male participant].*

Fidelity without condom use

Despite the reported condom use and partner faithfulness, 2 (15%) participants reported being faithful to their partners but not necessarily using condoms.

One male participant reported having one sexual partner but not using condoms due to the need to have children:

> *I made a decision of not having more than one girl friend after covering the WSWM. I currently have one girl friend and I respect her a lot though in Africa women are not always respected, me I respect mine anyway.*

> *She is the only girl friend I have; however much how many other pretty girls I see, I can't cheat on her because I love her and I have self-control. No we are not using condoms at the moment because we want to have a baby [male participant].*

One participant who used to have many sexual partners reported adopting fidelity after the intervention. However this participant reported not using condoms as he claims to dislike "*gum boots*" (condoms) and perceives his girl friend to be trustworthy:

> *Yes, I am a bit more reserved now. I used to jump here and there with many sexual partners but since I completed the WSWM, I decided to stick to having one girl but I don't use condoms, I don't put on those gum boots because I don't like them and I trust my girl friend [male participant].*

2.3.2 Impact on HIV/AIDS-related Knowledge and Attitudes

13 (65%) improved their awareness and perception of vulnerability to HIV/AIDS, 15 (75%) reduced their adherence to risky infidelity norms, and 6 (30%) improved their perceptions of gender equity in HIV/AIDS and pregnancy prevention.

HIV/AIDS awareness and perception of vulnerability

After the intervention, 65% of young people reported improved awareness of HIV/AIDS and perception of vulnerability to contrasting HIV/AIDS.

Young people suspected themselves to be at risk of getting HIV/AIDS and unwanted pregnancies from risky sexual behaviours e.g. unprotected sex. Consequently, they felt equipped and obliged to take necessary precautions to avoid these risks:

> *… because from the WSWM, I know I can die of AIDS if am not careful… I know the dangers of unprotected sex like getting HIV infections, and I can avoid such dangers [male participants].*

Young people that originally perceived themselves to be "*too young*" to contract HIV/AIDS perceived themselves to be vulnerable to HIV, as they realised from the intervention that the disease does not discriminate in ages:

> *To some extent yes, unlike before, I now know that I have to be extra careful about whom I move out with.*

Before I joined the WSWM, I thought I was too young to get AIDS or to die from AIDS; I was completely wrong, these days, I am very much scared of AIDS [male participant].

In addition to personal perception of vulnerability to HIV/AIDS, participants perceived anyone including their relatives to be at risk of HIV/AIDS. Consequently, the need for collaborative efforts in preventing the disease was pointed out:

Before, I couldn't feel AIDS, but now I know I am at risk of getting it, and so is every one. I learnt that anyone can have AIDS. Before, I used to think that AIDS is not my concern, and whenever I could hear that so and so has AIDS, inwards I would be like let the dead bury their own dead, but now I know that it could me with AIDS, it could be my relative. So, we all really need to work together to fight HIV/AIDS [female participants].

The intervention created awareness about the HIV/AIDS-related dangers of getting involved in risky sexual practices e.g. having more than one sexual partner at a time. Young people felt morally obliged to refrain from multiple sexual practices in order to avoid spreading HIV/AIDS to innocent partners in a sexual network: A quotation from a participant that was originally sexually undisciplined demonstrates this perception:

I was very problematic before… but when I completed the WSWM, it emphasised how deadly my habits were…Also I learnt from the WSWM that having many sexual partners is dangerous; you can get AIDS and when you get it from one partner, you infect the other partner who is innocent…[male participant].

The completion of the WSWM coupled with personal experience of witnessing the death of an AIDS patient (e.g. witnessing the severe pains endured by HIV/AIDS patients, deadly body sores and weight loss) improved participants' perception of the severity of HIV/AIDS, and motivated them to ensure that they do not contract HIV/AIDS:

The WSWM taught me a lot about AIDS. I don't want to die of AIDS for sure, because for me I have also seen our neighbour's daughter suffer from AIDS, she was a young girl at just 21 years. She died when she was looking too bad, with lots of painful sores and she was very skinny. Her death scared me. I am now very careful with my life because I cannot want to go through the pain of AIDS [female participant].

Due to the increased perception of HIV/AIDS risks, one participant reports her withdrawn trust from men, as well as her decision to avoid being in compromising situations that expose her to HIV/AIDS:

> The WSWM has saved me from putting myself in tempting situations that expose me to HIV/AIDS dangers. Before, like for example sometimes I would find myself in tempting situations with men while thinking that things are ok, but man you can't trust them. But now, if I am not interested, them I don't give them any air time because I don't want to put myself at risk [female participant]

Reduced adherence to men's infidelity norms

The intervention reduced 75% of young people's adherence to the prevailing socially defined gender-biased ideologies that condone men's polygamous practices.

Unlike their counterparts who never completed the WSWM, participants condemned the practices of men having multiple sexual partners, and report applying the WSWM principles to avoid the practice:

> The WSWM gave me some guiding principles that I still apply up to now. I see other boys around boosting about their habits of moving out with many girls. For them they think it is prestigious to have many girl friends. For me, I am sticking to my principles I obtained from the WSWM, and this has helped me because when am about to fall out of track, I come back to my principles I got from the WSWM and remember the dangers of involved in having many partners [male participant].

Female participants also condemned men's practice of having multiple sexual partners, stressed that men and women have the same sexual feelings, and advocated for a cultural change that gives both sexes equal sexual rights:

> Generally, my view of sexuality is quite different since I covered the WSWM. I now believe that our culture has to change really; men have to understand that women have got the same sexual feelings like men, and this business of thinking they deserve to sleep with many women and spread their seeds here and there just because they are men should come to an end [female participant].

Improved perception of gender equity in HIV/AIDS and pregnancy prevention

As a result of completing the intervention, 6 (30%) of young people improved their perceptions of gender equity in HIV/AIDS and pregnancy prevention.

In particular, the intervention topic on "pregnancy for both girls and boys" motivated males to get actively involved in ensuring that their partners are not victims of unintended pregnancies. Consequently, males report getting actively involved in discussing with their partners about strategies for preventing unwanted pregnancies:

> *Thanks be to the WSWM for having taught me the lesson on "pregnancy for both girls and boys". This lesson changed my attitudes about men's responsibilities in the context of pregnancy. I now know that as a man, I also have a role to play so that me and my partner avoid unwanted pregnancies. Me and her talk about it freely for example we discuss how to control pregnancy and what do to in case of pregnancy [male participant].*

The notation of gender equity in HIV/AIDS and pregnancy prevention was also demonstrated in males' positive attitudes towards females' condom negotiation. Mutual agreement, love, respect and understanding were described as key characteristics of an ideal sexual relationship:

> *Also for me I believe that girls can also suggest condom use because in relationships, both parties should decide and agree on what to do. And also for example before the WSWM, I used to think that it is up to a girl to ensure that she doesn't get pregnant. Now I know that both male and female need to take responsibility because love shouldn't hurt, and love is not jealous [male participant].*

Females also recognised their right to suggest condom use in order to ensure that their lives are not put at the risk of contrasting HIV/AIDS and unintended pregnancies:

> *…And I now know that girls can also request condom use because it is their lives too. Girls can get AIDS too, and can get pregnancies. So why not protect themselves too? I am abstaining now, but I would suggest condom use if I had a boy friend [female participant].*

2.3.3 Impact on Self-efficacy Skills

After the completion of the intervention, 7 (35%) improved their sexual assertiveness skills while 13 (65%) reported improved condom negotiation/use skills:

Improved sexual assertiveness skills

30% of females reported having been more assertive in sexual communications after completing the intervention.

Participants illustrated how the sexual assertiveness skills obtained from the intervention were being employed to assertively reject unwanted sexual advances, overcome sexual driving influences from their peers and friends, and maintain their decisions to abstain from sex:

> *The WSWM has helped learn me how to overcome the pressures to engage in sex before marriage. I am surrounded by so many temptations and lots of influence from my friends here at the university but I have been strong enough to keep my stand [female participant].*

The ability to assertively refuse sex, coupled with the awareness that not all relationships involve sex, enabled some young people to stay in relationships without necessarily getting involved in sex. For example the following quotation demonstrates a participant's maintenance of a sex-free relationship despite her partner's sexual demands:

> *…I have a boy friend but we abstain since I learnt from WSWM that being in a relationship means much more than just having sex. For him he wants and his friends also convince him, but me I how to handle it and refuse [female participant].*

The life skills gained from the intervention are being applied to overcome men's seductions:

> *Apparently, I realise I am getting increasingly attractive before quite a number of men and some of them really try to outsmart me, but I am glad I just acquired enough life skills from the WSWM. Am able to overcome their monkey tricks and go on with my life [female participant].*

The boldness and skills gained from the intervention are being applied to assertively confront and challenge old men's manipulations and attempts to seduce young girls into sexual relationships:

> *Before the WSWM, I did not know how to answer back in case a sugar-daddy approached me. I know how they sugar-daddies can manipulate us and am very much in position to overcome them. Before, I was very shy and to be honest, I wouldn't even look straight into a man's eyes. Now I can look straight into their eyes and challenge their sexual proposals [female participant].*

Condom negotiation/use skills

After the intervention, 65% of young people reported gaining condom negotiation/use skills, including refusal of unprotected sex.

Female participants were able to take control of their lives to ensure that their sexual feelings do not drive them to HIV/AIDS or pregnancy risky sexual behaviours. This included the abilities to initiate and negotiate for condom use:

> *After the WSWM, I have self-control to handle my feelings without letting them lead me to getting AIDS/pregnancy. I should not bear the cost of unprotected sex just because my boy friend wants it. We have to discuss and agree on condom use. Yea, I can start the conversation about condom use in order to avoid falling into problems [female participant].*

30% of female participants felt empowered to break the cultural norms and assertively take the lead in condom negotiations including refusing unprotected sex. What seemed to have compelled them to be actively involved in safer sex decision making was the realisation of the disproportionate burden of pregnancy experienced by women as a result of unprotected sex:

> *You know how men used to think that women's silence means yes, but for me, after being alerted by the WSWM, I can not be silent; if condoms have to be used, I say it out, if not, I refuse. I know some girls still fear and can't even suggest condom use, and in the end, if anything goes wrong say in case of pregnancy, girls are the ones to suffer most [female participant].*

Although there seems not to have been any practical demonstration of condom use in class, males report having obtained useful basic skills of using condoms in the WSWM classes:

> *I learnt how to use condoms from the WSWM; no, it was not illustrated in class, but they gave us good basics of using it e.g. ensuring that you follow the instructions of user manual, reading expiry date, safe disposal etc [male participant].*

2.4 Contextual Mediators for the Adoption of HIV Preventive Behaviours

As indicated in table 27 above, a variety of contextual mediators influence young people's adoption/non-adoption of HIV/AIDS prevention measures.

These contextual mediators included:

sexual relationship characteristics 13 (65%), familial mediators 16 (80%), peer norms 12 (60%), gender-biased social norms 13 (65%), financial constraints 2 (10%), and religious beliefs 15 (75%).

2.4.1 Relationship Characteristics

Relationship characteristic e.g. partner attitude towards an HIV/AIDS risk reduction strategy and perceived partner trust influenced 65% of young people's non-adoption of condom use as an HIV/AIDS prevention method.

65% of young people reported difficulties in negotiating and insisting on condom use due to negative partner attitude towards condom use, and perceptions of low HIV risks in long term relationships as indicated below:

Negative partner attitudes towards condom use
One female reported not using condoms due to her partner's bad attitudes towards the use of condoms e.g. associating condom use with cancer, and perceiving them to interfere with sexual pleasure:

> *…but my boy friend calls them paper bags [condoms], and says it is like eating a sweet without removing it from its cover, and he says they can even can cause cancer or even remain in me and cause problems [female participant].*

The same participant also reports withdrawn lack of trust in condoms since her partner claims that one can still get HIV even after using condoms due to claims of condoms' failure to be 100 percent effective in HIV/AIDS prevention:

> *…though I was like a person who was trusting condoms so much ….but my boy friend, tells me that a condom is not even correct percentage. I know even if you use condoms, you still get AIDS, so I now don't support them [female participant].*

Partners' lack of interest in condom use, coupled with fears of relationship breakdown that can result in insisting on condom use, undermined consistency in using condoms:

> *Safer sex would be safe of course…but at times we can fail to agree on it [condom use].*

Eeh… he gives you all sorts of excuses; he is not interested….. and when you over insist you can break your relationship because he may end up leaving me and go in for girls who are willing [female participant].

Perception of low HIV risk in long term relationships

The perception of trustworthiness in long term relationships, and perceptions of low HIV risk after both partners have tested for HIV can constrain the use of condoms:

Yea, the WSWM told us the use of condoms for HIV prevention but I really trust her and she trusts me too, We have loved each other for a long time, and we know we don't have AIDS , we really don't need to use condoms [male participant].

2.4.2 Familial Mediators

Compared to other mediators, results indicate that familial mediators are significant influences in young people's adoption of HIV preventive measures. 80% of young people demonstrated the vital influence of familial mediators in their decisions to adopt/not to adopt HIV/AIDS risk reduction strategies. These mediators are: parental-child sexual guidance, parental role models and family protective environments.

Lack of parental-child sexual guidance

Although timely and reliable sexual health and HIV/AIDS information from parents can help young people make appropriate and less risky decisions, also reported was parents' infrequent/lack of communication about issues related to HIV and pregnancy prevention:

Parents should be open to us in time and tell us to abstain or how protect ourselves from AIDS and pregnancy. Mine weren't [open]…there are certain traps I could have escaped if they had talked to me… You know like for example getting proper information from them [parents] can help us not fall into traps unknowingly. Before the WSWM I used to kind of try to learn from friends and others like new papers. Yea, sometimes it [information] would be right sometimes not [male participant].

You see the issue is; I am a young person and I was in a situation where I needed very reliable information about my sexual life. I am the only girl at home, so I had no sisters to turn to for such information. I could not trust the information I was getting from my peers because they also seemed to be uncertain of what is right and what is wrong. And my parents eeeh those ones, they live as if sex does not exist at all.

> *Sexual issues is a no go area at home. They were not at all bothered to share with any information regarding my sexual life. I am not even sure that themselves they even know the right information in the context of adolescents' sexual behaviour [female participant].*

Apparently, due to lack of timely sexual guidance from parents, some young people resort to looking for sexual health information from friends and news papers, yet the reliability of information from these sources is not guaranteed.

Lack of parental role models

Young people reported the need for parents to live as role models of HIV/AIDS prevention, by practicing fidelity themselves and refraining from enticing young people with gifts to seduce them into sex:

> *When they [parents] fail to be good examples themselves, then what about children? They [parents] are marrying many wives…, seducing young people into sex… sugar daddies enticing young girls with gifts… [female participant].*

Family environments

Environmental conditions surrounding young people can influence their adoption of HIV preventive measures in the form of protective family environment, and experience of coming from polygamous families. Protective family environments reduce young people's possibilities of getting involved in risky sexual practices:

> *…for me, I never had a chance to get involved in sexual relationships because my father was very strict and could not allow me get out of the house or give me gap… But when he died, I was like aha I am now free to get involved in sexual relationships. But when I reached school, the WSWM warned me of the dangers… [female participant].*

In addition, although it may not always be the norm, bad experiences of having grown up from polygamous families can also foster fidelity decisions:

> *I learnt from the WSWM that it is safe to be faithful … my father was unfaithful, and one of my step mums was not producing kids so she used to mistreat us, if my mum was also unfaithful, then I wouldn't be there, or wouldn't even have been to school[male participant].*

2.4.3 Peer Influence

Peers accounted for 60% of young people's adoption/non-adoption of HIV prevention measures. Both negative and positive peer influence were reported.

Negative peer influence

One participant reported having been discouraged to adopt sex abstinence by negative peer norms manifested in discriminative actions and bad labels directed to young people who decide to abstain; such labels included 'non-starters' and 'impotent'. The following narrative illustrates this scenario:

> *…My friends tell me this, they tell me that, they discourage me from sex abstaining. All sorts of things; that I am infertile, they call me "non-starter" and they brag on me about their sexual achievements…trying to persuade me…and now they kind of cut me off from their company [male participant].*

Positive Peer Influence

Personal testimonies of long term abstinence from former students of the intervention acted as exemplary role models that encouraged one of the young people to opt for sex abstinence:

> *…At school, our WSWM teachers brought us a former student of the WSWM who shared her testimony to us saying she was at the university yet she had no boy friend and she was still virgin. Her testimony encouraged me to be like her so for the boy friend I have now, we agreed to love each other without sex [female participant].*

2.4.4 Gender-biased Social Norms

65% of young people demonstrated how some societal shared expectations of men's and women's sexual behaviour put both men and women at a greater risk of contracting HIV/AIDS. These expectations were in the form of norms that interpret a girl's condom buying as prostitution, norms condoning multiple sexual partners for men, and norms associating girls' virginity with marital social gains.

Norms interpreting girls' condom buying/negotiation as prostitution

The African cultural expectations of women's passiveness and ignorance in sexuality constrain their capacity to negotiate for use of condoms by attaching labels of prostitutes to girls who buy condoms:

> *You are trying to protect yourself but here people will call you a prostitute if they see you're a girl and you are buying or carrying condoms. It is like you know you are sending the message to the whole world that you are a spoilt girl, they report you to your parents and they start saying so and so's daughter is loose and spoilt [female participant].*

Norms condoning multiple sexual partners for men

There appear to be traditional social-cultural norms that condone and praise men's sexual experience of having multiple sexual partners:

> *…like a young man of course, you know like any other 'cool' young man around, I used to have many girls. You know the tradition saying that "omushaija aba owagira abakazi baingi" [a real man should have many women]. But after the WSWM, I released the dangers involved in such practices. I now have one girl friend [male participant].*

Norms associating girls' virginity with marital social gains

It appears that the notation of sex abstinence was more heavily emphasized for girls than boys. This is portrayed by intervention teachers' stressing of marriage-related social values of virgin girls:

> *…I decided to abstain because our teachers told us that a girl's greatest gift she can give to her husband is virginity, so if I lose it now, them I will have lost my gift and I won't have anywhere to go if I lose my virginity [female participant].*

However, the practice of emphasising virginity for girls increased their vulnerability to sexual abuse since such girls are always perceived to be free from HIV/AIDS:

> *I used to have more girls, in fact there is a time when me and my friend decided to compete and finish all the girls who we thought were still virgin in my village… I now have one girl friend… [male participant].*

2.4.5 Economic Constraints

As shown by the following extract, financial difficulties for 10% can constrain uptake of HIV preventives by driving young people into unwanted sexual advances, and increases the possibilities of exposure to sexual abuse:

> *…The WSWM taught me that abstinence is the only safest HIV prevention method …and again I had my uncle who was kind of forcing me into sex and he was the one looking after me, so, I couldn't refuse him …and like of course I can not even tell him to use condoms [female participant].*

2.4.6 Christian Religious Beliefs

75% of young people reported opting for abstinence, fidelity and non-condom use for religious reasons.

This was influenced through the Christian condemnations of sex before marriage, condom use and infidelity practices.

Christian condemnations of sex before marriage and infidelity practices

Coupled with advocacies from the intervention, young people, particularly the born again Christians opted for abstinence and faithfulness in order to fulfil their religious values and obligations:

> *…in the bible, sex before marriage is a sin, so, whether it is protected sex or not, it remains a sin. Period. I can [abstain] because the WSWM encouraged me to abstain and it also goes against my Christian values to engage in sex before marriage…and of course those who are married have to be faithful cause God does not allow unfaithfulness [female participant].*

Religious condemnation of condom use

There were also negative religious perceptions against condom use:

> *…Although I am abstaining, I wouldn't support condoms, in fact condoms can lead people to sex, and like I think AIDS is a curse from God to those who disobey him by getting involved in such acts [male participant].*

2.5 Computer-related Benefits of the WSWM Intervention

As indicated in table 25 above, the computer-related benefits of the intervention include privacy and confidentiality of the other sensitive information, unlimited accessibility, source of the otherwise denied sexuality information, interactivity and engagement, and social support and coping strategies.

Privacy and confidentiality of the otherwise sensitive information

Young people who would otherwise feel uncomfortable to voice out their sexual health issues in class before their fellow students and teachers resorted using the intervention's online support centre for issues that seemed sensitive to them:

> *…sometimes, you want to ask about something in class but then you think that oh what will the teacher think about me, or you kind of think that students will laugh at you, or sometimes it is something you would not want anyone to know that you are like that. In that case, I would go ask my question on the online part of the program and since I don't have to put my name, I know that no one will know that I am the one asking that question [out-of-school youth].*

Unlimited geographical accessibility

The computer-assisted nature of the intervention provided unlimited accessibility to sexuality and HIV/AIDS prevention information irrespective of the geographical boundaries and temporal barriers:

> *At school because we did not have enough computers but because I am a day-scholar, when I go could home in the evenings and my aunt is not using her computer, I could then open the WSWM program using her computer and go through the program. [out-of-school youth].*

Source of the otherwise denied sexuality information

The WSWM online support centre is a useful source of sexuality and HIV/AIDS information that would otherwise not be available for young people due to the prevailing silence and denial associated with the subject of sexuality:

> *You know like some of the things the teacher could explain to us like for example I remember our teacher simply told us that as young people, we need to abstain from sex rather than rushing to use condoms.*

And generally he did not explain much about using condoms but when I went to the online support centre, I learnt a lot about condom use and other many things that we were not taught in class. [out-of-school youth].

Interactivity and active engagement

The Internet-based nature of the intervention made it possible to interactively utilise virtual peer educators; 'Rose' and 'Davis' during knowledge sharing, quizzes and games. The virtual peer educators actively involved young people in role modelling e.g. during the interactive safer sex quizzes and games:

It was really hands on, because we would first watch the computer Rose and Davis talk together about issues like negotiating condom use and refusing unwanted sexual relationships. Then, after we would play with the computer, in order to practically play the games about using a condom and refusing unwanted sexual relationships. As in after practicing it from the computer, it's like I have done it, so it was not hard when I had to do it in real sense. [out-of-school youth].

Social support and coping strategies

The intervention provided social support and coping strategies from both online expert counsellors and peers:

…I remember at some point, I had an issues I was worried about but when I went to the online support centre and read through the messages posted there, I realised that some other youth were going through the same problem and this kind of comforted me because I knew I was not alone. Although the counsellor's response sort of answered my question, it was when I read a testimony from a fellow youth who was sharing how he overcome the same problem that confirmed to me that I can also get out of it. [out-of-school youth].

Such social interactions, peer-based learning and sharing of coping strategies from individuals who have overcome HIV risky behaviours can be significantly important in encouraging peers who are still struggling to change their risky sexual behaviours as well as those who are in relapse stage.

3. Summary

This chapter employed qualitative telephon-based semi-structured interviews aimed at investigating the impacts and mediators influencing the implementation of the computer-assisted sexuality and HIV/AID intervention (WSWM) implemented in schools in Uganda, from the experiences of the 20 out-of-school young people that completed the intervention while they were still in school.

The results suggest that the intervention positively influenced young people's sexual behaviour. Compared to condom use and fidelity, sex abstinence was significantly influenced by the intervention. Also, the intervention influenced young people's HIV/AIDS-related knowledge and attitudes. Attitudes towards gender equity in safer decision making were the least influenced by the intervention, while adherence to men's infidelity norms was the most significantly influenced. The intervention significantly improved young people's sexual assertiveness and condom negotiation.

In addition, the results demonstrated the role of contextual mediators in influencing the adoption and maintenance of HIV preventive sexual behaviours. The major influencing contextual mediators were familial mediators, while the least influencing mediators were financial constraints.

The computer-related benefits of the intervention were privacy and confidentiality of the other sensitive information, unlimited geographical accessibility, source of the otherwise denied sexuality information, interactivity and engagement, and social support and coping strategies.

Following this chapter is chapter 6 that presents results from the cross-case analysis that investigated reasons for the success and failure of the implementation of the WSWM intervention in schools.

CHAPTER 6: QUALITATIVE CROSS-CASE ANALYSIS: RESULTS FROM THE INTERNAL STAKEHOLDERS

1 Introduction

This chapter is a cross-case evaluation that aimed to examine the mediators for the implementation of the intervention. This investigation specifically aimed at finding out why the implementation of the WSWM intervention succeeded in one school but was abandoned in another school. In order to get multi-perspective views, interviews and focus group discussions were employed to explore the experiences of various school stakeholders regarding the intervention. For the purposes of this thesis, the participant stakeholders involved in this chapter are referred to as internal stakeholders. This is because these stakeholders were involved in the intervention from within the contexts of the schools.

The format of this chapter is as follows: section one gives some background to this investigation, the second section presents the findings, and the third section summarises the results of this evaluation.

1.1 Brief Overview of the Investigation

This evaluation involves two studies; the school that completed the implementation of the intervention, which this study refers to as the Completed Implementation School (CIS) and the school that terminated the implementation of the intervention, which this study refers to as the Abandoned Implementation School (AIS). Appendices C2 and C3 present the interview guides employed in this investigation.

Between Sept.08 and Dec.09, qualitative semi-structured face-to-face interviews were employed to collect data from 18 internal participant stakeholders of the CIS.

These participants included four heads of school, four intervention teachers and 10 young people (students). In addition, in Dec.08, a focus group discussion involving 25 young people of the CIS was conducted. By the time (Sept.2008) this research started, the CIS had just completed the first cycle of the WSWM intervention that was implemented from Feb.08-Sept.08. The intervention was/is delivered by teachers and student peer educators using the computer website, CDs and computer print-outs.

Between Dec.08-Jan.09, qualitative face-to-face semi-structured interviews were used to collect data from four internal participant stakeholders of the AIS. These were two heads of school and two intervention teachers. In addition, in Nov.08, a focus group discussion involving 25 young people of the AIS were conducted. The AIS implemented the WSWM intervention up to the 7th lesson and abandoned it before completing all the 14 lessons of the intervention. The implementation of the intervention begun in Feb.08, but was terminated in Oct.08. By the time this research started (Dec.2008), it was around two months after the abandonment of the implementation of the WSWM intervention. Before its abandonment, the intervention was delivered by the teachers using a combination of handouts, CDs and internet.

More details about the research design followed in this investigation were demonstrated in sections 3 and 4 of chapter 3.

Responses from interviews and focus group discussions were digitally recorded and transcribed by the researcher. Data analysis followed grounded theory's coding procedures (Strauss and Corbin 1990). Details of data analysis are demonstrated in section 4.6 of chapter 3.

2. Results from the Internal Stakeholders

2.1 Results Overview

The results posit that effective integration of a computer-assisted sexual health and HIV/AIDS intervention in schools requires multi level strategies that involve harmonizing individual level integration mediators with institutional mediators, and social-cultural and religious mediators. The individual level mediators include perceived need for the intervention and the possession of confidence and consuming skills to deliver/learn sexuality and HIV/AIDS education. The institutional mediators include support from management, intervention's match with schools' routine workflow, availability of technological issues, and teachers' motivation to deliver the intervention. Social-cultural mediators include the intervention compatibility with the prevailing cultures and religious beliefs, and the extent of parents/public sensitisation and involvement in the activities of the interventions.

2.2 Results from the Semi-Structured Interviews with the Head Teachers and the Intervention Teachers

Table 28: Cross-case comparison of interview results for head teachers and intervention teachers of the CIS and the AIS

		Completed Implementation School (CIS)	Abandoned Implementation School (AIS)
Themes	**Sub-themes**	**properties**	
INDIVIDUALCONTEXT	Perceived need for the intervention	-High student vulnerability due to un-protective environments at school; mixed gender school located in the military barrack.	-Relatively low student vulnerability due to protective environment at school-girls only school
		-Un-protective environments at home; many war-victim orphans and adolescents from soldiers' separated families.	-Protective environment at homes since students came from stable middle-income families.
		-Existence of HIV/AIDS positive students and previous sexual offenders in the school	
	Confidence and consuming skills	-Had basic computer literacy skills to deliver the intervention	-Had basic computer literacy skills to deliver the intervention
		-Some challenges in tackling very sensitive issues in class but confident in dealing with such issues during out-of classroom	-Teachers had no confidence to discuss too sensitive issues in both the classroom context and out-of classroom contexts.

		private consultations,	
		After-class consultations had challenges of sexual mistrust between teachers and students	
		-Informed students about condoms, believed they were confident to demonstrate its use but did no demonstrations due to age appropriateness	-Would have deliberately skipped the lesson on condom use due to lack of skills and doubts on the age-appropriateness of the lesson
INSTITUTION AL CONTEXT	Management support and priorities	-Supportive school administration that: -Attended heads of school intervention orientation	-The new school administration that took office after intervention launching was unsupportive:
		-Financially supported teacher training workshop	-Was not officially oriented about the intervention
		-Supported and were actively involved in intervention activities; launching and exhibitions	-Never contributed money for teachers' training workshops
			-Was not actively involved in the intervention activities
	Match with routine workflows	-Although the intervention was not school's main timetable, no extra-academic lessons collided with the intervention time	-Intervention not school's main timetable, yet, the new head of school fixed academic lessons and exams after-classes during the intervention time, thus the intervention had to be terminated
		-Collision with other extra-curricular activities	
	Institutional climate	-Entire school environment owned and supported the intervention, e.g. other teachers voluntary involvement in the intervention activities	-Unsupportive school environment, e.g. other teachers claimed that the intervention teaches prostitution and that intervention teachers sexually harass students.
	Technological issues	-The school had three computers (with internet connection), and one television set for delivering the intervention to 150 students	-Limited computers and internet; The school had few computers and internet; 30 computers of which only 5 had internet, compared to 200 students enrolled for the intervention.
		-Limited internet interferes with email communications between the intervention leaders and teachers	-Limited internet interferes with email communications between the intervention leaders and teachers
	Teaching motivation	-Teachers' major motivation was to provide useful sexual health information to students.	-Teachers' major motivation was to get extra teaching income.
		-Teachers were committed to teach without financial incentives but stressed need for either teaching allowance from intervention donors or need for reduction in academic teaching load	-Teachers refused to deliver the intervention because they were not paid and stressed they could not resume teaching without being paid

SOCIAL-CULTURAL AND RELIGIOUS CONTEXT	Culture compatibility with sex education	-Incompatibility issues but teachers believed that breaking the taboos was more worthwhile than risking lives with HIV/AIDS	-Incompatibility issues and teachers felt intimidated by bad social attitudes towards the intervention
		-Need for intervention tailoring to suit different cultures and young people of different needs and ages	-Need for intervention tailoring to suit different cultures and young people of different needs and ages
		-Argues removal of lesson 7 which is about sexuality including homosexuality.	-Argues removal of lesson 7 which is about sexuality including homosexuality.
	Religious compatibility with condom advocacy	-Negative attitudes towards condom advocacy but intervention teachers believed in telling the students about condoms as an option for those who can't abstain from sex	-Teachers were strongly against the intervention topic on condom use due to claims of sex experimentation, and believed they would be condemned by their church-founded school if they informed students about condoms
	Public/parent sensitisation and involvement	-Surrounding communities were sensitised about the intervention during parents' meetings, intervention launching, and students' end of intervention exhibitions	-Parents were not sensitised about the intervention during parents' meetings due to agenda-mismatch and teachers' lack of confidence.
		-Parent involvement created support for the intervention and led to voluntary participation	-Parents were not involved in the intervention activities at all.
		-Need for collaboration with various sectors and for more parent/public involvement	

What follows is the detailed presentation of the results shown in table 28 above:

2.2.1 Individual Context

These were mediators at a personal level that were indentified as vital for successful implementation of the intervention. As indicated in table 28 above, these mediators fall into two sub-themes; perceived need for the intervention, and confidence and consuming skills.

Perceived need for intervention

The head teachers and intervention teachers in the school that completed the implementation of the intervention (CIS) perceived the system to be of greater benefit due to high perceptions of students' vulnerability to HIV/AIDS and teenage pregnancies.

This high perception of students' vulnerability was due to un-protective environments that students were exposed to both at school and at home. At home, many of the students were orphans whose parents had lost their lives in wars or from AIDS, while others were separated from their parents due to military operations:

> *The majority of our students lost their parents in wars, others lost their parents due to AIDS. And those whose parents are alive, their parents went for wars; they are in North, Iraq, Somalia, all over the world. And being in the barracks, they are very exposed, so, we needed the WSWM to ensure our students do not fall victims of AIDS and pregnancies [head teacher, CIS].*

At school, being a mixed gender school located in the military barrack found in the city suburb, there were possibilities of students' sexual harassment from barracks soldiers, city suburb dwellers as well sexual misconduct between students themselves.

Some students in this school were already living with HIV/AIDS while others were previous sexual offenders:

> *You see young people have a lot of challenges in this era of AIDS, with these ones here we used to have a lot of sexual misconducts and child pregnancies between students themselves, and sometimes between students and soldiers and even neighboring trading centre. Even some of our students have AIDS, others were once in prisons for rape, defilement e.t.c. so we needed to counsel them [intervention teacher, CIS].*

The head teachers and intervention teachers of the school that prematurely abandoned the intervention-AIS considered the intervention to be beneficial to students in equipping them with reliable information for pregnancy and HIV/AIDS pregnancy.

However, compared to students' vulnerability in the CIS, the perception of students' vulnerability in AIS was relatively low due to students' protective environments both at school, since this was a rural-based girls-only school, and at home since students came from stable middle-income families:

> *Generally, the WSWM is helpful in equipping these young girls with information to prevent themselves from pregnancies and AIDS. We also have very strict roles on them here at school…. Most of their parents are educated middle income earners, so they should also be safe at home really [intervention teacher, AIS].*

Confidence and consuming skill

Although teachers in the CIS had basic computer literacy skills to deliver the intervention, they faced challenges of feelings of embarrassment in dealing with issues that appeared too sensitive in class. Despite these challenges, teachers were able to deal with such issues during out-of-class private consultations:

> *Yea, I know the basics of computer required to deliver the intervention really. I can run through the intervention. I am confident because as a biology teacher, I have always taught related issues in. reproductive biology. But sometimes it becomes hard to discuss very private things before students because they are like my children. Yes, I am confident if students privately consult me after class [intervention teacher, CIS].*

However, after-class private consultations were hindered by the prevailing sexual mistrust between teachers and students. It was urged that students should consult teachers of the same sex during after-class consultations:

> *…erm, some girls take it very far by simply coming to tempt male teachers into sex while pretending that say they have been dropped by their boyfriends and need some counselling. Sometimes I wish I had only boys. I think for very sensitive issues, students should privately consult teachers of the same sex after class [intervention teacher, CIS].*

Noteworthy however is that despite the reported confidence and consuming skills, intervention teachers only informed students about condoms. No demonstrations of condom use were carried out due to doubts of age appropriateness:

> *We generally tell them about condoms but we encourage them to abstain. Yea, I could demonstrate condom use but I think it is better we just let them know about condoms for now. We give them information about the role of condoms, where to buy them, and how they should first read instructions before using them [intervention teacher, CIS].*

In contrast, although intervention teachers in the AIS also had basic computer skills to deliver the intervention, they lacked self-efficacy and felt embarrassed and uncomfortable in both the classroom delivery of the intervention and in responding to some of the students' sexual health queries during out-of class private consultations:

> *Yes, I believe I have enough computer skills to teach the program.*
> *We give students some information but sometimes it is hard to discuss information that looks too private in class. To some extent yes I can answer those queries after class, but to some extent no because still some of them are either still too sensitive or I simply don't know the answers myself [intervention teacher, AIS].*

Intervention teachers confessed that if the implementation of the intervention had continued, they would have skipped the topic on condom use due to both lack of skills and doubtfulness of the age appropriateness of the topic:

> *We could not have taught students about condoms… condoms should be removed from the WSWM program and left for experts like sexual health experts because for them they have the ability to discuss and demonstrate condom use confidently, and at right age. [intervention teacher, AIS].*

Although individual level mediators are vital in the successful implementation of the WSWM intervention, there exist mediators beyond the individual level that provide a supportive institutional environment for the individual adoption of the intervention.

2.2.2 Institutional Context

These are contextual mediators that influenced the implementation of the intervention at the institution/school level. As indicated in table 28 above, these mediators were manifested in three sub-themes; management support and priorities, match with routine workflow, institutional climate, technological issues, and teaching motivation.

Management support and priorities

In the CIS, the school administration was supportive of the intervention activities including attending head teachers' orientation, financially supporting teacher training workshops, supporting and actively participating in intervention activities e.g. intervention launching and end of intervention student exhibitions:

> *…our head teacher is very cooperative in this program, for example he himself attended the head teachers' oriented workshop, he contributes to the cost of our training workshops, and he was very helpful in mobilizing the entire school during the launching of this program. And I think you yourself saw his active participation at the exhibition [intervention teacher, AIS].*

In contrast, the AIS experienced a change of administration a few months after the intervention was launched. Having never attended the intervention's head teachers' orientation workshop, the new head of school was administratively unsupportive of the intervention; including failure to contribute money for teachers' training workshops and lack of active involvement in the activities of the intervention:

> *The new head of school that joined us after the program was implemented didn't attend the head teachers' orientation workshop. Although I introduced the program to her, she kind of not prioritises it; our teachers are not facilitated to attend training workshops... [deputy head teacher].*

Match with routine workflow

In both the CIS and AIS, there was no time allocated for the intervention on the schools' main timetable, as the intervention could not be matched with the schools' routine workflows:

> *…it would be good if the WSWM was timetabled like any other subject really. We teach the program in the evening as an extra-curricular activity. For day-scholars, we sacrifice and teach them on Saturday [intervention teacher, CIS].*

Failure to put the intervention on the school's main timetable consequently resulted in students' inconsistent attendance due to clashes with other extra-curricular activities:

> *Students keep coming in and out, because in the evenings when the program is run, they are already tired from the days work and end up not coming, and they also have to prepare for their night preps, and sometimes there other things like football going on [intervention teacher, CIS].*

Noteworthy, however, is that although both schools never integrated the intervention into the main timetable, workflow mismatch was more seriously felt in the AIS, since the new head of school instead fixed academic lessons and exams after-classes during the same time the intervention was conducted. The adverse effect of this clash was intervention termination:

> *We stopped at lesson 7 coz when the new head teacher came, she put academic lessons and exams in the evenings at the same time we were having our WSWM lessons… so we kind of give up on the WSWM because of this collision [intervention teacher, AIS].*

Institutional climate

The overall school environment in the CIS was generally supportive of the intervention. Other than the intervention teachers, other teachers actively participated in the intervention activities, including voluntary engagement in intervention classroom sessions:

> *…yea, they [other teachers] are very much involved. In fact some even come into our classes and contribute to our discussions. And this helps students to learn from real life experiences of different people that have passed through the same challenges [intervention teacher, CIS].*

In contrast, lack of intervention ownership from other teachers created unsupportive institutional environments for intervention implementation in the AIS. Rather than collaboratively embracing the intervention, other teachers instead claimed that the intervention teaches prostitution and that intervention teachers sexually harass students:

> *…other teachers are completely not bothered about the WSWM program. In fact they say we are teaching these students prostitution, and when they see students come to us for sexual guidance, they think we are instead corning them for sex [intervention teacher, AIS].*

Technological Issues

Although the intervention is supposed to be web-based/computer-assisted, there was a lack of sufficient computers and reliable internet connections in both the CIS and AIS. In the CIS, the school relied on only one connected computer for the delivery of the intervention to 150 students:

> *We don't have enough computers and internet. You have seen it yourself even. We need more connected computers, not just the three computers we have out of 150 students that need them…[intervention teacher, CIS].*

Likewise, the AIS had computers and internet, the number of computers outnumbered the number of students; 30 computers, of which only 5 computers were connected to the internet, compared to 200 students that had enrolled for the intervention:

> *…there is also a problem of too many students in relation to the 30 computers we have here; and there are only 5 computers with internet [intervention teacher, AIS].*

Lack of computers and internet connections not only de-motivated students, but also limited intervention accessibility, and made it impossible for students to fully utilise the potentials of the intervention including online discussion forums and interactive HIV/AIDS prevention games:

> *…much us we try to use the few computers available, students need to be able access the program on their own and practice the things like the interactive games, and you know being able to get involved in that online discussion. Such hands on experience would really be motivating to students [intervention teacher, CIS].*

Lack of/unreliable internet connections interfered with email communications between the intervention leaders and teachers:

> *…which means when our internet is off, we have to travel five miles away from here and spend our own money in internet cafes in order to read emails from project leaders [intervention teacher, AIS].*

Teaching motivation

Intervention teachers in both the CIS and the AIS were not paid any financial incentive for delivering the intervention.

Yet, in addition to delivering the intervention lessons they had to teach their routine academic load. Nevertheless, teachers in the CIS were still committed to delivering the intervention in order to help young people with HIV prevention information. They however stressed the need for either a teaching allowance from intervention donors or a reduction in academic teaching workload:

> *It is a sacrifice really because we want to help our students; and we have to teach our academic lessons too…We need to be given some token for teaching the program. Program leaders or donors need to something, otherwise, at some point, we will have to give up, or they can reduce for us the academic lessons we are teaching …[intervention teacher, CIS].*

In contrast, in the AIS, the intervention teachers' involvement was mainly driven by financial motives. Lack of financial motivation was one of the major driving mediators for intervention abandonment:

> *…when I had about the WSWM, I knew I was going to get some money for teaching it, so that's why I got involved knowing that I will not be committing my time for free. But coz of no payments, we kind of pulled out. If you see project donors or leaders, tell them that they have to pay us if they ever want us to resume teaching the WSWM lessons [intervention teacher, AIS].*

Beyond the institutional contexts are the societies or surrounding communities, to which individual members of the institution belong.

2.2.3 Social-cultural and Religious Contexts

Social-cultural and religious contexts refer to the general social and religious mediators that directly or indirectly mediate the adoption of the intervention. Social-cultural and religious mediators were characterised by three sub-themes; "cultural compatibility with sex education", "religious compatibility with condom advocacy", and "public/parent sensitisation and involvement".

Cultural compatibility with sex education
Compatibility with the prevailing cultural values entails the extent to which the intervention matches with the norms and values prevailing in an individual's social group.

Despite the taboo-relatedness surrounding the subject of sexuality, intervention teachers in the CIS believed that breaking the taboos was less blameworthy than risking youthful lives with HIV/AIDS and pregnancy:

> *I see, but though some people are against it [sex education] , the fact remains the fact; we have to give them the right information, we have to tell them to use condoms if they can't abstain, otherwise, we can't remain quite when AIDS is finishing our youth, when our girls are getting pregnancies and dropping out of schools [intervention teacher, CIS].*

In contrast, intervention teachers in AIS felt significantly intimidated by bad societal attitudes that regarded the intervention as a sexually misleading intervention. They stressed the need for intervention tailoring to suit implementers' differing cultures and young people's different needs and ages:

> *It can be disturbing to teach things that other people regard as immoral. And much as I think sex education is ok, we need to be very careful what information is culturally allowed, what information we should reveal to young people of different ages and origins [intervention teacher, AIS].*

Teachers in both CIS and AIS suggested that lesson seven be removed or revised due to cultural incompatibility. Lesson seven is about homosexuality and sexuality including different ways of playing sex and their precautions.

They argue that the lesson gives students inappropriate details in addition to encouraging homosexuality, which is culturally unacceptable:

> *…Also lesson seven about sexuality should be removed or should be adjusted, it goes unnecessarily beyond what students should know, it encourages homosexuality too, which is against our culture [head teacher, AIS].*

Religious compatibility with condom advocacy

Given the fact that AIDS has killed many young people, who are at the same time the most economically productive age group, intervention teachers in the CIS stressed the need to inform young people about the alternative of using condoms despite the prevailing religious values against condom advocacy:

> *Although we are religious, we cant remain rigid about condom use when AIDS has killed many of our youth population, yet the youth are the future of this nation in terms of being economic productive.*

> *We need to tell them condom use as an option for those who fail to abstain [intervention teacher, CIS].*

In contrast, for religious and moral reasons, teachers and heads of school in the AIS were strongly against the intervention topic on condom use. Advocating sex abstinence was the only strategy allowed in this Church-founded school, since it was argued that condoms may hasten young people's sexual activity:

> *… this being a Church-founded school; teachers cannot be immoral by starting teaching young people about condoms instead of abstinence. Personally, though I am in support of this program, I don't hide the fact that I am strongly against the lesson on condom use. Condoms can lead children to want to practice what they are taught [deputy head teacher, AIS].*

Public/parent sensitisation and involvement

The relationships existing between school and local communities impacted the adoption of the intervention. The CIS created awareness in the local communities by inviting some local leaders during the launching of the intervention, introducing the intervention during parents' meeting, as well inviting the public during end of intervention's students' exhibitions to witness students' personal testimonies, poems and drama:

> *In order to inform the surrounding communities and parents about the benefits of this program, we invited some influential members of the community when we were launching the WSWM, we also briefly tell parents about the WSWM when we call them for meetings. We also call them for the program exhibitions and they witness students' educative poems, drama and personal testimonies [head teacher, CIS].*

Consequently, sensitising and involving parents and neighboring communities was instrumental in buying intervention support from parents who would otherwise negatively perceive the intervention to be teaching prostitution. Some parents are also taking an active role by voluntarily getting involved in intervention sessions:

> *…I think making parents aware of the program, has kind you know informed them that we are not teaching prostitution as some thought at first, but that instead we are teaching students how to avoid AIDS and live responsibly. I see some parents even come and attend our program sessions and join in our discussions [intervention teacher, CIS].*

In contrast, in the AIS, there was a lack of public's/parents' sensitisation about the intervention. Intervention teachers lacked the confidence to sensitise parents about the intervention during parents' meetings due to perceptions of resistance and agenda-mismatch:

> *The parents and the general public needed to be informed of existence and benefits of the WSW, but, the strategy of introducing the program during parents' meetings could not work; you cant just introduce such stuff on people's agenda, unless it is done by the heads of school or project leaders because us we received some objections here and there [intervention teacher, AIS].*

Teachers in the CIS stressed the need for more collaboration with various sectors e.g. education, health, and social sectors. Expressed also was the need for more parent/public sensitation and involvement e.g. through student-parent intervention assignments, student-parent communication, and school-parent communication. They argued that the current implementation of the intervention by the private donor-funded organisation contributes to the low prioritisation of the intervention, due to the perception that the intervention is just to fulfil the interests of the donors.

> *I wish different ministries can work with us. Like for example ministries of health, education, and social-related sectors, bse when the program is just brought by the private organinsation, it cannot be taken serious because some people think that the donors may have their own interests. Also, parents and community members need to be more involved. Aah, we say send them leaflets about the program, tell students to talk to parents about the program, give students assignments and all that [intervention teacher, CIS].*

2.3 Results from the Semi-Structured Interviews and Focus Group discussion with the Young People

Table 29: Cross-case comparison of interview and focus group discussion results for young people of the CIS and the AIS

Themes	Sub-themes	Completed Implementation School (CIS)	Abandoned Implementation School (AIS)
		properties	
INDIVIDUAL CONTEXT	Perceived need for the intervention	-Lack of parental guidance about HIV/AIDS prevention and believed in wrong misconceptions from friends	-Lack of parental guidance about HIV/AIDS and personal witness of the suffering endured by people living with HIV/AIDS
	Confidence and consuming skills	-Uncomfortable to discuss sexual issues in class, preferred after-class private consultations for too sensitive issues,	-Uncomfortable to discuss sexual issues in class, preferred after-class private consultations for too sensitive issues,
		-Felt more confident in peer-led sessions than teacher-led sessions, but believe more in teachers' answers than answers from peers	-Felt more confident in peer-led sessions than teacher-led sessions, but believe more in teachers' answers than answers from peers
		- Had basic computer skills to use the intervention	-Had basic computer skills to use the intervention
INSTITUTIONAL CONTEXT	Match with routine workflows	-Inconsistencies in attending the intervention due to collision with other extra-curricular and housework commitments	-Missing of intervention lessons due to evening classes and exams that collided with intervention time
	Institutional climate	-Encouraged to adopt the intervention by fellow students and other teachers	-Discouraged to adopt the intervention by fellow students and other teachers
	Technological issues	-Limited accessibility due to few computers and unreliable internet connections	-Limited accessibility due to few computers and unreliable internet connections
SOCIAL-CULTURAL AND RELIGIOUS CONTEXT	Culture compatibility with sex education	-Encouraged to join the intervention by parents/guardians	-Discouraged to join the intervention by parents/guardians claiming that intervention was for people with AIDS or for old people
	Religious compatibility with condom advocacy	-Some negative attitudes but need to be taught about condoms	-Bad perceptions about condoms but expressed the need to be taught about them though they may not necessarily use them

What follows is the detailed presentation of the results shown in table 29 above.

2.3.1 Individual Context

Perceived need for the intervention

In both the CIS and AIS, students were motivated to adopt the intervention due to lack of parental guidance about HIV/AIDS prevention, lack of reliable information about HIV/AIDS, prevailing misconceptions about HIV/AIDS and pregnancy prevention and personal witness of the suffering endured by people living with HIV/AIDS:

> *I lacked right information about slim [AIDS] and pregnancy before. No, my parents don't tell me and like my friends would tell me that a girl cannot get pregnant when she does sex while standing, or that you don't catch slim when you wash with soda, and like my parents don't tell me these things [student, CIS].*

> *…the WSWM was very important for us coz like me, my parents never talk to me about those things yet I lost my sisters due to AIDS and especially the last one before she died she called us and told to be careful…she was in a big pain and in a very bad shape, so it was important for me to join the WSWM program and know how to control myself and prevent AIDS [student, AIS].*

Confidence and consuming skills

Students in both the CIS and the AIS felt shy to openly discuss sensitive sexual issues in class, preferred after-class private consultations for too sensitive issues, felt more confident in face-to-face peer-led sessions than teacher-led sessions but believed more in answers provided by teachers than answers from peers:

> *At first, I was shocked by private words talked in class... Yes, I can try but erm sometimes I wait and go and talk the teacher after class if I feel shy to say ask something in class. … of course peers are more of shares, I don't fear them like I would fear my teachers, but I think teachers know more than peers [student, CIS].*

Students in the CIS were motivated to adopt the intervention in order to learn computer skills. However, their expectations of gaining computer skills from the intervention were due to lack of computers and internet:

> *When I had that the this program will be using computers, I said, ahaa, I am going to get a chance of learning computer, but I have tried to learn but it is always many of us on three computers, so, I only have some limited skills. [student, CIS].*

Likewise, students in the AIS had basic computer skills for using the intervention:

> *Yes, I know how to use the computer because our teachers taught us how to use them. And also at home we have a computer [student, AIS].*

2.3.2 Institutional Context

Match with routine workflow

In CIS, students' inconsistencies in attending the lessons of intervention were mainly attributed to collision with other extra-curricular activities for boarders, and housework commitments on Saturdays for days-scholars:

> *…no, I missed some of the lessons because at times I have to go for football in the evenings [boarding student, CIS].*

> *I could not come for all the lessons …sometimes it is difficult for me to be back here for the program on Saturday, sometimes my parents want me to help them with some work. [day-scholar student, CIS].*

In contrast, in the AIS, students' inconsistencies in attending the intervention lessons was mainly attributed to school administration's fixing of academic lessons and exams in the evening that collided with the intervention time:

> *But sometimes I could be having classes, and sometimes I could be having exams, I so could not attend the WSWM lessons [student, CIS].*

Institutional climate

Supportive institutional environments e.g. social support provided by significant others. For example, students and teachers within the school in the CIS influenced individual adoption decisions:

> *…but after my friend had joined the program, he started telling that the program is very good in helping help me change my behaviour and prevent AIDS… and also my teacher told me that it is good to join WSWM because it is educative [student, CIS].*

In contrast, some students in the AIS were discouraged to adopt the intervention by fellow students who alleged that the intervention teaches bad manners and that students are made to remove their clothes to demonstrate the intervention lesson about body changes:

> *My fellow students scared me that in WSWM program, students are taught bad manners and that they are even made to remove clothes when it comes to lesson about changes. No, when I joined, I found nothing like removing clothes, and WSWM instead teaches good manners [student, AIS].*

Students in the AIS also experience some discouragements to adopt the intervention from some other school teachers who, due to lack of knowledge about the benefits of the intervention claimed that the intervention teaches bad sexual misconduct:

> *Some teachers were kind of talking bad on the program like for example my aunt is a teacher here and she was kind of not happy that I joined the WSWM. She said that I will learn bad sexual behaviours but I think she just was not aware of the benefits of the WSWM [student, AIS].*

Technological issues

As previously mentioned, a lack of enough computers and internet connection in the CIS limited intervention accessibility, and resulted into some of the intervention contents either being under covered or even not covered at all:

> *…if we had enough computers and internet we would be revising the program on our own. Our teachers keep on telling us that they will bring more computers and give us internet so that we can fully practice some parts of the program like other schools but we can't see them [computers] [student, CIS].*

Likewise, due to lack of sufficient computers and internet connections in the AIS, even the CD/online versions of the intervention could not be accessed after the termination of the face-to-face teacher-led intervention delivery:

> *…that is the only computer lab we have for the whole school, and they normally lock it after computer skills classes, so the only time we had to use the lab was when we were studying the program. Also we have few internets, and yet it's our teachers who keep the CD, so we can't use the program [student, AIS].*

2.3.3 Social-cultural and Religious Contexts

Culture compatibility with sex education

Social-cultural values prevailing in students' individual families had an influence on their decisions to adopt/not to adopt the intervention.

Students in the CIS whose parents/guardians valued the significance of sex education reported having been encouraged to adopt the intervention by their parents/guardians:

> *It wasn't easy when I had to talk to my parent about this program, at first she told me not join the program, that because such programs spoil young people. But when I brought her the hand out of the program and she saw what is there, she said I can join [student, CIS].*

In contrast, some students in the AIS were discouraged to join the intervention by parents/guardians due to the prevailing cultures of silence and age appropriateness surrounding the subject of sexuality. Such beliefs claimed that the intervention teaches prostitution, is only meant for old people or those living with AIDS. In order to clear out the prevailing misconceptions about the intervention, there is need for schools themselves to officially sensitise parents about the benefits of sexual health and HIV/AIDS education:

> *When I told my parents about the WSWM program; …for example they said I will be a harlot. They also said that such a program should be for old people or people with AIDS. Schools should tell parents the benefits of the WSWM because for us they can't believe us even when we tell them [student, AIS].*

Religious compatibility with condom advocacy

Students in the CIS expressed mixed feelings concerning the issue of condom advocacy in the intervention; some expressed the need to go beyond religious values as they recognised the need to be taught about condoms as a preventive strategy for HIV/AIDS and teenage pregnancy:

> *Although our religion tells us to abstain, sometimes it is hard for us so we need to be taught about condoms in order not to fall into problems like getting AIDS or pregnancy [student, CIS].*

Students in both the CIS and the AIS expressed some negative perceptions about condom use, including claims that condoms can slip and remain in a woman, condoms are liable to breakage, are not 100% effective, and that condoms can cause cancer.

However, despite the negative perceptions, students reported the need to be taught about condoms, claiming that knowing about condoms does not necessarily mean that they will use them:

> *Me I think condoms are bad; they can remain inside the woman and also condoms are weak and can even break and put you at risk and also they contain something that is harmful to us e.g. that water in them causes cancer and they not 100% perfect. But though we may not use them, we need to know about them anyway [student, AIS].*

3. Chapter Summary

3.1 Summary

This chapter employed qualitative interviews and focus group discussions aimed at highlighting the critical success mediators for effective implementation and adoption of the intervention. The qualitative approach has provided in-depth insights into the implementation of the intervention. Investigated were the experiences of internal school stakeholders; head teachers, teachers and students of two schools; the CIS that completed the implementation of the intervention, and the AIS that terminated the intervention implementation.

Unlike the CIS, which successfully implemented all the 14 lessons of the intervention, the AIS is by no means a success story as it abandoned the implementation of the intervention on the 7th lesson. Exploring these two extreme studies was particularly enlightening and made it possible to compare the success story with a failure story in order to better understand why the implementation of the intervention succeeds in some schools and fails in others.

A cross case analysis of responses from head teachers, intervention teachers and students of the CIS and the AIS demonstrated three integrative contexts: individual level contexts, institutional level and social-cultural and religious level, which were comparatively more favorable in the CIS than in the AIS.

Below is a summary of the major differences and similarities between the CIS and the AIS at different levels.

3.2 Individual Context

The perceived high HIV and pregnancy vulnerability of students in the CIS motivated the school to be committed in implementing the intervention. In contrast, students' vulnerability in the AIS was perceived to be low.

Teachers and students in both the CIS and the AIS felt uncomfortable in discussing sensitive sexual issues in classroom. However, unlike the teachers in the AIS, teachers in the CIS, notwithstanding some sexual mistrust between teachers and students, were confident to deal with sensitive issues during out-of class private consultations. Unlike teachers in the CIS, teachers in the AIS lacked confidence to inform students about condoms. Teachers in both the CIS and the AIS had basic computer skills to deliver the intervention, but unlike students in the CIS, students in the AIS had basic computer skills to use the intervention.

Students in both the CIS and the AIS preferred after-class consultations to classroom discussions of private issues, felt more confident in peer-led discussions than teacher-led discussions, but believed more in teachers' answers than answers from their peers.

3.3 Institutional Context

Administratively, the school administration in the CIS was supportive of the intervention activities, including attending head teachers' orientation, financially supporting teacher training workshops, supporting and actively participating in intervention activities, e.g. intervention launching and end of the intervention student exhibitions. Conversely, there was a change of administration in the AIS after the intervention was launched, and the new head of school was administratively unsupportive of the intervention.

Routinely, in both the CIS and AIS, the intervention was taught as an extra-curricular activity, as there was no time allocated for the intervention on the schools' main timetable. This resulted in students' inconsistent attendance due to clashes with other extra-curricular activities. Noteworthy however is that workflow mismatch was more seriously felt in the AIS, since the new head of school instead fixed evening academic lessons and exams, which clashed with the intervention resulting in its abandonment.

Environmentally, the CIS school environment was supportive of the intervention; for instance, other teachers voluntarily actively participated in the intervention activities including voluntary engagement in intervention classroom sessions. In contrast, in the AIS, there was a lack of intervention ownership from other teachers, as they instead claimed that intervention teaches prostitution and that teachers sexually harass students.

Technologically, there was a lack of sufficient computers and reliable internet connections in both the CIS and AIS. Lack of computers and internet connections limited students' intervention accessibility, led to partial or no coverage of discussion forums and interactive HIV/AIDS prevention games, and created communication barriers between the teachers and intervention leaders.

Financially, despite a lack of financial incentive for delivering the intervention, teachers in the CIS were still committed to delivering the intervention in order to help young people with HIV prevention information. In contrast, lack of financial incentives mainly contributed to intervention abandonment in the AIS, and teachers stressed that they would not resume its implementation without payment.

3.4 Social-cultural and Religious Contexts

Culturally, despite the taboo-relatedness surrounding the subject of sexuality, teachers in the CIS were bold enough to break the taboos, rather than risking youthful lives with HIV/AIDS and pregnancy.

In contrast, teachers in AIS felt significantly intimidated by the cultural incompatibilities that associated the intervention with prostitution. Teachers in both the CIS and the AIS expressed concern over the inappropriate sexual details of lesson 7 and claimed that the lesson encourages homosexuality. They also stressed the need to tailor the intervention to suit implementers' differing cultures and young people's different needs and ages.

Religiously, teachers in the CIS were committed to informing young people about the alternative of using condoms, despite the prevailing religious values against condom advocacy. In contrast, being a Church-founded school, teachers and heads in the AIS believed in sex abstinence-only interventions and associated condom advocacy with promoting sexual immorality.

Publicly, unlike the AIS, the CIS created awareness of the benefits of the intervention in the local communities, and involved local leaders and parents in intervention activities. This consequently created intervention support from the public that would otherwise negatively perceive the intervention.

This chapter has dealt with the experiences and perceptions of internal stakeholders regarding the WSWM implementation.

Following this chapter is chapter 7 that presents the experiences and perceptions of external stakeholders regarding the facilitating and the inhibiting mediators for the implementation of the WSWM intervention.

CHAPTER 7: QUALITATIVE CROSS-CASE ANALYSIS: RESULTS FROM THE EXTERNAL STAKEHOLDERS

1. Introduction

This chapter is a continuation of a cross-case evaluation (presented in Chapter 6) that aimed to examine the mediators for the implementation of the intervention. Chapter 6 dealt with the experiences of internal stakeholders while this chapter deals with the experiences of external stakeholders. It should be recalled that for the purpose of this research, 'external stakeholders' refers to participants whose relationship within the WSWM intervention was outside the contexts of the school.

Examining the experiences of schools' external stakeholders; particularly parents and the intervention leaders can also offer insights into the critical success mediators for the implementation of the WSWM intervention. Parents can: (1) influence their children's decisions to adopt the intervention; (2) reinforce the sexual health and HIV/AIDS information that students obtain from the intervention; (3) are important sources of reliable sexual health and HIV/AIDS information for their children; (4) be directly involved in the activities of the intervention. Intervention leaders can provide fruitful insights about mediators of the implementation of the intervention not only from the experiences of the schools investigated in this study but also from the experiences of other schools.

The format of this chapter is as follows: section one gives a brief overview of this investigation, the second section presents the findings, and the third section summarises the results of this investigation.

1.1 Brief Overview of the Investigation

This investigation aimed to qualitatively investigate, from the experiences of external school stakeholders, why the implementation of the intervention succeeded or failed. Appendices C4 and C5 present the interview guides employed in this investigation.

These external stakeholders are the 12 parents, i.e. 6 parents from the Completed Implementation School-CIS and 6 parents from the Abandoned Implementation School-AIS. All the 12 parents interviewed had their children completed/enrolled for the intervention. 3 of the parents from the CIS were involved in the intervention implementation activities. External participant stakeholders also included 3 intervention leaders that had visited both of the schools investigated, i.e. the CIS and the AIS.

More research design details about this investigation were presented in sections 4 of chapter 3.

Responses from interviews were digitally recorded and transcribed by the researcher. Data analysis followed grounded theory's coding procedures (Strauss and Corbin 1990). See sub-section 4.6 of chapter 3 for details of data analysis.

2. Results

2.1 Results from the Semi-Structured Interviews with the Parents

Table 30: Cross-case comparison of interview results from the parents of the CIS and the AIS

Themes	Sub-Themes	Completed Implementation School (CIS)	Abandoned Implementation School (AIS)
		properties	
INDIVIDUAL CONTEXT	Perceived need for the intervention	-Strong recommendation for intervention due to perceived young people's vulnerability, and increased exposure to pornography and sexual abuses -Argues sex education should start at in primary schools	-Total denial of the need to provide sex education to young people due to possibility of sex experimentation. Only one parent who is a teacher at the same time recommends abstinence only sex education -Claimed sexual mistrust between parents and teachers due to child sexual harassment from parents and teachers. Only trusts Christian role frameworks in advocating sex abstinence.
	Confidence and consuming skills	-Supportive of sex education but lacked knowledge and confidence: in opposite sex parent-child sexual education, in parent-child sex education with children born with HIV/AIDS, and in child-parent condom education	-Unsupportive of sex education.
SOCIAL-CULTURAL AND RELIGIOUS CONTEXT	Culture compatibility with sex education	-Embraced the school-based intervention and expressed urgent need to break the sex-related taboos and give reliable information to young people rather than otherwise being misled.	-Strongly believed in traditional aunt/uncle-led sexual education rather than the school-based intervention. Accused the intervention of the possibility of encouraging early sex experimentation
	Religious compatibility with condom advocacy	-Supportive of condom advocacy and shopping for young people 18 years and above for HIV/AIDS and pregnancy prevention.	-Strongly unsupportive of the condom topic in the intervention. Argues that condoms discourage HIV/AIDS testing, are inconsistently used, and lead to spiritual and moral decay through pre-marital sexual practices and fornication.

| | Public/Parent sensitisation and involvement | -Parents voluntarily participated in intervention activities and encouraged their children to adopt the intervention.

-Collaborations between schools and communities also acted as a source of expert advice

-Local community leaders, religious leaders, and parents need to be trained in disseminating HIV/AIDS prevention messages to young people | -Parents were not involved in the intervention activities but instead argue Churches and Christian role frameworks to encourage abstinence till marriage and emphasise fidelity practices after marriage.

-Expresses the need to train the traditional Aunts/Uncles and Christian religious leaders in preparation for child pre-marital orientations |

What follows is the detailed presentation of the results shown in table 30 above.

2.1.1 Individual Context

Perceived need for the intervention

Parents in the CIS perceived the need for their children's sexual health and HIV/AIDS education. They recognised that young people are particularly vulnerable to HIV/AIDS and unwanted pregnancies, due to lack of reliable knowledge amidst increased exposure to pornography and sexual abuse:

> *In my days, I couldn't here a young person dying of AIDS, but now, our children are dying. We need to warm them about the dangers ahead, and teach them how to overcome such dangers because the world has gone crazy with pornography, defilement and rape [parent, CIS].*

Related to this increased exposure, some parents of the CIS stressed the need for children to start sex education as early as in primary school levels, the need for parents to be watchful of their children's HIV/AIDS-related safety including the TV interventions that their children watch, and their safety in schools:

> *Children need to be given sex education as early as primary school; around 10 years or even slightly below 10 years. Also parents need to be vigilant about the kind of movies their children watch. And nursery teachers should stop making our boys and girls sleep together on one bed… [parent, CIS].*

In contrast, five of the six parents in the AIS expressed total denial of the need to provide sex and HIV/AIDS education to young people. They expected young people to abstain from sex, and they argued that giving young people sex education may hasten their sexual activity. Instead, it was argued that schools should factually encourage young people to avoid sexual relationships and abstain till marriage:

> I don't expect my child to be taught such things because I am not expecting him or her to be involved in sex. If we start teaching them about sex, then it's like we telling them that here are condoms, go and enjoy. May be schools can just tell them to avoid boy friends or girl friends and wait till they are married [parent, AIS].

Only one parent in the AIS, who is at same time a teacher, recognised the importance of warning young people about HIV/AIDS and early pregnancies, but also emphasised that abstinence rather than condom knowledge should be advocated. This parent argues that condom advocacy and abstinence are two contradicting strategies, and that advocating condom use gives young people the legitimacy to have sex while at the same time underemphasising the dangers of early sexual activities:

> I think being alerted about HIV/AIDS and pregnancy is ok really but students should not be told about condoms, they should be told to abstain. Because giving them an option of condoms creates a picture as if it is ok to have sex as long it is protected, yet there are many dangers involved [parent, AIS].

The same parent expressed sexual mistrust between parents and teachers regarding young people's sex education. This sexual mistrust is due to scenarios of heads of schools, teachers and parents/guardians who sexually abuse young people. She argued that committed Christian leaders can be trusted in delivering sex education to young people:

> You see sex education is a challenging subject, you can't trust teachers and you can't trust parents. You find teachers and parents in prisons for defilement. Like for example me being a teacher as well, one of the girls who always appeared miserable in class opened up and told me that her parents died and she was made to stay with her uncle who had already lost his wife due to AIDS and that this uncle rapes her. May be if it sex education is done by honest Church leaders because there are also some you can't trust [parent, AIS].

Confidence and consuming skills

As previously mentioned, parents in the AIS were unsupportive of the intervention. Although parents in the CIS supported the need for the intervention, issues regarding the appropriate contents and age remain contentious in parents-child sexual communication:

> *We lack knowledge of how and what issues in sexuality we should talk to*
> *our children and at what age should we talk to them [parent, CIS].*

To avoid feelings of embarrassment and discomfort perceived in the parent-child sexual communication, some parents quietly buy and pack condoms for children as they go to school and simply put an instruction note in the condom package regarding how to use them:

> *To be on a safer side, I normally buy condoms for them as they are going*
> *to school. It is a bit hard but I normally write and a note and put it in the*
> *pack saying that if you can't avoid it, you protect yourself, this is how you*
> *put then on, etc. It is better I give them condoms than letting them go*
> *wholesale [parent, CIS].*

Due to parents' lack of confidence to communicate to their children about sexuality, some parents feel justified to shift the responsibility of child sex education to their children peers, school teachers and health professionals:

> *I don't think I can do it, it is not easy for me; I expect my kid to learn these*
> *things from friends. I myself didn't learn such things like condom use from*
> *my father; I learnt them from my friends. Or they can learn those things*
> *from school teachers or doctors [parent, CIS].*

Yet, the appropriateness of school teachers was challenged by some parents who contend that compared to teachers, trained parents are in a better position to educate their own children about sexual health and HIV/AIDS:

> *We as parents should be the ones to talk to our children concerning*
> *things like AIDS or pregnancy …we can't simply leave it to teachers, it is*
> *better we teach them our selves than teachers because teachers may*
> *pump our children with too much information and make them impossible*
> *for us children to control [parent, CIS].*

Noteworthy however, some parents who would otherwise try to discuss sexual issues with their children are too busy but if time allows, fathers would rather talk to boys as mothers talk to girls:

> *I am always busy but if I get time I can talk to the boys, I can start telling them that I know this is not what you are doing but in case of temptations like… what would you do if this and this happens, so that I get the basement for starting the whole issue. But for the girls, their mum should talk to them because you know they can ask me things I may not be able to answer [parent, CIS].*

The greatest challenge appeared when it came discussing HIV/AIDS issues with children born with HIV:

> *…but as there are children who are born with it [HIV/AIDS], and you know when it comes to explaining to them what happened exactly, why it happened, what needs to be done; it becomes a big challenge and yet they are the children who most need our advice and counselling [parent, CIS].*

2.1.2 Social-cultural and Religious Contexts

Compatibility with sex education

Parents in the CIS embraced the school-based intervention as they expressed the urgent need to break the salience, denial and taboo-relatedness surrounding sexuality and HIV/AIDS education in order to give reliable information to young people. It was argued that failure to failure to provide reliable information leads to young people being misled by information from unreliable sources (e.g. media) that may lead them to ignorantly being victims of HIV/AIDS and unintended pregnancies:

> We *need to face realities because we can't keep quite when the whole world especially the youth is getting finished by AIDS. We need to give our children the right information and tell those who can't wait for the right time to use condoms. Even if we don't talk to them, they are already exposed to wrong information in the media and they will end up in dilemmas of catching AIDS and getting early pregnancies [parent, CIS].*

In contrast, rather than the school-based intervention, parents in the AIS strongly believed in traditional paternal uncle/aunt-led pre-marriage sexual education.

Since the intervention is delivered to young people before they are culturally and morally permitted to indulge in sex, the parents in the AIS accused it of possibly encouraging early sex experimentation:

> *…according to the traditional way, it is uncles to boys and aunts to talk to girls about sexual-related issues. But of course these talks are only given them at the right time; the time when they just preparing for their marriages, in so doing, we are indirectly sending a message to young people that sex is only meant for people in marriage. Teaching them such things any other time may lead them astray [parent, AIS].*

Religious compatibility with condom advocacy

Rather than risking young people's lives with HIV/AIDS and early pregnancies, parents in the CIS were supportive of condom advocacy and shopping for young people who are 18 years and above. Teaching young people about condoms and buying them condoms was seen as a strategy of protection rather than a commission to indulge in sexual activities:

> *…for children at 18 years or above I can do the shopping of condoms to go with at school as they are also humans because if I can be tempted what about children, and if I fail to buy them, they may go barely and risk falling in the HIV/AIDS and pregnancy. So, religious or not, buying or teaching children about condoms does not mean that we are commissioning them, its giving them protection [parent, CIS].*

In contrast, all parents in the AIS were strongly unsupportive of the condom topic in the intervention for both religious and moral reasons. They argued that the perception of protection in condoms hastens sexual activity and discourages people to test for HIV/AIDS before getting involved in sexual relations. Yet, despite the perceived protection, condoms are inconsistently used, which increases the devastating tragedy of HIV/AIDS infections:

> *It annoys me when condoms are advertised by those so called foreign-funded projects; they are the ones that have increased the spread of AIDS because condoms lead people into sex and hinder testing for AIDS. They think they will be protected but in the end, people don't use them every time, and yet they are sleeping here and there, as if they have no integrity at all [parent, AIS].*

One parent argues that too much emphasis has been put on advocating condom use while giving no attention to advocating sex abstinence.

Yet, in cases where sex abstinence is advocated together with condom use, the two approaches contradict each other in nature, and it is likely that the option of condom use will be adopted over abstinence, while at the expense of religious and moral values:

> *No attention has been given to abstinence and of course, you cant tell people to abstain and at the same time tell them to use condoms; imagine if you tell people not steal and at the same time give them an option of gun proof clothing in case they can't avoid not stealing, they will definitely choose the option of going to steal, but where is God in this? And where are our societal morals? [parent, AIS].*

While another parent contends that condoms can only prevent pregnancy but not HIV/AIDS, as HIV/AIDS is perceived as a curse from God pronounced against fornicators. For religious reasons, the need to advocate sex abstinence was stressed as advocating condom use was perceived as a way of promoting fornication among young people:

> *Condoms can prevent pregnancy but not AIDS. If your condoms are working why you do think AIDS is still killing so many people up to now? We know AIDS is a curse from heaven for those fornicators. Instead of promoting prostitution with condoms, we should tell young people to abstain as the Bible says [parent, AIS].*

Community Sensitisation and Involvement

In the CIS, collaborations between schools and the surrounding communities played a significant role in encouraging the diffusion and increasing the acceptability of school-based intervention. Parents themselves encouraged their children to adopt the intervention and voluntarily participated in the class room delivery of the intervention:

> *I have two daughters in this school, and when they told me about this intervention of AIDS and pregnancy prevention, I told them that they should attend and not dare miss any of the lessons. And I also talked to their teachers who allowed me to come and also share my experiences to students [parent, CIS].*

Collaborations between the CIS and parent communities also acted as a source of expert advice.

Some sexual and reproductive health consultants from the neighbouring health centres would irregularly be invited to answer students' sexual health and HIV/AIDS issues. For instance, one parent who is a sexual and reproductive health consultant reports:

> *I know that to combat AIDS and teenage pregnancies, we all need to embrace the intervention and work together with schools. So, as a health worker in this field, I have always come and it is always my pleasure to come and talk to our youth so that we can health responsible citizens out of them [parent, CIS].*

There was a need for more parent/public sensitisation, empowerment and involvement.

This included the need to encourage, train and involve youth-related NGOs, local community leaders, religious leaders, health workers, teachers, parents/guardians and health-related organisations in issues related to disseminating HIV/AIDS prevention messages to young people:

> *I think it all about sensitisation because most of us lack knowledge of how to do it. So, Church leaders, youth NGO's, local leaders, health workers, teachers and parents/guardians need to be encouraged and trained so that we can team up and reach to the youth with the message of hope and save our children from AIDS and pregnancies [parent, CIS].*

In contrast, parents in the AIS argued that only Churches and Christian role frameworks should sensitise young people about the dangers of HIV/AIDS, caution them about spiritual wickedness of early sexual indulgence, and encourage fidelity practices after marriage. It was also argued that there is a need for training of Christian leaders and aunts/uncles to prepare them for child pre-marital orientation:

> *Churches and good Christians should sensitise young people about AIDS and the sins of sex before marriage, and emphasise the need for faithfulness after marriage because for example in Uganda today, the marrieds are the majority of people sick with AIDS. And aunts/ uncles church leaders should be trained so that they will have the knowledge to pass on to young in preparation for their marriages [parent, AIS].*

2.2 Results from the Semi-Structured Interviews with the Intervention Leaders

Table 31: Relating themes to sub-themes and properties from interview results of the intervention leaders

Themes	Sub-themes	properties
INDIVIDUAL CONTEXT	Perceived need for the intervention	-Source of knowledge and skills to prevent HIV/AIDS and pregnancy in young people
	Confidence and consuming skills	-The World Population Foundation (WPF) consultants assist in training, preparation and follow-up of Teacher Support Specialists (TSS), Sexual Reproductive Health (SRH)consultants and Student Peer Educators (SPE)
		-Five days orientation of intervention teachers before the intervention implementation and on-going support provided by teacher support specialists, Sexual Reproductive Health (SRH)consultants and Student Peer Educators (SPE).
		-Head teachers are sensitised about the intervention in a 2-day sensitisation workshop
		-More training for teachers and peer educators needed
		-Student Peer Educators sometimes conflict with teachers on the sexual health messages given to students
		-Problems of transfers of the trained teachers
		-Trained teachers should train other teachers at their schools
		-Sexual health reproductive consultants should equip teachers with knowledge and skills needed to handle students' sexual health issues.
INSTITUTIONAL CONTEXT	Match with routine workflows	-Schools officially apply and justify the need for the implementation of the intervention.
		-Expects schools to integrate the intervention across the curriculum and devise better implementing strategies.
	Technological issues	-Many schools still lack computers and internet, but the interactive nature of the intervention gives both knowledge of sexual health and ICT
		-The online support centre is helpful in answering students' sexual health queries in a way that ensures privacy and confidentiality
		-The core team mailing list and email communications are a cost effective strategy to share intervention experiences, get updated on intervention activities, and ensure continuous intervention teachers' support without geographical barriers
		-The intervention website provides participating schools with additional information about the intervention

	Teaching motivation	Expect schools to facilitate and motivate intervention teachers
SOCIAL-CULTURAL AND RELIGIOUS CONTEXT	Culture/religious compatibility with sex education	-Cultural unacceptability of lesson 7 which is about different ways of having sex. Claims that slide 27 encourages students to be homosexuals by claiming that homosexuals are born and giving examples of role frameworks of homosexuals.
	Public/Parent sensitisation and involvement	-Exhibitions at school/regional level/national level
		-Utilises student peer educators and intervention alumni role frameworks for intervention promotion and advocacy through personal testimonies

What follows is the detailed presentation of the results shown in table 31 above.

2.2.1 Individual Context

Perceived need for the intervention

Intervention leaders view the intervention as the major source of knowledge and skills to prevent HIV/AIDS and pregnancy in young people, thereby enabling them to concentrate on their studies. They argued that without such an intervention, girls will continue to drop out of schools due to teenage pregnancies, while boys end up misusing tuition fees to maintain relationships:

> *The WSWM provides knowledge, skills which enable young people to avoid HIV and pregnancy. Without such a intervention, young people will get involved in early sex which may result into infections of STDs, boys will end up channelling their fees into maintaining sexual relationships, while girls will get become pregnant and drop out of school [intervention Sexual Reproductive Health consultant].*

Confidence and consuming skills

To ensure confidence and availability of skills for conducting the intervention, the World Population Foundation (WPF) consultants assist in training, preparation and follow-up of Teacher Support Specialists (TSS), Sexual Reproductive Health (SRH) consultants and Student Peer Educators (SPE). Head teachers are also sensitised about the intervention in a 2-day sensitisation workshop.

Intervention teachers attend five days orientation before the intervention implementation and they are offered on-going support by teacher support specialists, Sexual Reproductive Health (SRH) consultants and student peer educators. This support is however a temporary support, which is gradually withheld and eventually terminated:

> *With assistance from the World Population Foundation (WPF) consultants, we train Teacher Support Specialists (TSS), Sexual Reproductive Health (SRH) consultants, Student Peer Educators (SPE) and give some orientation to the heads of schools. We also arrange 5-days orientation workshops for the intervention teachers just like the one we have now, and we ensure that we continuously support them through our TSS, SRH consultants and SPE. However, this is just a hand-hold support that diminishes with time and eventually vanishes [intervention Executive and Training Director].*

However, despite the orientations given, intervention teachers and student peer educators required more training to equip them with skills and interactivity required in sexuality education. Student peer educators sometimes conflict with teachers on the sexual health messages given to students. The problem of transfers of the trained intervention teachers was also raised:

> *I think we need to give more training to the intervention teachers so that they don't just deliver the intervention superficially. Our peer educators also need to be well informed; I encountered many instances where peers and teachers give completely contradicting answers to students regarding a particular question. And also sometimes our teachers are transferred to other schools [intervention Teacher Support Specialist].*

The intervention Executive and Training Director argues that the trained intervention teachers should transfer their knowledge and skills and train other teachers in their schools, in order to increase school involvement in the intervention activities, and to ensure that the intervention activities are not affected in cases of transfers of the trained teachers to other schools:

> *The training given to teachers should be cascaded at the school level; when two teachers are trained for each school, these trained teachers should train other teachers at their schools so that more people are involved in the intervention, and so that we reduce the problems that arise when the WSWM teachers are transferred to other schools [intervention Executive and Training Director].*

The Executive and Training Director goes on to argue that Sexual Reproductive Consultants should share their knowledge and skills with teachers, so that teachers will be in a position to confidently handle students' sexual and reproductive health needs:

> *The Sexual Reproductive Health consultants need to pass on the professionalism needed when dealing with sexual health issues to the teachers so they can acquire the skills of handling some of the sexual and reproductive health issues faced by students [intervention Executive and Training Director].*

2.2.2 Institutional Context

Match with routine workflows

To implement the intervention, schools officially apply and justify the need for the implementation of the Implementation. After capacity building from the intervention leaders, schools are expected to integrate the intervention across the curriculum, and devise best ways of implementing the intervention on their own:

> *We help schools in capacity building through head teachers, teachers and peers orientations but they are expected ensure the effective implementation of the WSWM in their curriculum. Our partnership with participating schools is based on trust, mutual understanding and obligations. It is not a donor-recipient relationship. Therefore after our capacity building, schools are supposed support themselves, motivate and facilitate teachers to guide students through the 14 lessons of the curriculum [intervention Executive and Training Director].*

Technological issues

Although many schools still lack computers and internet, the interactive nature of the intervention gives both knowledge of sexual health and ICT. The online support centre is helpful in answering students' sexual health queries in a way that ensures privacy and confidentiality:

> *The WSWM is a great interactive intervention that teaches sexual health and ICT at the same time. Our online support centre is doing a great job in providing answers to young people's sexual health questions in a private and confidential manner [Sexual Reproductive health consultant].*

The intervention mailing list, provides a platform for electronic sharing of experiences and keeps the intervention core team informed of the intervention activities. Email communications reduce the physical barriers and ensure cost-effective on-going support of intervention teachers from Teacher Support Specialists and Sexual Reproductive Health consultants. The intervention website provides additional information to participating schools:

> *The WSWM core team uses the mailing list to get updates of what is happening in the intervention and to share experiences. Although there is face-to-face help provided, any unfinished business and extra help between the Teacher Support Specialist, Sexual Reproductive Health consultants and schools can be provided via emails.*
> *Schools can also get more information from the intervention website [intervention Executive and Training Director].*

Teaching motivation:

Intervention leaders expect schools to motivate and facilitate teachers to ensure effective implementation of the intervention:

> *…Our partnership with participating schools is based on trust, mutual understanding and obligations. It is not a donor-recipient relationship. Therefore after our capacity building, schools are supposed support themselves, motivate and facilitate teachers to guide students through the 14 lessons of the curriculum [intervention Executive and Training Director].*

2.2.3 Social-cultural and Religious Contexts

Culture/religious compatibility with sex education

Teacher Support specialists received complaints from intervention teachers about the unacceptability of lesson seven that is about sexuality. The lesson demonstrates different ways of having sex and their associated precautions that contradicted the cultures of many of the schools. Teachers also argued that slide 27 of this lesson is culturally unacceptable as it encourages students to be homosexuals through claiming that homosexuals are born and giving examples of role frameworks of homosexuals:

> *Teachers say they have problems handling lesson 7 on sexuality and because it has both the facts on different ways of having sex and precautions for each way of having sex.*

> *They say that slide 27 of this lesson which says that homosexuals are born and also gives examples of some famous people who are homosexuals conflicts our culture where homosexuality is unacceptable and may lead students into the practice [intervention Teacher Support Specialist].*

Public/Parent sensitisation and involvement

The public, including parents, are sensitised about the activities of the intervention through end of intervention exhibitions at school/regional level/national level. Student Peer Educators and intervention alumni are also utilised through personal testimonies as role frameworks for intervention promotion and advocacy purposes:

> *We always organise exhibitions at the school/regional or national level at every end of the intervention life cycle where we invite the public, parents, and related organisations.*
> *We also use peer educators and intervention alumni to market and advocate our intervention [intervention Executive and Training Director]*

3. Chapter Summary

3.1 Summary of Results from the Parents

3.1.1 Individual Context

Concerning the perceived need for the intervention, parents in the CIS strongly recommended the system and argue that given the increased exposure to pornography and sex abuses, sex education should start as early as in primary schools. In contrast, parents in the AIS were in total denial of the need for school-based sex education and associated it with sex experimentation.

Unlike the parents of the AIS, the parents of the CIS were supportive of parent-child sex education.

However, they lacked knowledge and confidence in opposite sex parent-child sexual education, in parent-child sex education with children born with HIV/AIDS, and in child-parent condom education.

3.1.2 Social-cultural and Religious Contexts

Culturally, parents in the CIS embraced the school-based intervention and expressed an urgent need to break the sex-related taboos and give reliable information to young people, rather than otherwise being misled. In contrast, parents in the AIS strongly believed in traditional aunt/uncle-led sexual education rather than the school-based intervention.

Unlike the parents in the AIS, parents in the CIS were supportive of condom advocacy and condom shopping for young people 18 years and above for HIV/AIDS and pregnancy prevention.

Parents in the CIS actively voluntarily participated in intervention activities and encouraged their children to adopt the intervention. In contrast, parents in the AIS were not involved in the intervention activities.

3.2 Summary of the Results from the Intervention leaders

3.2.1 Individual Context

The leaders of the intervention viewed the system as a major source of knowledge and skills to prevent HIV/AIDS and pregnancy in young people.

There was a need for more training of intervention teachers and student peer educators. Reported were also problems of transfer of the trained teachers to other schools. It was suggested that the oriented intervention teachers should take the responsibility to orient other teachers in their respective schools.

3.2.2 Institutional Context

After capacity building, intervention leaders expected schools themselves to devise the best ways of implementing the intervention, including motivating and facilitating intervention delivery.

The computer-based nature of the intervention makes it interactive, allows privacy and confidentiality, facilitates electronic communications and allows sharing of information without mobility barriers. However, many schools still lacked computers and internet.

3.2.3 Social-cultural and Religious Contexts

The cultural incompatibility of lesson 7 of the intervention was reported, including claims that this lesson encourages students to practice homosexuality.

The public/parents are sensitised to the activities of the intervention through end of intervention exhibitions. Students, peer educators, and intervention alumni are used as role frameworks for intervention advocacy and promotion. Overall, mediators for the implementation of the intervention can be summarised in the framework in figure 6, which is presented and discussed in chapter 8. This framework was formulated based on the analysis of the data from both the internal (chapter 6) and the external stakeholders in this chapter.

 The next chapter is chapter 8 that consolidates and discusses the results, and compares and contrasts the findings with extant literature.

CHAPTER 8: DISCUSSION

1. Introduction

The last four chapters have presented results for (1) the impact evaluation of the school-based computer-assisted sexuality and HIV/AIDS intervention (the WSWM intervention); (2) the mediators influencing the implementation of the WSWM intervention. The aim was to answer the research questions of this study (presented in chapter 1). The purpose of this chapter is to consolidate the findings presented in chapters 4-7 and compare and contrast them with extant literature. Section 2 consolidates and discusses qualitative and quantitative impacts of the intervention from both the in-school and the out-of-school young people. Section 3 consolidates and discusses qualitative findings regarding mediators influencing the implementation of the intervention from both the internal and the external stakeholders. Section 4 summarises this chapter.

2. Impacts of the WSWM Intervention

The consolidated results from this evaluation suggest a framework for impact evaluation presented in figure 5 below. This framework was generated by systematically relating themes and sub- themes during selective coding in data analysis. The framework for impact evaluation attempts to demonstrate how the WSWM intervention influenced young people's individual level mediators. These mediators are HIV/AIDS-related knowledge and attitudes, and self-efficacy skills. These influences may have been linked to young people's adoption of healthy sexual behaviours: sex abstinence, fidelity and condom use. In addition, the framework indicates that contextual mediators influence the adoption of HIV/AIDS preventive measures, thereby affecting the effectiveness of HIV/AIDS interventions. These mediators are relationship characteristics, familial mediators, peer norms, gender-biased social norms, economic constraints and religious beliefs.

Figure 5: A Framework showing the impacts and benefits of the intervention and the contextual mediators

2.1

Knowledge and attitudes

HIV/AIDS awareness and perception of vulnerability

Attitudes towards gender equity in HIV & pregnancy prevention

Attitudes towards men's infidelity norms

Self-efficacy skills

Girls' sexual and condom assertiveness self-efficacy

The computer-assisted HIV/AIDS intervention

Sexual behaviours

Abstinence

Fidelity

Condom use

Contextual mediators
-Sexual relationship characteristics

-Familial mediators

-Peer norms

-Gender-biased social norms

-Economic constraints

-Christian religious beliefs

Computer-related benefits

-Privacy and confidentiality of sensitive information

-Unlimited accessibility

-Source of the otherwise denied sexuality information

-Interactivity and active engagement

-Social support and coping strategies

2.1 Impact on Adoption of Sex Abstinence

- In chapter 4, results of the controlled trial indicated that unlike the comparison group, the intervention group had a significant (P=0.00) increase in young people who reported not having had sex in the last three months from a pre-test percentage of 61 to a post-test percentage of 73.

- In chapter 5 of the qualitative inquiry, 46% of the out-of-school young people reported engagement in sex abstinence due to the knowledge of the risk of HIV/AIDS and unintended pregnancy, peer pressure overcoming skills, self expression and self-control obtained from the intervention.

2.2 Condom Use and Fidelity

- In chapter 4, results of the controlled trial indicated that like the comparison group, the intervention had significant decreases in young people's number of sexual partners over the previous three months, from 22% at pre-test to 12% at post-test; (P=0.00) for engagement with one person, and from 17% to 14%; (P=0.05) for involvement with multiple persons. This compares to the decrease in the comparison group from 23% to 21%; (P=0.16) for engagement with one person, and an increase from 15% to 17%; (P=0.08) for involvement with multiple persons.

- The intervention had no significant impact on young people's condom use i.e. 45% at pre-test, and 46% at post-test; P=0.32, and, no significant (P=0.64) increase in young people's condom use at last sex from 23% at pre-test, to 25%; at post test.

- Answers to the open ended question included in the quantitative survey of the controlled trial indicated that three reasons largely contributed to young people's non-use of condoms at last sex. These reasons appeared not to have been influenced by the intervention.

The reasons were: lack of skills in using condoms (25%); feelings of embarrassment associated with buying and suggesting condom use (21%) and perceptions that one can still get HIV/AIDS even if condoms are used (13%).

- Other reasons for non-use of condoms from both chapter 4 of quantitative findings and chapter 5 of qualitative findings included: perceptions that condoms cause cancer and contain germs, lack of money to buy condoms, religious constraints, desire to prove manhood through making girls pregnant, partner trust, interference in sexual pleasure, perceptions that young people don't fit in condoms, and perceptions that condoms can slip off and remain in a girl's body.

- In chapter 5, discussing the qualitative findings, 38% of the out-of-school young participants said they adopted condom use and fidelity practices due to improved perceptions of risk of HIV/AIDS infections and unwanted pregnancies from unprotected sex and multiple sexual partners.

2.3 HIV/AIDS awareness and perception of vulnerability

- The intervention group experienced statistically significant mean increases in the likelihood of participants to disagree with misconceptions of associating HIV/AIDS cure with washing ones private parts (M1=3.33 to M2=3.51; SD=0.38; p=0.00), eating healthy foods (M1=3.42 to M2=3.58; SD=0.36; p=0.00), taking birth control pills (M1=3.24 to M2=3.61; SD=0.56; p=0.00), and existence of vaccination for HIV/AIDS cure (M1=3.17 to M2=3.50; SD=; p=0.00).

- The intervention group experienced statistically significant mean decreases in participants' likelihood to disagree that a person can get AIDS from having sex only once (M1=2.22 to M2=1.69; SD=0.88; p=0.00); can get AIDS from deep kissing (M1=2.60 to M2=2.24; SD=0.76; p=0.00); and that a person with HIV/AIDS can feel and look healthy (M1=2.62 to M2=2.34; SD=1.41; p=0.02).

- After exposure to the intervention, 65% of the out-of-school young participants reported improved HIV/AIDS-related knowledge and perception of vulnerability to HIV/AIDS, including understanding the dangers of multiple sexual practices and unprotected sex.

2.4 Attitudes towards gender equity in HIV/AIDS and pregnancy prevention

- From the quantitative results of chapter 4, the intervention group experienced a significant mean decrease in the like hood of young people to associate girl's condom carrying and negotiation with planning to have sex (M1=2.13, M=2.26; SD=0.67; p=0.02), loss of respect (M1=2.74, M2=2.83; SD=0.44; p=0.02), embarrassment (M1=2.14, M2=2.09; SD=0.33; p=0.05), lack of trust (M1=2.33, SD=0.53; M2=2.21; p=0.00), sexual experience (M1=2.37, M2=2.44; SD=0.42; p=0.05), and prostitution (M1=2.39, M2=2.47; SD=0.42; p=0.02).

- They significantly disagree that condom use initiation should only be done by boys (M1=3.13, M2=3.18; SD=0.30; p=0.05), and significantly agree that girls can suggest condom use (M1=1.72, M2=1.62; SD=0.43; p=0.00).

The qualitative results of chapter 5 indicated that 30% of the out-of-school young people improved their perceptions of gender equity in HIV/AIDS and pregnancy prevention e.g. males felt obliged to actively get involved in pregnancy prevention and reported positive attitudes towards females' condom negotiation, while girls recognised their rights to suggest condom use.

2.5 Attitudes towards men's infidelity-related norms

- In chapter 4, unlike the comparison group (M1=2.45, M2=2.57; SD=0.60; p=0.68), the intervention group experienced statistically significant mean increases (M1=2.56, M2=2.75; SD=0.81; p=0.00) in the likelihood of participants to disagree that men should have multiple sexual partners while at the same time women should have only one partner.

  In chapter 5, it was reported that 75% of the out-of-school young people reduced their adherence to the socially defined gender-biased ideologies that condone men's polygamous practices. They condemned such norms and stressed the need for cultural change that promotes fidelity practices for both men and women.

2.6 Girls' sexual and condom assertiveness self-efficacy

- From chapter 4, the intervention had a significant effect on girls' perceived condom assertiveness self-efficacy. For example, participants significantly agreed that they would make sure that they use condoms (M1=2.09, M2=1.48; SD=1.26; p=0.00), insist on using condoms (M1=2.76, M2=2.45; SD=0.73; p=0.05), and refuse to have unprotected sex (M1=2.16, M2=1.55; SD=0.96; p=0.03).

- According to chapter 5, it was reported that 35% of the out-of-school females engaged in assertively rejecting unwanted sexual advances, while 65% improved their condom initiation and negotiation skills.

3 Contextual Mediators for the Adoption of HIV/AIDS Preventives

3.1 Sexual Relationship Characteristics

In chapter 5, 65% of the out-of-school young people reported difficulties in negotiating and insisting on condom use due to:

- Negative partner attitudes e.g. associating condoms with cancer, reduction in sexual pleasure. Insisting on condom use amidst such bad attitudes was constrained by fears of relationship breakdown.

- Perception of low risk of HIV in long-term relationships, as insisting on condom use in such relationships was perceived as lack of love and trust.

3.2 Familial Mediators

In chapter 5, 80% of the out-of-school young were influenced by familial mediators to adopt/not to adopt HIV/AIDS risk reduction strategies:

- Infrequent/lack of parental-child sex communication denies young people reliable information about HIV and pregnancy prevention.

- Parents' fidelity practices and seduction of young people into sex set bad example role models for young people.

- Protective family environments reduce young people's possibilities of getting involved in risky sexual practices.

- Experiences of having grown up in polygamous families can influence young people's sexual behaviours.

- In chapter 6, some in-school young people also reported adopting the intervention as a result of encouragement from their parents or guardians.

3.3 Peer Influences

In chapter 5, 60% of the out-of-school young people had their decisions influenced by their peers to adopt/not to adopt HIV prevention measures:

- Negative peer influences e.g. attaching discriminative labels of "impotent" and "non-starters" discouraged sex abstinence.

- Positive peer influences informing of example role models of adopting sex abstinence encouraged sex abstinence.

- In chapter 6, it was reported that peers could encourage or discourage the in-school young people from adopting the intervention.

  Also, compared to teacher-led intervention sessions, in-school young people felt more confident to discuss sexual issues in class during peer-led sessions.

3.4 Gender-biased Social Norms

Results from chapter 5 demonstrated that 65% of the out-of-school participants were influenced by gender-biased social norms, for instance:

- Societal perceptions norms interpreting girl's condom buying and suggestion as prostitution constrain girls' condom use in pursuit of social desirability, good reputation and escape from social accusations.

- Compliance with social norms that condone and praise men's sexual experience of having multiple sexual partners drives young men into risky sexual experimentation in order to prove their manhood.

- Due to norms that associate girls' virginity with marital gains, sex abstinence is more heavily emphasised for girls than boys, which indirectly indicates gender-bias in the appropriate sexual practices for men and women.

3.5 Economic Constraints

According to chapter 5, financial constraints drove 10% of the out-of school young people into unwanted sexual advances through sex in exchange for money and this increased their possibilities of exposure to sexual abuse.

3.6 Christian Religious Belief

Next to familial mediators in significance was the influence of Christian religious beliefs on individual adoption of HIV/AIDS preventive sexual behaviours. In chapter 5, it was reported that 75% of out-of-school young people opted for abstinence, fidelity and non-condom use for religious reasons.

- Christian condemnations of sex before marriage and infidelity practices encourage sex abstinence and fidelity practices in order to fulfil religious values and obligations.

- Christian condemnations of condom use discourage condom use.

- In chapter 6, religious compatibility with condom advocacy influenced the in-school young people to adopt or not to adopt the intervention.

4. Computer-related benefits of the WSWM Intervention

Due to its computer-assisted nature, the WSWM intervention has the following computer-related benefits, details of which are explained in section 5.7 below.

- Privacy and confidentiality of sensitive information

- Unlimited accessibility

- Source of the otherwise denied sexuality information

- Interactivity and active engagement

- Social support and coping strategies

5. Reflections and Comparison with Extant Literature

The framework in figure 5 demonstrates the individual level impacts of the intervention on sexual behaviours, HIV/AIDS awareness, attitudes and self-efficacy. The framework also indicates the influence of contextual level mediators on the adoption of HIV preventive sexual behaviours. What distinguishes this framework from prevailing related frameworks, e.g. the AIDS Risk Reduction model (Catania 1990), is an integrative approach that goes beyond the individual level mediators by considering contextual mediators. The framework agrees with assertions of ecological models of health promotion (McLorey 1988), which emphasise the need to consider factors that influence behaviour at both personal and contextual level. The devised framework specifies the different interventional levels and suggests constructs to be targeted in the specific context of HIV/AIDS prevention.

5.1 Impact on sexual behaviours

The intervention generally had positive influence on sexual behaviours: first, some positive impacts in engagement in sex abstinence, partner faithfulness and condom use were reported from the qualitative assessment with the out-of-school young people i.e. 46% adopted sex abstinence while 38% adopted condom use and fidelity practices; second, the quantitative before-after study showed that the intervention had significant impact on the in-school young people's sex abstinence, partner faithfulness. However, the impact on condom use was not significant. Findings of insignificant impacts on condom use are consistent with those of previous researchers (Walker et al 2006; Stephenson et al 2004; DiCenso et al 2002; Cheng et al 2008; Jahanfar et al 2009; Bull et al 2009; Paul-Abhohimhen et al 2008). In a recent review of 87 studies (70% of which were school-based) around the world by UNESCO (2009), 60% of the interventions had no significant effect on condom use.

Also, a systematic review of the effectiveness of behavioural interventions for prevention of STDs in young people showed improvements in knowledge and self-efficacy but no significant impacts on sexual behaviours, condom use inclusive (Shepherd et al 2010).

One of the reasons for the lack of significant influence on condom use may be the short follow-up of interval of seven days that may have been too short for condom adoption. However, given that there were significant impacts observed on other sexual behaviours, associating the insignificant impact on condom use with the short follow-up assessment seems to be insufficient. A longer follow-up of 18 years olds still showed no significant impacts on unprotected sex (Stephenson et al 2004). Walker et al (2006) report young people's inability to maintain the behavioural impacts (condom use in particular) reported during short follow-up.

In the present study, even with long follow-up, it is highly doubtful if any significant influence on condom use would have occurred since the three reasons (i.e. lack of knowledge of using condoms, feelings of embarrassment associated with buying and suggesting condom use, and perceptions that one can still get HIV/AIDS even if condoms are used) that largely contributed to non-use of condoms at last sex appeared not to have been influenced by the intervention.

In addition to the three major mediators for non-use of condoms mentioned above, other mediators that constrained the in-school young people's condom use include: perceptions that condoms cause cancer and contain germs, lack of money to buy condoms, desire to prove manhood by making girls pregnant, partner trust, interference in sexual pleasure associated with condom use, perceptions that young people don't fit in condoms resulting in condoms slipping off and remaining in a girl's body, and religious constraints.

Other studies also report constraints in condoms use e.g. condoms' interference with sexual pleasure (Thomson and Holland, 1996), challenges in initiation and negotiation (Sionean et al 2002; Helitzer-Allen 1994), religious constraints (Mosley 2003; Parker and Kelly 2000), desire to prove manhood (Thomson and Holland 1996), and partner trust (Kelly & Parker 2000; MAYISHA II Collaborative Group 2005). Perceptions that young people don't fit in condoms, and that condoms contain germs and cause cancer are not reported in literature. In addition, condoms' failure to be 100% effective in HIV prevention, and lack of money to buy condoms, appear not to be reported in literature.

Results from the investigation of mediators for the implementation of the intervention may also explain the limited impact of the intervention on condom use. The condom use constraint of lack of skills may have been attributed by intervention teachers' failure to practically demonstrate condom use in class. The intervention teachers' reservations on teaching about condom use ultimately influenced their level of condom emphasis and details revealed to young people. Teachers' failure and inabilities to demonstrate condom use is also reported in a recent systematic review (Shepherd et al 2010). In fact young people reported that the intervention teachers told them that condoms are not good for young people that condoms are not 100% effective in preventing HIV/AIDS, and that young people should not use condoms but should instead abstain from sex. Thus, lack of practical demonstrations of condom use, coupled with teachers' discouragements about condom use may have contributed to young people's non-use of condoms.

The qualitative inquiry with the out-school youth also revealed contextual mediators that may explain the intervention's limited impact on condom use. Constraints of condoms use include: negative partner attitudes about condoms, perceptions of trust and love, bad attitudes towards girls who buy/suggest condom use, and religious beliefs about condom use.

As earlier noted, some of these contextual constraints in adopting condom use are reported in the literature, e.g. condoms' interference with sexual pleasure (Thomson and Holland 1996).

Others include challenges in initiation and negotiation (Sionean et al 2002; Helitzer-Allen 1994), religious constraints (Mosley 2003; Parker and Kelly 2000), and partner trust and attitudes (Kelly & Parker 2000; MAYISHA II Collaborative Group 2005).

Findings of positive impacts in engagement in sex abstinence, partner faithfulness are similar to the contentions of previous related studies (Lonczak et al 2002; Siegel et al 1998) which also report reduction in risky sexual behaviours after exposure to the intervention.

5.2 HIV/AIDS awareness and perception of vulnerability

Consistent with those other researchers who evaluated the impacts of the school-based HIV/AIDS intervention on young people's knowledge of HIV/AIDS (Cheng et al 2008; Jahanfar et al 2009; Susan et al 2006; Kiene and Barta 2006), the present study indicates that the intervention significantly influenced young people's knowledge of HIV/AIDS transmission and prevention.

Compared to the comparison group, young people in the intervention group were significantly more likely to disagree that HIV/AIDS can be prevented by: washing private parts after sex, eating healthy foods, taking birth control pills, and to disagree that there is a vaccination that cures HIV/AIDS. Also, compared to the comparison group, the intervention group were significantly more likely to agree that a person can get AIDS from having sex only once and deep kissing and to agree that a person with HIV/AIDS can feel and look healthy. Although increase in knowledge does not always guarantee changes in behaviour, reliable information especially about the involved risks can be vital in motivating health behavioural change (Prochaska and DiClemente 1983).

Boyer and colleagues' (Boyer et al 2000) contend a direct relationship between perception of vulnerability and adoption of HIV preventives.

In the present study, the increased HIV/AIDS awareness and perception of vulnerability obtained from the intervention subsequently led to reduced involvement in sexual activities and increased condom use, as reported by 65% of the out-of-school young people.

5.3 Attitudes towards gender equity in HIV/AIDS and pregnancy prevention

Cultural expectations of women's passiveness and ignorance in sexuality constrain their sexual negotiating power, including negotiating for safer practices (Phillips 2000; Bowleg et al 2000; Wingood et al 2000; Pearson 2006). The improvement in perceptions of gender equity in HIV/AIDS and pregnancy prevention was statistically significant in the in-school young people. In addition, 30% of out-of-school young people reported improved perceptions of gender equity in HIV and pregnancy prevention. These positive attitudes towards females' condom negotiation and male's active involvement in preventing unwanted pregnancies are important steps forward in tackling the gender-related vulnerability of HIV/AIDS and pregnancy. Eventually, consistent with findings of Sionean et al (2002), results of the out-of-school study demonstrate that young girls who could initiate and negotiate condom use with their partner were more likely to use condoms. Studies evaluating HIV school-based interventions rarely incorporate gender-related constructs in their assessments; this study is among the first school-based evaluations to specifically evaluate the impacts of such interventions on attitudes towards gender equity in HIV and pregnancy prevention.

5.4 Attitudes towards men's infidelity-related norms

Compared to the comparison group, the intervention group experienced significant reduction in participants' adherence to the socially defined gender-biased ideologies that condone men's practice of having concurrent multiple sexual partners while constraining women's sexuality to single partners.

Also, 75% of the out-of-school participants reported adopting fidelity practices as a result of reducing their adherence to norms condoning men's polygamous practices.

To the knowledge of the researcher, no empirical study in literature investigated the influence of school-based HIV interventions on young people's attitudes towards men's infidelity-related norms. Noteworthy however is that a related study by Jemmott and colleagues reported improvement in participants' attitudes towards risky sexual behaviours after exposure to the intervention (Jemmott et al 1992). Other related studies (Umeh 1997; and Thomson and Holland 1996) caution that adherence to norms of men's polygamous practices can drive young people to unprotected sex due to perceptions of condoms' interference in their sexual performance.

5.5 Girls' sexual and condom assertiveness self-efficacy

Given the persistently reported young people's difficulties in practical translation of HIV knowledge to HIV prevention practices (Bazargan et al 2000), the reported improvements in HIV/AIDS knowledge and attitudes may not make significant impact on behaviours without appropriate self-efficacy to adopt HIV preventive measures. Self-efficacy plays an important role in closing the awareness-behaviour gap by equipping individuals with positive capability beliefs and abilities to adopt healthy behaviours (Rimal 2000).

The intervention influenced the out-school girls' self-efficacy in two different ways; 35% reported improved sexual assertiveness, while 65% reported improved condom negotiation self-efficacy. This improved self-efficacy influenced and reinforced their adoption of sex abstinence and condom use. Previous studies also report young women's refusal self-efficacy (Karnell et al 2006) and condom negotiation self-efficacy (Roberto et al 2007; Jemmott et al 1999) after exposure to the sexuality intervention.

Demonstrations of the central role played by girl's condom negotiation and sexual assertiveness self-efficacy in the use of condoms are parallel to the contention of Sionean et al (2002).

Similar to the findings of Stephenson et al (2004) and Stephenson et al (2008), this study's findings indicate that after the intervention, the out-of-school girls' perceived self-efficacy to negotiate and insist on condom use significantly increased, and that these girls started to confidently negotiate and insist on condom use. It was reported that from the intervention, girls became aware of their sexual rights and their high levels of vulnerability to HIV/AIDS compared to their boy counterparts, which compelled them to be sexually assertive and negotiate and insist for condom use for those that were sexually active. This can be viewed as indicating a shift in traditional societal expectations about women's passiveness and assumed ignorance in sexual decision making that have long constrained women's sexual negotiating power, including negotiating for safer practices. Evidently therefore, such a distinctive condom negotiation self-efficacy and sexual assertiveness can be instrumental in combating HIV/AIDS and its uneven burdensome consequences among young women.

5.6 Contextual Mediators

Previous studies evaluating school-based HIV interventions have often limited themselves to assessing individual level mediators. This study is the first evaluation to investigate contextual mediating mediators influencing the adoption and maintenance of sexual behaviours promoted by the school-based intervention. Similarly to the contentions of ecological frameworks for health (McLeroy et al, 1988), the findings indicate that sexual behaviours are determined by the interaction of the complex intertwined mediators that go beyond individual characteristics. This implies that exclusive attribution of sexual behaviours to individuals ignores the contextual determinants of sexual behaviours. These mediators include interpersonal characteristics e.g. relationship characteristics, and peer influence.

Beyond the interpersonal characteristics are socio-cultural and religious mediators that influence sexual behaviours through gender-biased sexual norms and religious beliefs and values.

Beyond the socio-cultural and religious contexts there are economic mediators that can constrain adoption of HI/AIDS preventive behaviours. Finally, there are religious mediators that influence sexual behaviours through religious norms and values.

5.6.1 Sexual relationship characteristics

With the notable exception of Bull et al (2009), previous research generally concentrates on the influence of individual level negative attitudes towards condom use (e.g. MacPhail and Campbell 2000). Yet, the present study reveals that sexual relationship characteristics (e.g. negative partner beliefs about condoms and perceptions of partner trust in long term relationships) influenced individual decisions to use condoms. 65% of the out-of-school young people could not use condoms due to their partners' negative beliefs about condoms and perceptions of partner trust. These negative beliefs included perceptions that condoms can cause cancer, can slip off and remain in a woman's body, are not 100% effective in preventing HIV and interfere with sexual pleasure. Amidst such negative attitudes, young people, especially girls, feared insisting on condom use due to fears of breaking their relationships. Thomson and Holland (1998) also report inconsistent condom use due to perceptions that condoms interfere with sexual pleasure and performance.

Perceptions of trust and love, particularly in long term relationships, undermined young people's condom use.

Suggesting condom use in such trusting relationships may be regarded as lack of love and trust, and evidence of promiscuity (Kelly & Parker 2000; MAYISHA II Collaborative Group 2005). Yet, such assumptions of lower HIV risks in long-term or loving relationships may not necessarily be true.

This is because even if partners knew their HIV status before, one of them can in the long run become infected and bring HIV/AIDS into the relationship. Clearly, consistent condom use requires mutual understanding, consent and commitment from both sexual partners.

5.6.2 Familial mediators

Although there is a paucity of empirical research about the role of parents and guardians in fighting HIV/AIDS among their children, this study's findings are consistent with those of the modest previous research (e.g. Dilorio et al 2003; Li et al 2000), in demonstrating the vital role of familial mediators in shaping young people's sexual behaviours. Compared to other contextual mediators, familial mediators significantly influenced young people's sexual behaviours. 80% of young people's sexual behaviours were influenced by familial mediators e.g. through lack of parent-child sex communication, lack of exemplary parental role models, and provision of family protective environments.

Compared to other sources, parents were regarded as reliable sources of sexual health information, including information about HIV/AIDS and pregnancy prevention. Yet, young people reported not getting timely sexual guidance from their parents. Reasons for lack of parental-child sex communication include misconceptions that sexuality education leads to sex experimentation, and lack of parents' self-efficacy in parent-child sex communication especially in cases of opposite sex, condom education, and children born with HIV. Kelly and Parker (2000) report parents' feelings of embarrassment and discomfort in discussing sexual-related issues with their children.

This suggests the need to ensure that parents/guardians and entire communities are educated about the benefits of young people's sexuality and HIV education, as well involving them in intervention development and implementation.

This study did not find any published previous research relating parents' sexual behaviours with children's sexual behaviours. Findings demonstrate that good parental role models with healthy sexual behaviours encouraged young people's adoption of HIV preventive behaviours. The sexual behaviours of parents sent implicit messages to young people about the 'acceptable' sexual behaviours, which was more likely to subsequently influence their sexual behaviours. For instance, the influence of parents' risky sexual behaviours on young people's sexual behaviours was two sided: on the one side, some young people who grew up from polygamous families reported how their bad experience in such families motivates them to maintain one sexual partner. On the other side, some young people who grew up from polygamous families were more likely to perceive the practice as 'acceptable' and were more likely to have more than one sexual partner concurrently. Also, it was reported that parents who seduce young people with gifts present bad examples to young people.

Restrictive and monitoring environments reduced possibilities of involvement in risky sexual behaviours among the out-of-school young people. Other studies e.g. Crosby et al (2003) affirm that frequent parental monitoring is associated with reduced occurrence of sexually transmitted diseases, while Li et al (2000) contend that adolescents who perceive that their parents are monitoring their movements and their company are less likely to engage in risky sexual behaviours.

Also, parents/guardians influenced their children's adoption of the intervention by encouraging/discouraging intervention adoption, voluntary participation in the intervention activities and reinforcing or rejecting the information obtained from the intervention.

This demonstrates that parents/guardians and communities can influence the effectiveness of school-based sexuality and HIV interventions. No study has been found in literature reporting young people's encouragement to adopt HIV interventions by parents. Regarding child-parental adoption discouragement, Mitchell (2001) contend that some parents in Uganda discourage their children from adopting HIV interventions as they presume that providing sexual information to young people drives them to sex experimentation.

5.6.3 Peer influence

Although much of the focus in literature has mainly concentrated on the role of negative peer influences in encouraging highly risky sexual behaviours (e.g. Selikow et al 2009), this study demonstrates the central role of both negative and positive peer influences.

On the one hand, there are negative peer influences that discourage the intervention itself, and the adoption of HIV preventive measures e.g. sex abstinence was discouraged through discriminative actions and giving intimidating labels such as 'non-starters, 'impotent'. In the midst of such peer pressures, rejection and intimidating labelling, sex abstinence among the out-of-school young people was constrained in the quest for peer acceptance and desirability.

On the other hand, consistent with findings from related studies e.g. (Sheeran et al 1999; Perkel et al 1991), the present study demonstrates that positive peer influences encourage adoption of HIV risk reduction strategies e.g. peer role frameworks provided exemplary encouragement for young people to abstain from sex. This was enabled by positive encouragement that created obligatory feelings of adopting an HIV preventive method in an attempt to conform to the behaviours of role frameworks.

In addition, compared to teacher-led intervention sessions, in-school young people felt more confident to discuss sexual issues in class during peer-led sessions. Similar to the contentions of Stephenson and colleagues' randomised controlled trial (Stephenson et al 2004), young people felt more confident in peer-led sessions since both peer-educators and young people were *sharers* in the same age group, with relatively similar sexual-related values and challenges. However, young people were more likely to believe more in teachers' answers than in answers from peer-educators. This may have been due to the perception that peer-educators may not have greater expertise and experience than those of young people themselves.

However, according to randomised controlled trials and meta analysis studies (Stephenson et al 2004; Kirby et al 1997), there is no evidence regarding whether or not adult-led sexuality and HIV intervention targeting young people are more effective than peer-led interventions.

5.6.4 Gender-biased social norms

Findings demonstrate that unsupportive societal environments undermine girls' capacity to negotiate for condom use by attaching labels of 'prostitutes' to girls who buy condoms or negotiate for condom use. Due to such constraining gender-biased societal expectations, some girls refrained from buying condoms, or from proactively and assertively negotiating for condom use, in fear of transgression costs including bad reputations, social accusations and family rejection. The constraints of socially imposed sexual passiveness and culture of silence on women's condom use is also reported in related literature (Phillips 2000; Bowleg et al 2000; Wingood et al 2000; Pearson 2006). Such unsupportive societal environments also constrain women's ability to seek HIV risk prevention information or even seek HIV treatment (Weiss et al, 2000). Unless such constraining norms are dismantled, women will certainly remain in the midst of the deadliest killer - HIV/AIDS, disproportionately carry the burdens of HIV/AIDS, and increase HIV devastation by infecting their unborn babies.

Findings also indicate that social norms associating men's multiple sexual partnership with heroism and masculinity provide a fertile ground for the spread of HIV/AIDS and reduce the effectiveness of HIV prevention interventions. Some young males feel socially justified in having more than one sexual partner at the same time and are driven into risky sexual experimentation in order to prove their manhood.

Such norms interfere with condom use since condoms are believed to interfere with their sexual performance (Thomson and Holland 1996).

Although sex abstinence was generally encouraged for both girls and boys, it was more heavily emphasised for girls compared to boys. The social expectation of girls' virginity and its related marital gains apparently demonstrates the grass root existence of gender-bias in HIV prevention. Such norms of virginity before marriage can increase a girl's vulnerability to HIV/AIDS. As indicated in this study, the perceptions of low HIV risk among virgin girls can make them sexual targets for men with risky sexual behaviours. No empirical study was found in the literature reporting the relationship between girls' virginity and sexual vulnerability.

5.6.5 Financial Constraints

Evans and Lambert (2008) report related findings as they record frequent uptake of HIV preventives by women who are not constrained financially or subject to sexual abuse. The present study demonstrates that 10% of young people's vulnerability to HIV/AIDS was influenced by financial difficulties. Due to financial constraints, girls' capacity to refuse unwanted sexual advances or suggest condom use was constrained by the pressing need for survival that was traded off against the long run consequences of HIV/AIDS infection.

5.6.6 Christian religious belief

Christianity can be a practical weapon to dismantle the prevailing social-cultural and religious norms that approve men's risky polygamous practices, early sex debuts and increased sexual activities. Christian young people felt obliged to refrain from sex before marriage and infidelity practices in order to attain spiritual uprightness. Religious beliefs about ungodliness associated with sex before marriage motivated some young people to delay sex debut, while religious condemnations of infidelity practices motivated some to remain faithful to their partners. Noteworthy also however was religious constraints on HIV/AIDS prevention through condemnations of condom use. Lagarde et al (2000) also relates religious beliefs with reduction in women's HIV risk behaviours.

However, religion can also be a constraint to condom use. Some religious beliefs claim that advocating condom use is an ineffective strategy that only encourages infidelity and moral decay, and increases the spread of HIV/AIDS (Mosley 2003; Parker and Kelly 2000).

5.7 Computer-related Benefits

5.7.1 Privacy and Confidentiality of Sensitive Information

The sensitive nature of sexuality and HIV/AIDS education continue to present challenges fighting HIV/AIDS (e.g. see Power et al 2004; Shepherd et al 2010). As reported in this study, the use of information communication technology promises to minimise such challenges as young people who would otherwise feel uncomfortable to voice out their sexual health issues in class felt confidence to do so using the intervention's online support centre. Related to this finding, Rhodes (2004) reports that HIV/AIDS prevention chart rooms ensure confidentiality in sharing sensitive sexual-related information among gay community.

Other researchers (e.g. Kalichman et al 2002; Levine et al 2008) acknowledge the role of computer-assisted HIV interventions in addressing the challenges of confidentiality, stigma and discrimination associated with face-to-face sexuality and HIV/AIDS education.

5.7.2 Unlimited Geographical Accessibility

Findings indicate that the intervention's website and online support centre provided unlimited accessibility to sexuality and HIV/AIDS prevention information irrespective of the geographical boundaries and temporal barriers. This is important as it allows young people from all over the world can to virtually access and/or discuss/share critical sexual health issues that affect their lives. Consequently, this makes it possible to generate a pool of knowledge from different counsellors and peers with different expertises and experiences in sexual health and HIV issues. (e.g. see http://schoolnetuganda.sc.ug/wswmonlinesupport/).

Although not necessarily accessing HIV-related information in particular, the role of the internet in facilitating unlimited accessibility of health-related information is reported in literature (e.g. see Wikgren 2003; Coulson and Knibb 2007). Such kind of accessibility and connection of the otherwise inaccessible information and disconnected communities is vital in obtaining generating useful health-related information (Wikgren 2003).

Although the use computer-assisted nature of the WSWM intervention offerd unlimited accessibility, this study indicates that a lack of enough computers and internet connection constrained intervention accessibility and hindered communication between intervention leaders and teachers. Challenges of accessibility of computer-based health interventions especially among the hard to reach populations are not uncommon (Payton and Kiwanuka-Tondo 2009; Zolfo et al 2006; Kalichman et al 2002; Perryman 2003).

Given the limited applications particularly in developing countries, the use of information technology may exclude some groups of population who have got no access to internet or/and who are computer illiterate. As was experienced in this research, young people who lacked enough computers and internet (the CIS) were at the same time more vulnerable to HIV. This echoes contentions of Bull (2001) regarding the possibility of health disparity between those who have access to computers/internet and those who are on the wrong side of the digital divide.

5.7.3 Reliable Source of the otherwise Denied Sexuality Information

Information technology can be instrumental in anonymously conveying the otherwise taboo-realted messages of sexuality and HIV prevention. For instance, findings indicate that young people were able to access useful sexuality and HIV/AIDS information (e.g. information on condom use) from the WSWM online support centre. And that such information would not otherwise be available for young people due to the prevailing silence and denial associated with the subject of sexuality.

Related to this finding, Coumba et al (2005) report that due to the prevailing denial of sexuality and HIV information, female adolescents in African countries; including Uganda are instead resorting to internet to search for sexual and HIV-related information.

The quality/reliability/trust of health-related information posted on the unregulated internet sites may not be guaranteed (e.g. see Tsai et al 2007; Adams and De Bont 2007; Bull et al 2001; Moturu et al 2008). Benotsch et al (2004) reports the inability of HIV/AIDS' patients to make distinctions between 'high-quality' and 'low-quality' of internet-based HIV education information available. The capability of users to recognise and make attempts to rectify the wrong information obtained cannot be assumed (Coulson and Knibb 2007).

However, information posted on the WSWM online support centre is edited by a counsellor before its publication. The important role played by such intermediaries in ensuring reliability of internet-based health-related information is acknowledged by Eysenbach (2008). The reliable information on the WSWM online support centre can be helpful in clearing out the myths and misconceptions surrounding sexuality and HIV issues. Consequently, accessing such information can play a significant role in empowering young people to avoid risky sexual behaviours, which they could have engaged in due to lack of reliable knowledge about good sexual practices.

5.7.4 Interactivity and Active Engagement

The utilisation virtual peer educators; 'Rose' and 'Davis' for educational information, quizzes and games made the WSWM intervention website more interactive. These virtual peer educators actively involved young people in role modelling including engaging them in interactive safer sex (condom use) quizzes and games. Using interactive condom use quizzes and games were significantly helpful given that condom use was not demonstrated in class. In addition, young people were able to share their sexual-health and HIV-related experiences on the WSWM online support centre. Thus, young people themselves were not only actively engaged in their own health, but were also proactive producers and co-producers of vital sexual health information and HIV prevention resources posted on the online support centre.

The potentials of information technology to actively engage the public in health-enhancement behaviours is acknowledged by Norman et al (2008) and Lewis et al (2005). As these authors assert, this active engagement is transforming the public from being mere health consumers to 'informed experts' and producers of the contents of health promotion interventions.

Computer-assisted health interventions provide opportunities to tailor sexuality and HIV/AIDS interventions to the needs and preferences of the users (Chiauzzi et al 2003).

This can be significantly helpful given that young people can have differing sexual needs and preferences e.g. depending age, level of sexual activity, self-efficacy, HIV/AIDS status, readiness to change, and level of HIV/AIDS vulnerability. Untailored interventions have long been criticised for failing to effectively meet young people sexual and HIV/AIDS needs (Kelly and Parker 2000). However, WSWM website does not tailor information in accordance to young people's needs and preference. Tailoring would make the make the website more 'personal', and improve the reported benefits of interactivity and active engagement.

5.7.5 Social Support and Coping Strategies

The intervention's online support centre was young people's source of social support and coping strategies from both expert counsellors and peers. This included peer-based learning and sharing of experiences and coping strategies from young people who have overcome HIV risky situations and behaviours. Such experience-based communications was an important source of encouragement and empowerment to other young people who were attempting to overcome HIV risky situations and behaviours. The link between information technology and consumers' heath-related empowerment and social support is highlighted in prevailing related literature (e.g. Hoffman-Goetz and Donelle 2007; Parr et al 2002). These authors acknowledge the development of online 'medical communities' with its possible challenges on physician-consumer relationship.

6. Mediators Influencing the Adoption of the WSWM Intervention

The consolidated results from both internal stakeholders in chapter 6 and external stakeholders in chapter 7 suggest a framework (figure 6 below) for analysing the mediators influencing the implementation of the intervention. This framework was generated by systematically relating themes and sub-themes during selective coding.

This framework posits that effective integration of the intervention was shaped by multi level mediators including individual level mediators, institutional mediators, and social-cultural and religious mediators.

Figure 6: Framework summarising the mediators influencing the adoption of the intervention
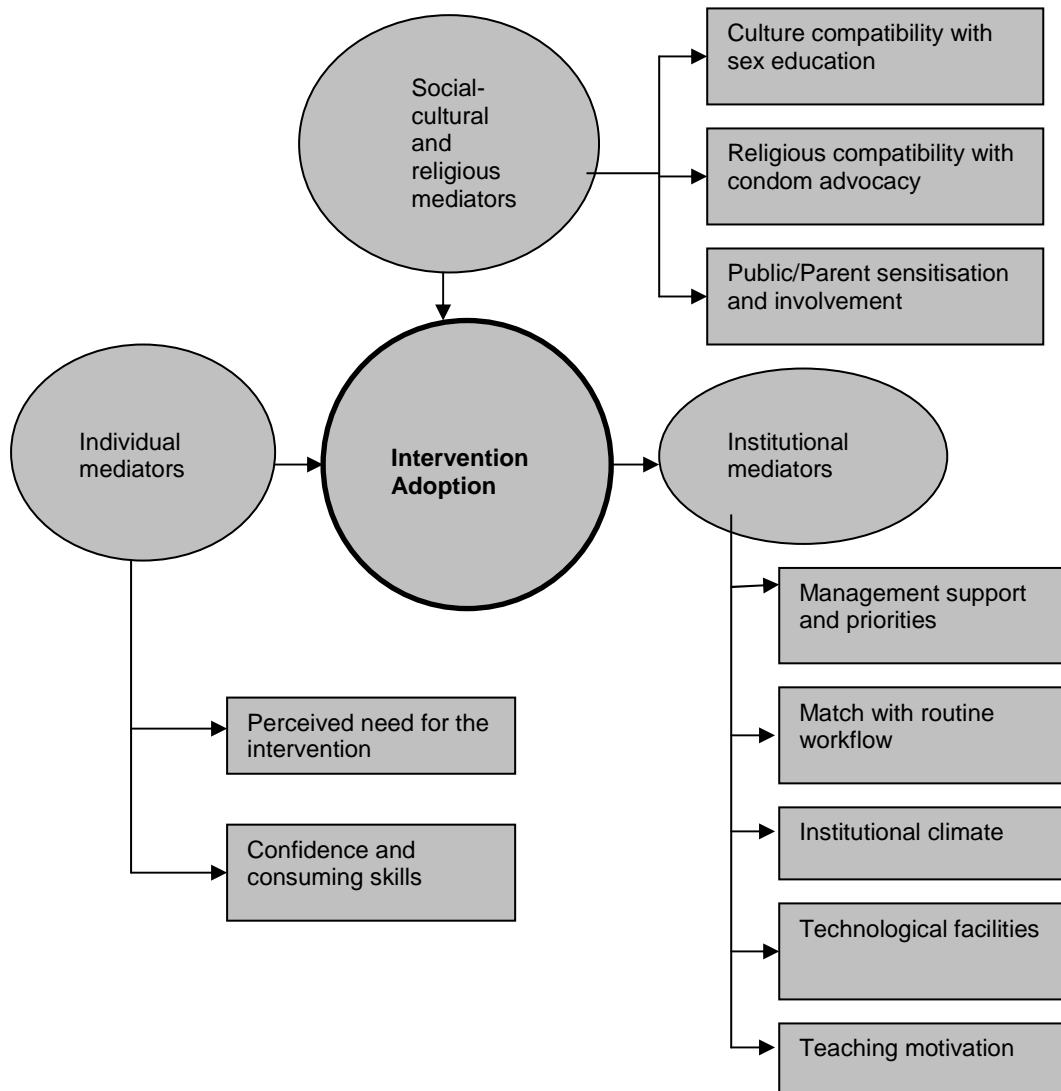
6.1 Individual Context

6.1.1 Perceived Need for the Intervention

- Heads of schools, teachers, and parents of the CIS had a strong need for the intervention, since young people were considered to be more vulnerable to HIV and unintended pregnancies. This was because it was a mixed gender school located in the military barracks with many orphans and young people from soldiers' separated families. Also, some of the young people in the CIS were already living with HIV/AIDS while others were previous sexual offenders. In contrast, in the AIS there was no felt need to prioritize the implementation of the intervention, since the young people's vulnerability was relatively low, it was a girls-only school with young people from middle income families, and many of the young people had both of their parents.

- Young people from both the CIS and the AIS equally expressed the need for the intervention, due to perceptions of lack of knowledge of HIV and pregnancy prevention, lack of parental guidance on sexuality and HIV issues, and perceived severity of HIV which was reinforced by the personal witness of HIV/AIDS patients.

- All parents in the CIS strongly recommended the intervention and argued that sex education should start as early as in primary schools due to the increased exposure of young people to pornography and sex abuse. In contrast, five out of the six parents in the AIS (which was a Church-founded school) were in total denial of the need for school-based sex education as they associated it with young people's sex experimentation.

6.1.2 Confidence and Consuming Skills

Teachers and young people in both the CIS and the AIS felt uncomfortable discussing sensitive sexual issues in the classroom.

However, unlike teachers in the AIS, teachers in the CIS, notwithstanding some sexual mistrust between teachers and young people, were confident to deal with such sensitive issues during out-of class private consultations, and to inform young people about condoms.

- Although teachers and peer educators were trained in a five-day intervention orientation workshop, there was a need for more training. Conflicting messages were sometimes given to young people by teachers and peer educators.

- Young people in both the CIS and the AIS preferred after-class consultations to classroom discussions of private issues, felt more confident in peer-led discussions than teacher-led discussions, but believed more in teachers' answers than answers from their peers.

- Young people in both the CIS and the AIS had basic computer to use the intervention.

- Although parents of the CIS were supportive of sex education, they lacked knowledge and confidence in talking to children of the opposite sex, to children born with HIV/AIDS, and in educating their children about condom use.

6.2 Institutional Context

6.2.1 Management Support and Priorities

Administratively, the school administration in the CIS was supportive of the intervention activities e.g. the school administration:

- o Attended head teachers' orientation.
- o Financially supported teacher training workshops.
- o Participated actively in the intervention activities, e.g. intervention launching and end of intervention student exhibitions.

- Conversely, there was a change of administration in the AIS after the intervention was launched and the new head of school was administratively unsupportive of the intervention. For instance the new head of school:

  - Never financially facilitated teachers to attend training workshops.
  - Fixed evening academic lessons that clashed with the delivery time for the intervention.
  - Was not actively involved in the intervention activities.

- There was inconsistence in young people's attendance at the intervention due to timetabling problems in both the CIS and the AIS. Noteworthy however is that young people's inconsistent attendance in the CIS was mainly attributed to clashes of the intervention with other extra-curricular activities, while that of AIS were mainly attributed to clashes with evening academic lessons and exams fixed by the new head of school.

6.2.2 Match with Routine Workflows

Intervention leaders expected schools to integrate the intervention across the curriculum and to devise better implementation strategies.

- In both the CIS and AIS, the intervention was taught as an extra-curricular activity, as there was no time allocated for the intervention on the schools' main timetable, which resulted in young people's inconsistent attendance at the intervention due to clashes with other extra-curricular activities.

- Clashes with routine workflow were largely felt in the AIS, due to the fixing of evening academic lessons and exams that clashed with the delivery time of the intervention and contributed to its abandonment.

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6.2.3 Institutional Climate

- The CIS school environment was supportive of the intervention; for instance other teachers voluntarily actively participated in the intervention activities, including voluntary engagement in intervention classroom sessions, and encouraging young people to adopt the intervention.

- In contrast, in the AIS, other teachers never owned the intervention, e.g. they discouraged young people from adopting the intervention, claiming that the intervention teaches prostitution and that intervention teachers sexually harass young people.

- In the CIS, young people were encouraged to adopt the intervention by their fellow colleagues, friends and other teachers at school, while in the AIS, young people reported being discouraged from adoption of the intervention by their school colleagues, friends and other teachers that were not directly involved in the intervention.

6.2.4 Technological Issues

- Results demonstrated that the computer-based nature of the intervention had the following advantages:

  o It is interactive in nature and gives knowledge of sexual health, HIV and pregnancy prevention skills while at same time equipping young people with ICT skills.

  o The online support centre is helpful in answering students' sexual health queries in a way that ensures privacy and confidentiality.

  o The core team mailing list and email communications are cost effective communication strategies for sharing intervention experiences.

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They also provide avenues for getting updated on intervention activities, and ensuring continuous intervention teachers' support from intervention leaders without geographical barriers.

- o The intervention website provides participating schools with additional information about the intervention and offers teachers and young people unrestricted access to the intervention.

- However:

  - o There was a lack of computers and reliable internet connections in both the CIS and AIS. The CIS had only three computers with internet connections and one television set, while the AIS had 30 computers, of which only five were connected to the internet.

  - o Lack of computers and internet limited accessibility to the intervention, which led to partial or no coverage of discussion forums and interactive HIV/AIDS prevention games, and created communication barriers between the teachers and intervention leaders.

6.2.5 Teaching Motivation

- Intervention leaders expect schools to motivate and facilitate intervention teachers, yet schools expect intervention leaders or intervention sponsors to be the ones to motivate teachers.

- Despite the lack of financial incentive for delivering the intervention, teachers in the CIS were still committed to delivering the intervention in order to help young people protect themselves from HIV and unwanted pregnancies.

In contrast, lack of financial incentives significantly contributed to intervention abandonment in the AIS, and teachers stressed that they would not resume its implementation without payments.

6.3 Social-cultural and Religious Contexts

6.3.1 Culture Compatibility with Sex Education

- Despite the taboos surrounding the subject of sexuality, teachers in the CIS believed that breaking the taboos was justified compared to risking youthful lives with HIV/AIDS and pregnancy.

- In contrast, teachers in AIS felt significantly intimidated by the cultural incompatibilities that associated the intervention with prostitution.

- Teachers in both the CIS and the AIS expressed concern over the inappropriate sexual details of lesson 7 and claimed that the lesson encourages homosexuality. They also stressed the need to tailor the intervention to suit implementers' differing cultures and young people's different needs and ages.

- Young people in the CIS whose parents/guardians valued the significance of sex education reported having been encouraged to adopt the intervention by their parents/guardians. In contrast, some young people in the AIS were discouraged from adopting the intervention by parents/guardians due to the prevailing cultures of silence and age appropriateness that claimed that the intervention teaches prostitution, and should be meant for older people or those living with AIDS.

- Parents in the CIS embraced the intervention and expressed the need to break the sex-related taboos in order to give reliable information to young people rather than their otherwise being misled. In contrast, parents in the AIS strongly believed in traditional aunt/uncle-led sexual education rather than the school-based sexuality education.

6.3.2 Religious Compatibility with Condom Advocacy

- Teachers in the CIS were committed to informing young people about the alternative of using condoms, despite the prevailing religious values against condom advocacy.

- In contrast, being a Church-founded school, teachers and heads of school in the AIS believed in sex abstinence-only interventions, and associated condom advocacy with promoting sexual immorality.

- Unlike the parents in the AIS, parents in the CIS were supportive of condom advocacy and condom shopping for young people who are 18 years and above for HIV/AIDS and pregnancy prevention.

6.3.3 Public/Parent Sensitisation and Involvement

- Unlike the AIS, the CIS created awareness of the benefits of the intervention in the local communities, and involved local leaders and parents in intervention activities e.g. end of intervention exhibitions. This consequently created intervention support from members of the public, who would otherwise negatively perceive the intervention.

- Parents in the CIS actively voluntarily participated in intervention activities and encouraged their children to adopt the intervention. In contrast, parents in the AIS were not involved in the activities of the intervention.

- Peer educators and intervention alumni are used as role frameworks for intervention advocacy and promotion.

- Need for collaboration with various sectors e.g. collaboration with education, health and social sectors. And need for more parent/public involvement e.g. school-parent written communications, student-parent verbal communications, student-parent interactive intervention assignments.

6.4 Reflections and Comparison with Extant Literature

This evaluation demonstrated that the individual level mediators, institutional and social-cultural and religious levels were comparatively more favorable in the CIS compared to the AIS.

6.4.1 Individual Context

Perceived need for the intervention

Consistent with contentions of behavioral scientists (e.g. Azjen and Fishbein 1980; Bandura 1986; Rosenstock et al 1988) that stress a positive relationship between anticipated adoption benefits and adoption decisions, this study demonstrated a positive relationship between stakeholders' perceived benefits of adopting the intervention and the actual adoption of the intervention. Noteworthy however is that although the anticipated benefits implicated by the mentioned behavioural scientists focus on target audiences whose behaviours need to change, this study demonstrates that the influence of the perceived benefits extends from the individual target audience to other concerned stakeholders. Young people from both CIS and AIS equally expressed the need for the intervention due to perceptions of lack of knowledge of HIV and pregnancy prevention, lack of parental guidance on sexuality and HIV issues, perceived severity of HIV. Despite the young people's expressed need for the program, they had little to no influence since the decisions to implement the intervention were largely in the hands of intervention leaders, heads of schools and teachers. Also whether or not parents perceived the intervention to have positive or negative benefits influenced young people's decisions to adopt the intervention. Thus, the anticipated benefits of adopting the intervention not only influenced young people's adoption decisions, but also influenced adoption decisions of heads of schools, teachers and parents.

On the one hand, perceptions of the important role of the intervention in helping vulnerable young people prevent themselves from contracting HIV and suffering unintended pregnancies motivated stakeholders in the CIS to adopt the intervention.

On the other hand, low perceptions of young people's vulnerability to HIV and negative perceptions that associated the intervention with sex experimentation inhibited the adoption of the intervention.

This difference in perceptions of vulnerability was could have been because the CIS was an army-founded mixed gender school located in the military barracks with many orphans and young people from soldiers' separated families. Thus, there were possibilities of young people's sexual harassment from barracks soldiers, and city suburb dwellers, as well as sexual misconduct between the young people themselves. Other reported reasons for young people's increased vulnerability to HIV included increased exposure to pornography and sexual abuse. Also, some of the young people in the CIS were already living with HIV/AIDS while others were previous sexual offenders. Thus, compared to the AIS, the CIS considered the implementation of the intervention a priority rather than an option.

In contrast, the AIS was a Church-funded girls-only school with young people from middle income families, many whom had both of their parents alive. Stakeholders' perception of young people's vulnerability was generally low due to perceived protective environments both at school and at home.

Also, being a Church-founded school, stakeholders believed in abstinence-only interventions preferably delivered by Christian role models, claimed possibilities of teacher-student sexual harassment in school-based interventions and had negative perceptions about some topics of the intervention, specifically topics on condom use and homosexuality. Resistance to condom education was due to perceptions of young people's sex experimentation and increased sexual activity. Although there is currently no evidence to support such claims (UNESCO 2009), concerns about young people's sex experimentation as a result of sexuality education have long been reported to be the major concern of parents and teachers (e.g. see Mitchell 2001; Mosley 2003; Parker and Kelly 2000; Power et al 2004). Stakeholder resistance on homosexuality was due to incompatibility with religious and cultural values and beliefs.

As argued by behavioural scientists (e.g. Azjen 1991; Rogers 1995) compatibility of the intervention with stakeholders' values and beliefs vitally influences intervention adoption.

Confidence and consuming skills conundrum

Similar to other researchers' (Shepherd et al 2010; Power et al 2004; Wight and Abraham 2004; Smith et al, 2003; Paulussen et al 1994; Turner et al 1997) the results indicated that low levels of self-efficacy greatly hindered the fidelity of the intervention implementation. Teachers and young people in both the CIS and the AIS felt uncomfortable discussing sensitive sexual issues. However, unlike teachers in the AIS, teachers in the CIS, notwithstanding some sexual mistrust between teachers and young people, were confident to deal with such sensitive issues during out-of class private consultations, and to inform young people about condoms.

Feelings of embarrassment and discomfort in discussing sensitive sexual issues greatly constrained the would-be skills-based and interactive nature of the intervention e.g. role plays and condom use demonstrations, which consequently resulted in delivery of mainly factual and superficial information. For instance, due to lack of skills, and concerns of age-appropriateness, no condom use demonstrations were carried out. Although teachers and peer educators attended a five-day intervention orientation workshop, intervention teachers expressed a need for more training, as it was argued that limited training contributed to their low levels of self-efficacy in delivering the intervention.

Related studies affirm that teachers' lack of skills and confidence, mainly due to poor quality training, is a major barrier to effective implementation of sexuality and HIV/AIDS education in schools (Kirby 2009; Smith et al 2003; Buston et al 2002). Power et al (2004) also report possibilities of sexual mistrust between students and teachers. Reported also were shortages of trained teachers, particularly in cases of transfers of the trained teachers to other schools. Intervention leaders reported that peer educators sometimes conflict with teachers on sexual health messages given to young people.

Young people reported not being confident in open classroom communication and discussions of information that appeared too sensitive to them. As a result, some of them resorted to after-class consultations of private sexual issues with teachers. Young people who felt too shy to privately consult teachers could not get answers to their challenging sexual issues. With the notable exception of Wight and Abraham (2000) who report young people's lack of confidence in interactive sexual role playing as part of sexuality and HIV/AIDS interventions, previous literature generally concentrates on assessing intervention teachers' confidence and skills in delivering sexuality and HIV lessons. Although young people felt more confidence in sessions led by peers than sessions led by teachers, related studies indicate no differences in the effectiveness of peer-led and teacher-led interventions (Stephenson et al 2004; Kirby et al 1997).

Relying on mixed gender sessions in delivering the intervention in the CIS might have contributed to the reported young people's lack of confidence. For example, Stephenson et al (2008) and Stephenson et al (2004) report young people's dissatisfaction with the delivery of the intervention in mixed gender sessions. Assuring young people about the confidentiality of information discussed, coupled with separating classes into same-sex groups for some part of the curriculum or for the entire curriculum, may minimise their lack of confidence in classroom discussion of sexuality issues (UNESCO 2009; Kirby 2009).

Lack of computers in the CIS contributed to young people's lack of enough computer skills, yet the computer-based nature of the intervention was one of the motivations that had inspired them to adopt the intervention. No school-based study in the literature reports similar findings. This is due to the scarcity of computer-assisted sexuality and HIV evaluations. The modest evaluations (e.g. Lou et al 2006; Halpern et al 2008) carried out in this area mainly focused on impact evaluation.

Parents also indicated lack of knowledge, confidence and skills in communicating to young people about sexual health and HIV/AIDS issues. This challenge was most felt in instances of communicating to children born with HIV/AIDS, as well as communicating to children of the opposite sex. Parents-child sex communication can be instrumental in supplementing school-based sexuality and HIV/AIDS interventions. No research was identified in the literature reporting similar results.

6.4.2 Institutional Context

Poor management support

Administratively, the school administration in the CIS was supportive of the intervention activities, including attending head teachers' orientation workshop, financially supporting teacher training workshops, and was actively involved in intervention activities, e.g. intervention launching and end of intervention student exhibitions. Conversely, there was a change of administration in the AIS after the intervention was launched and the new head of school was administratively unsupportive of the intervention.

Lack of support from the school management was a major cause of the abandonment of the implementation of the intervention in the AIS. There was a change of school administration after the intervention was launched, and the new head teacher did not support and prioritise the intervention e.g. she did not financially support intervention teacher training workshops, which led to teachers' failure to attend training workshops. She also introduced institutional changes that adversely affected the intervention, e.g. she fixed evening academic lessons and exams that clashed with the intervention timetable.

Although there was inconsistency in young people's intervention attendance, due to timetabling problems in both the CIS and the AIS, this problem was more significant in the AIS than in the CIS. This was because young people's inconsistent attendance in the CIS was mainly attributed to clashes of the intervention with other extra-curricular activities, while that of the AIS was largely attributable to clashes with evening academic lessons and exams fixed by the new head of school.

Previous related studies also affirm that administrative support is a significant factor for the success of HIV interventions implemented in schools. These studies include Shepherd et al (2010) and Buston et al (2002).

Institutional climate

The CIS school environment was supportive of the intervention; for instance other teachers voluntarily actively participated in the intervention activities, including voluntary engagements in intervention classroom sessions, and encouraging young people to adopt the intervention. In contrast, in the AIS, other teachers never owned the intervention e.g. they discouraged young people from adopting the intervention, claiming that the intervention teaches prostitution and that intervention teachers sexually harass young people. Adults' perceptions of associating young people's sex education with sex experimentation are reported in literature (Mitchell et al 2001; Kelly and Parker 2000; Power et al 2004).

In the CIS, young people were encouraged to adopt the intervention by their colleagues, friends and other teachers at school, while in the AIS, young people reported being discouraged from adopting the intervention by their school colleagues, friends and other teachers. These discouragements included claims that the intervention teaches bad manners, and that young people are made to remove clothes to demonstrate some of the topics of the intervention e.g. body changes. No other studies have been found in literature reporting the specific influence of other teachers and other young people in the adoption of school-based sexuality and HIV intervention. Nevertheless, the role of social influence in shaping people's adoption of health behaviours is documented in literature (e.g. McLeroy 1988; Azjen 1991).

Match with routine workflows

 Absence of a timetabling policy left teachers helpless and they struggled to allocate some time for the intervention. Similar with other researchers' contentions (Shepherd et al 2010; Buston et al 2002), this study affirms that poor timetabling policy is an impediment to successful implementation of school-based sexuality and HIV/AIDS interventions.

The intervention could not be allocated time on the schools' core timetables. Delivering the intervention as an extra-curricular activity in the evenings and weekends resulted into young people's inconsistent attendance and largely contributed to intervention abandonment in the AIS's worst case scenario. Inability to complete school-based HIV/AIDS education curricula in Uganda due to time constraints are also reported by Kinsman et al (1999).

Technological issues

Consistent with those of previous researchers (Rhodes 2004; Levine et al 2008; Coumba et al 2005) the findings demonstrated that the computer-based nature of the intervention was appealing due to assurances of confidentiality of the otherwise sensitive information, interactivity, easy communication and unlimited accessibility of the intervention. However, there was a lack of computers and reliable internet connections in both the CIS and AIS. In particular, the CIS had only three computers with internet connection and one television set to deliver the intervention to 150 young people, while the AIS had limited computers and internet connections; compared to 200 young people in the intervention, the school had 30 computers, of which only five were connected to the internet.

Lack of computers and internet limited accessibility to the intervention, led to partial or no coverage of discussion forums and interactive HIV/AIDS prevention games, and created communication barriers between the teachers and intervention leaders. Lack of internet, particularly in the CIS whose young people were more vulnerable to HIV and teenager pregnancies, indicates the possibility of health disparity between the technology "haves" and the "havenots" (Kiwanuka-Tondo 2009; Bull et al 2001; Eng 1998). This is because, lack of internet limited young people's intervention accessibility and resulted in partial or even failure to participate in discussion forums and interactive HIV/AIDS prevention games.

Generally, compared to the technological aspects, the social and orgnisational issues played a major role in the implementation of the intervention.

These social and organisational issues included perceived need for the intervention, confidence and consuming skills, management support, match with routine workflows, and cultural and religious compatibility. No studies have been found in the literature that investigated mediators for the adoption of computer-based HIV/AIDS interventions implemented in schools. However, related literature (e.g. Munir and Kay 2003; Day et al 2006) acknowledge that compared to technical aspects, social and organisational issues are major determinants of effective implementation of computer-assisted healthcare interventions

Teaching motivation

Intervention teachers complained of teaching overload, as the intervention was an extra teaching load, moreover without any financial incentives for its delivery. There seemed to be disagreements about who should motivate and facilitate intervention teachers.

For instance, intervention leaders expected schools to motivate and facilitate intervention teachers, yet schools also expected intervention leaders or intervention sponsors to be the ones to motivate teachers. Lack of financial motivation was one of the major mediators that led to intervention abandonment in the AIS and teachers stressed that they were not willing to resume the intervention without financial motivation.

In contrast, although teachers in the CIS were still committed to delivering the intervention due to high perceptions of young people's vulnerability to HIV and unintended pregnancies, they also stressed the need for teaching allowance or reduction in academic teaching workload. Teachers' need for financial motivation has not been reported in previous studies evaluating school-based sexuality and HIV interventions. However, some behavioural researchers (e.g. Hill 2001; Dolan et al 2010; Kotler et al 2002), suggest that incentives can motivate and encourage the adoption of behavioural change interventions.

6.4.3 Social-cultural and Religious Contexts

Social-cultural and religious compatibility shaped stakeholders' views regarding the need and usefulness of the intervention, influenced their intervention adoption decisions, and determined the level of their commitment to implementing the intervention. As further explained below, socio-cultural and religious mediators were seen in the form of cultural compatibility with sex education, religious compatibility with condom advocacy and public/parent sensitisation.

Cultural compatibility with sex education

Despite the taboos surrounding the subject of sexuality, teachers and parents in the CIS embraced the intervention as they believed that breaking the taboos was justified compared to risking youthful lives with HIV/AIDS and pregnancy. Young people in the school reported being encouraged to adopt the intervention by their parents/guardians, friends and other teachers who were not necessarily intervention teachers.

In contrast, teachers in AIS reported feeling significantly intimidated by the cultural incompatibilities that associated the intervention with prostitution, while the majority of parents in the AIS strongly believed in traditional aunt/uncle-led sexual education rather than the school-based sexuality education, and discouraged young people from adopting the intervention, claiming that the intervention teaches prostitution, is meant for older people or those living with AIDS. Parents' resistance was due to perceptions of young people's sex experimentation and increased sex activity.

Other empirical studies (e.g. Mitchell et al 2001; Kelly and Parker 2000; Power et al 2004; Kinsman et al 1999) report major resistance from parents towards the implementation of HIV/AIDS interventions, claiming that such programs lead to young people's sex experimentation. Such presumptions assume young people's ignorance of sexuality as well as inactivity in sexual issues, yet there is evidence (e.g. UNAIDS/WHO 1998; UNAIDS 1999) that young people are the most sexually active population age group and that in developing countries.

These authors also report that, it is the same population age that is mostly getting infected with HIV/AIDS. Apparently, with or without sexuality education, it would be hard to conclude other than that young people engage in sexual activity.

Teachers, heads of schools and parents of the CIS and teachers of the AIS stressed the need to tailor the intervention to suit implementers' differing cultures and young people's different needs and ages. Other studies (e.g. Parker and Kelly 2000; DiClemente et al 2008; Power et al 2004; Flicker et al 2004; Wantland et al 2004) also report concerns of age-appropriateness from parents and suggest the need for intervention tailoring to suit differing needs of young people. As Turner et al (1997) acknowledges, it cannot be assumed that young people are all at the same level of sexual activeness and neither can it be assumed that they all have the same sexual health and HIV/AIDS education needs.

Teachers and heads of schools in both the CIS and the AIS expressed concern over the inappropriate sexual details of lesson 7 and claimed that the lesson encourages homosexuality, which was regarded as culturally unacceptable. Specifically, they argued that the topic on homosexuality should be removed from the intervention curriculum. Intervention leaders also reported this resistance from other schools that implemented the intervention. Teachers and heads of schools and many of the parents of the AIS were strongly against the intervention topic on condom use due to religious reasons and perceptions of young people's sex experimentation and increased sex activity after knowing about condoms. The identified cultural incompatibility issues reinforce previous contentions (e.g. Smith et al 2003; Shepherd et al 2010), which affirm that successful implementation of school-based HIV interventions depends on their compatibility with social-cultural values prevailing among HIV communities.

Religious compatibility with condom education:

Teachers in the CIS were committed to informing young people about the alternative of using condoms despite the prevailing religious values against condom advocacy. Parents in the CIS were supportive of condom advocacy and condom shopping for young people who are 18 years and above. This was because of the high perceptions of young people's vulnerability to HIV and unwanted pregnancies. In contrast, being a Church-founded school, teachers and heads of school in the AIS believed in sex abstinence-only interventions and associated condom advocacy with promoting sexual immorality by encouraging sexual activity. They also believed that they would be condemned by their Church-founded school if they taught young people about condoms. Parents in the AIS were also strongly unsupportive of condom education. Other studies report resistance on condom education due to religious beliefs and claims of encouraging sexual activity among young people (Mitchell et al 2001; Kelly and Parker 2000; Power et al 2004; Kinsman et al 1999).

Parent/public involvement

As acknowledged by Kirby (2009) and Shepherd et al (2010), findings from the present study demonstrate that parents/public involvement is crucial for the successful implementation of school-based HIV interventions. Unlike the AIS, the CIS created awareness of the benefits of the intervention in the local communities, and involved local leaders and parents in intervention activities. The CIS invited parents and influential members of the community during end of intervention exhibitions to witness young people's testimonies about the intervention. These testimonies were mainly in form of poems, drama as well as communications of personal experiences of the impact of the intervention.

Parents and community members were also invited during intervention launching where they were briefed about its benefits and were encouraged to actively participate in the activities of the intervention. Awareness about the intervention was also continuously raised during parents' meetings. Peer educators and intervention alumni were utilised as role frameworks for the advocacy and promotion of the intervention.

These parent/public involvement approaches employed by the CIS consequently created intervention support from the public that would otherwise have negatively perceived the intervention. The CIS's school-community links were sources of expertise advice. For instance, sexual reproductive experts from the neighbouring hospitals and health organisations were often invited to talk to young people as well as to help teachers with some emerging challenging issues regarding young people's sexual and reproductive health. In contrast, the AIS did not sensitise parents/public about the intervention. For instance, intervention teachers reported difficulties in introducing the intervention during parents' meetings as they claimed agenda mismatch and irrelevancy.

Teachers in the CIS stressed the need for more collaboration with various sectors e.g. education, health, and social sectors. Stakeholders reported that the government can distribute appealing messages of intervention adoption through these potential collaborators, and that such messages should explicitly emphasise the benefits of providing sexual health and HIV/AIDS education to young people.
Related to this point, the World Health Organisation, WHO (1990) also acknowledges the need for solidarity between different sectors in promoting health in developing countries.

Expressed also was the need for more parent/public sensitation and involvement e.g. through student-parent intervention assignments i.e. giving young people holiday assignments that require to be discussed with parents/guardians. Kirby (2009) and Shepherd et al (2010) also mention interactive child-parent assignments as a potential strategy for encouraging parent-child sex communication.

Another approach of parent/public involvement suggested was the approach of sending parents/community members and opinion leaders written materials about the activities of the intervention, and encouraging young people to talk to their parents about the intervention.

Although not necessarily referring to school-based interventions, other studies (e.g. Vijaykumar 2007; Beeker et al 1998; Campbell and Williams 1999; Janz et al 1996) stress the need for community involvement in the development and implementation of HIV/AIDS interventions, in order to obtain community support and development of culturally accepted interventions.

7. Stakeholder Perception Clusters/Segments

After exploring the mediators influencing the implementation of the intervention, it was realised that the values and beliefs of stakeholders influenced their decisions to adopt the intervention. Although this was not initially a research question, it was thought insightful to analyse and group stakeholders in different clusters while at the same relating these emergent clusters with the intervention adoption rates. This approach is also advocated by some prevailing systematic frameworks for health education and promotion, particularly, social marketing frameworks (Kotler and Robert 1989). Social marketing framework argues that audience segmentation/clustering helps in effectively dealing with the concerns and needs of differing populations.

Thus, the present study analysed perceptions of stakeholders in order to identify competing or motivating perceptions that influenced the adoption of the intervention. Assessing possible sources of competing values and stakeholder resistance points is crucial in facilitating the implementation of health interventions that are more likely to be adopted Hastings (2003). The present stakeholder analysis identified that depending on their personal values, cultures and religious backgrounds, various stakeholders had different perceptions towards the integration of the intervention in schools. In summary, four perceptions/attitudinal segments/clusters with differing characteristics and adoption behaviours were postulated. As shown in figure 7, these attitudinal segments are anti-innovation purists, innovation ambivalents, innovation conformists, and innovation receptives.

Figure 7: Stakeholder perception clusters in relation to their levels of commitment to the adoption of the intervention
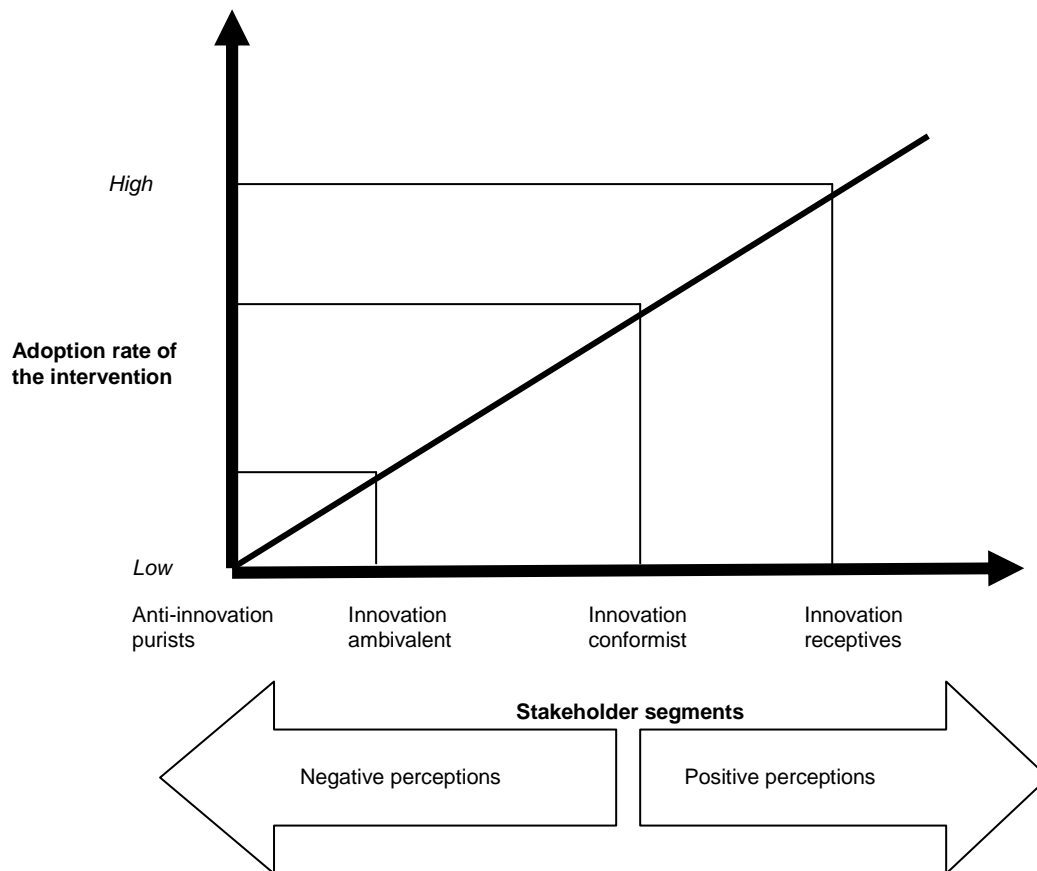
Anti-innovation purists

There is a dearth of academic literature that relates parents' attitudes with their children's adoption of sexual health and HIV/AIDS intervention. But generally, parents' concerns of age appropriateness (Parker and Kelly 2000) and claims of sex experimentations (Power et al 2004; Mitchell et al 2001) are reported in the literature. This analysis indicated that the anti-innovation purists were the five parents of the AIS who were village dwellers that held very traditional and religious values towards sexuality education, that believed in aunt/uncle-led sex education for the bridegrooms and brides-to-be and abstinence-only interventions preferably delivered by Christian role models, and were totally unsupportive of the intervention due to possibilities of sex experimentation and increased sex activity.

Thus, the major sources of adoption competition in this cluster were beliefs in traditional sexual education approaches, anticipated sex experimentation and increased sex activity, and opposing social-cultural and religious values. This constrained the adoption of the intervention as negative perceptions exhibited by these parents were extended to student adopters through parental-child adoption discouragements. As stressed by behavioural scientists (e.g. Azjen and Fishbein1980; Bandura 1986; Rosenstock et al 1988), the anticipated benefits play a major role in influencing adoption decisions. In this case, the anticipations of sex experimentation and increased sexual activity negatively influenced the adoption of the intervention.

Innovation ambivalents

Innovation ambivalents included mainly some head teachers, some teachers, some parents and some young people of both the CIS and the AIS. As shown in figure 7, the intervention adoption rate of the innovation ambivalents was relatively low. This cluster had mixed feelings about the intervention; they acknowledged the importance of the intervention in HIV/AIDS and pregnancy prevention, while at the same time expressing either partial or total disapproval of some topics of the intervention; mainly topics on condom advocacy and homosexuality.

Condom advocacy was associated with the possibility of hastening onset of sex and increasing sexual activity among the young people, while the contents of the topic on homosexuality were perceived to encourage the practice, which is culturally unacceptable in Uganda. Consequently, these topics on condom use and homosexuality were partially covered in the CIS, while teachers in AIS admitted that even if the intervention had not been abandoned, they would not have covered these topics at all. Wight and Abraham (2000) and Shepherd et al (2010) also report teachers' acts of amending some topics of the intervention or missing out sessions of intervention, due to perceived negative attitudes about the topics. The negative attitudes of innovation ambivalents towards condom education and homosexuality were rooted in religious, personal, cultural and moral values.

Similar findings of widespread apathy regarding teaching condom use to young people are reported by previous studies (e.g. Mosley 2003; Parker and Kelly 2000; power et al 2004; Kinsman et al 1999).

Innovation conformists

Innovation conformists had a relatively high adoption rate compared to innovation ambivalents. They were mainly young people adopters whose adoption decisions of the intervention depended on other people's approval. This cluster would positively perceive the intervention and felt obliged to conform and adopt the intervention in case of social encouragement from significant others e.g. approval from friends, parents and teachers. Likewise, in their quest for social acceptance, they would refrain from adopting the intervention due to social discouragements and worries from important others, e.g. in cases where the significant others associated the intervention with sexual misconduct and moral decay.

The role of social influence in shaping people's behavioural adoption decisions is also recognised by the ecological framework of health promotion (McLeroy et al 1988), and the Theory of Planned Behaviour (Azjen 1991).

Innovation receptives

Innovation receptives included teachers, heads of schools, some young people, and parents mainly of the CIS. The differences in location and in religious commitments could have contributed to the sharp contrasts in the responses of participants of the AIS, (who are mainly anti-innovation purists), and participants of the CIS, (who are mainly innovation receptives). This is because the AIS was a Church-founded school located in the village, while the CIS was a government school located in the semi-urban area.

Innovation receptives had a higher adoption rate since they perceived the intervention as beneficial in preventing HIV and unintended pregnancies. These stakeholders believed in empowering young people to prevent themselves from unintended pregnancies and HIV through provision of reliable sexuality and HIV education, rather than leaving them to get unreliable information from their peers, media, and the internet.

They argued that denying young people reliable information makes them victims of conflicting and sometimes dangerous information, abuse, coercion, unwanted pregnancies, and HIV/AIDS and other sexually transmitted diseases. However, some members of this group also had some reservations about the kind of information that should be given to young people especially regarding condom education and homosexuality issues. Despite their receptiveness, their adoption of the intervention was modulated by self-efficacy worries, competing schools' routine workflows, unsupportive institutional management and environment, and lack of financial teaching incentives. Consistent with the Theory of Planned Behaviour (Azjen 1991) and Social Cognitive Theory (Bandura 1986), availability of favourable facilitation conditions, necessary resources and adoption self-efficacy enhance behavioural adoption.

8. Comparing the Frameworks with the PRECEDE-PROCEED Model

In order to enhance internal validity and generalisability (Strauss and Corbin 1990), the four frameworks formulated in this research are compared with the PRECEDE PROCEED model discussed in Chapter 2. Specifically, these frameworks are: (1) framework for the intervention impacts – figure 5; (2) implementation mediators framework – figure 6; (3) stakeholder segmentation framework – figure 7; and (4) intervention integration framework (ISOSSIME) – section 3.1.4 of chapter 9). In this comparison, design and processes/phases of the PRECEDE PROCEED model are considered.

Considering its design, Green and Kreuter (1999) acknowledge that the model can be adjusted to fit the nature of the behaviour in question. For instance, the authors recognise that not all behaviours are health-related behaviours and point out that the model can be adjusted to fit a particular behaviour.

This research investigated HIV/AIDS prevention, which is a health-enhancement behaviour. However, sexual behaviours, which are the major causes of HIV/AIDS, are not necessarily hereditary. Thus, in this comparison, the concept of genetics is excluded from the model.

Considering the first phase (social assessment phase), analysis of sexuality and HIV-related perceptions, needs priorities, as well as the quality of life of all relevant stakeholders would be conducted. These stakeholders include young people, parents, teachers, community members, and religious leaders. The four stakeholder segments devised in this research (figure 7) are a basic social assessment that this research suggests may be used to group stakeholders according to their perceptions towards the HIV intervention.

Out of the social assessment phase, the priority audience is identified, and the outcome of the prospective HIV intervention is defined. More issues to consider in this phase are presented in the 'Inquire' and 'segment' concepts of the ISOSSIME framework - section 3.1.4, chapter 9.

Regarding the second phase (epidemiological assessment), the prevalence and incidence rates of HIV and other sexually transmitted diseases in the priority audience are analysed. In addition, behaviours and environment that contribute to these rates are identified. The behaviours and environmental/contextual mediators to be considered are suggested in figure 5. Specifically, behaviours to be assessed include: sexual activity, fidelity and condom use among the priority populations. Specific environmental mediators to assess include: sexual relationship characteristics, familial mediators, peer norms and economic and social-religious mediators. Other issues to assess during this phase are highlighted in the 'Inquire' concept of the ISOSSIME framework - section 3.1.4, chapter 9.

Expressed in terms of predisposing, reinforcing and enabling mediators, the predisposing, reinforcing and enabling mediators to be assessed in the third phase (educational and ecological assessment phase) are demonstrated in frameworks formulated in this research. Specifically:

- o Predisposing factors are mediators that influence the adoption of HIV interventions and/or adoption of HIV preventive behaviours at an individual level. As indicated in figures 5 and 6, these mediators are: HIV-related knowledge, attitudes, values, beliefs, perceived needs and self-efficacy skills.

- o Reinforcing factors influence HIV prevention at an interpersonal and community/institutional levels. As shown in figures 5 and 6, and discussed in under figure 7, interpersonal level mediators include: peers, family, sexual relationships. While institutional level mediators include: match with routine workflow, and institutional climate. Highlighted community level mediators include cultural compatibility with sex education, and religious compatibility with condom advocacy.

- o Enabling factors are environmental conditions that influence accessibility, availability and affordability of HIV prevention interventions and preventive services. In this research, enabling factors may include accessibility of a web-based version of the investigated intervention.

The fourth phase (administrative and policy assessment) includes identifying administrative and policy mediators of the implementation and adoption of HIV interventions. As highlighted in the formulated frameworks, these issues include school management support and policies, and availability of finances to motivate intervention teachers.

Other administrative and policy issues to consider during this phase are highlighted in the 'Oblige', 'Support' and 'Motivate' concepts of the ISOSSIME framework - section 3.1.4, chapter 9.

The HIV intervention is designed in this phase. The design should take into consideration the needs and perceptions of all relevant stakeholders. More insights on design and implementation of HIV interventions are outlined in the 'Involve' concept of the ISOSSIME framework.

Regarding the additional PROCEED phases, the fifth phase marks the implementation of the HIV intervention. This research suggests involving all relevant stakeholders in the implementation. Supplementary interventions are also vital, as outlined in the 'Supplement' concept of the ISOSSIME framework.

In the sixth phase, a process evaluation is carried out to investigate the implementation facilitating and constraining mediators. The implementation mediators demonstrated in figure 6 should be considered. The seventh phase is the impact evaluation that investigates the immediate impacts of the intervention on the target population. Vital outcome measures (e.g. sex abstinence, condom use, partner faithfulness, HIV-related knowledge) to be assessed are demonstrated in figure 5.

In the eighth phase, the long-term impacts/outcomes of the intervention are investigated. This can be a long follow-up investigation that assesses the maintenance of the immediate impacts identified during the impact evaluation such as maintenance of sexual behaviours. More recommendations on evaluating HIV interventions are discussed in section 3.2 of chapter 9.

9. Summary

This chapter has brought together all the four chapters of results. It has consolidated and discussed the findings of this study while at the same comparing and contrasting them with the extant literature. This has resulted in the formulation of three frameworks; the framework for impact evaluation; the framework showing mediators influencing the implementation of the intervention; and a framework showing four perception clusters that have been formulated.

From the framework for impact evaluation, the following conclusions can be made:

- The extent to which computer-assisted sexuality and HIV/AIDS interventions implemented in schools improve young people's sexual behaviour remains inconclusive.

- Such interventions have significant effects in improving young people's HIV knowledge, attitudes and perceived self-efficacy for adopting HIV preventive sexual behaviour.

- In addition to individual contexts that are normally targeted by interventions, young people's sexual behaviours are influenced by a variety of contextual mediators including sexual relationship characteristics, familial contexts, peer norms, gender-biased social norms, economic constraints and Christian religious beliefs.

The framework showing mediators influencing the adoption of the intervention, demonstrates that the implementation of a computer-assisted sexuality and HIV/AIDS intervention can be facilitated or hindered by:

- Individual contexts e.g. perceived need for the intervention and confidence and consuming skills.

- Institutional contexts e.g. management support, match with routine workflow, institutional climate technological facilities and teaching motivation.

- Social, cultural and religious contexts e.g. culture compatibility with sex education, religious compatibility with condom advocacy, and public/parent sensitisation.

The four perception clusters were formulated depending on the adoption characteristics and behaviours of various school stakeholders. These clusters are:

- Anti-innovation purists; these are totally against the implementation of the intervention mainly due to opposing social-cultural and religious beliefs that associated school-based sexual education with sex experimentation and increased sexual activity.

- Innovation ambivalents; these had mixed feelings about the intervention as they embraced some topics of the intervention while at the same opposing the intervention topics on condom education and homosexuality. They stressed that condom education and homosexuality are religiously and culturally unacceptable in Uganda. Innovation conformists were stakeholders whose adoption decisions depended on other people's approval or disapproval.

- Innovation receptives embraced the intervention but their adoption was constrained by lack of skills and self-efficacy, unsupportive administration, competing routine workflows and lack of teaching motivation.

In addition, this chapter compared the frameworks formulated by this thesis are compared with extant theory in order to enhance generalisability of the research findings.

The next chapter is the final chapter of this thesis, which provides an examination of the contributions of this research, points out recommendations for practice and research and concludes the thesis.

CHAPTER 9: CONTRIBUTIONS, IMPLICATIONS & CONCLUSIONS

1. Introduction

This research investigated the impacts and the implementation mediators of a computer-based sexuality and HIV/AIDS education (WSWM) intervention implemented in schools in Uganda.

The impact evaluation involved both quantitative and qualitative investigations aimed at assessing the behavioural, attitudinal, self-efficacy and knowledge impacts of the WSWM intervention on young people. The quantitative investigation involved a survey-based before-after intervention study based on an intervention group and a comparison group of in-school young people. The qualitative investigation involved telephone-based interviews with out-of-school young people who had completed the intervention while they were still at school. This assessment also took into account the contextual mediators influencing young people's adoption and maintenance of HIV/AIDS preventive measures.

Evaluating the mediators influencing the WSWM intervention implementation was accomplished by an investigation involving a qualitative cross-case analysis. This analysis aimed at understanding stakeholder experiences and perceptions of the reasons for the completion and non-completion of the intervention. Two schools were involved in this investigation; the Completed Implementation School (CIS) and the Abandoned Implementation School (AIS). This investigation involved semi-structured interviews with heads of schools, intervention teachers, parents, in-school young people, intervention leaders, and two focus group discussions with the in-school young people.

2. Research Contributions

School-based computer-assisted HIV/AIDS interventions have the potential to innovatively disseminate HIV prevention messages to young people of diverse backgrounds. However, the effectiveness of such interventions depends on how schools are technologically, socially and organisationally ready to implement them. There are significantly few studies evaluating school-based computer-assisted HIV/AIDS interventions in developing countries.

No other academic study in Uganda has been found that has investigated the impacts and the implementation mediators of a school-based computer-based sexuality and HIV/AIDS education intervention.

This thesis makes contributions to knowledge in two broad areas:

(1)   ***Theoretical contributions***: It has devised two multi-level theoretical frameworks for conceptualising both the impacts of the intervention and the mediators influencing the implementation of the intervention. In addition, it has formulated four stakeholder segments/clusters for understanding stakeholder perceptions towards the intervention. In addition, it has summarised the recommendations in a strategic framework that can be used to guide the integration of sexuality and HIV/AIDS interventions in schools.

(2)   ***Methodological contributions***: The study has provided useful insights into the implementation and the impacts of the WSWM intervention, based on a rigorous methodology. Methodological contributions include: the use of a quantitative before-after intervention study with a comparison group, the application of mixed qualitative and quantitative methods in a complementary manner, a long and contextually sensitive follow-up of the out-of-school young people, and a multi-perspective investigation of the innovatively selected cases for the cross-case analysis.

The devised frameworks, the formulated stakeholder segments, and the applied rigorous methodology provide avenues for understanding the integration of the WSWM intervention in schools. What follows is a consideration of specific issues arising from each of these contributions.

2.1 Theoretical Contributions: Theoretical frameworks

Have the research questions been answered?

The main research question was: ***What are the impacts and benefits of the WSWM intervention and what mediators influence its implementation?*** Exploring how this central question and its sub-questions (outlined in chapter 1) have been answered assists the discussion of the insights, theoretical contributions and stakeholder segmentation.

The main research question and its sub-questions have been answered. Results of the impact evaluation have been summarised in the framework indicated in figure 5 of chapter 8. Results of the mediators influencing the implementation of the intervention are shown in the framework indicated in figure 6 of chapter 8. The formulated stakeholder segments are demonstrated in figure 7 of chapter 8. Both frameworks (figure 5 and 6) suggest that the integration of this intervention in schools and its subsequent impacts are influenced by a variety of intertwined mediators operating at both individual levels and contextual levels. The formulated intervention integration framework will be discussed fully in section 3.1.4.

2.1.1 Framework for Evaluating Intervention Impacts

The multi level framework for impact evaluation may not be exhaustive, nevertheless, it demonstrates relationships between the individual level mediators (e.g. knowledge, attitudes and self-efficacy) and contextual mediators (e.g. relationship characteristics, familial mediators, peer influence) that influence the adoption of good sexual practices: sex abstinence, fidelity and condom use.

Contribution to the ARRM , Ecological models, Social Marketing theory and PRECEDE PROCEED model.

The framework for evaluating intervention impacts both supports and extends on Catania's AIDS Risk Reduction model (Catania 1990). Some of the identified impacts of the intervention support Catania's "hypothesized factors" that influence individual behaviours towards HIV/AIDS prevention. These factors include: knowledge of HIV/AIDS, perception of vulnerability and self-efficacy. One major limitation of the ARRM is its focus on individual level mediators. Overemphasise on individual level behavioural change approaches does not appropriately address contextual dimensions that are crucial determinants of sexual behaviours (UNAIDS 1999). The framework devised in this research is distinct from the ARRM due to its integrative nature that goes beyond the individual level mediators by identifying contextual mediators including gender-based HIV/AIDS vulnerabilities, familial factors, religious beliefs and economic constraints.

This approach concurs with the contentions of ecological models of health promotion (McLeroy et al 1988) that advocate considering both individual level and contextual determinants of health behaviours. Both individual level and contextual level mediators (e.g. sexual relationship characteristics, peer norms) have been identified as indicated in figure 5 of chapter 8. While ecological models are general health promotion models, this research has taken into consideration the specific context of HIV/AIDS prevention. Although not exhaustive, the formulated contextual-sensitive framework is a step forward to filling the persistently reported lack of contextually-sensitive theories for tackling HIV. It this holistic approach of investigating both individual level and contextual mediators distinguishes it from many of the existing HIV/AIDS evaluation studies.

The identification of the benefits (computer-related e.g. privacy, unlimited accessibility) of the intervention supports social marketing's principle of consumer analysis.

The only difference is that the identified benefits were actual benefits rather than the perceived benefits acknowledged by social marketing.

Considering a general healthcare prevention model such as PRECEDE-PROCEED model, the individual level and contextual mediators demonstrated by the devised framework are echoes of the PRECEDE-PROCEED education and assessment phase which are expressed in form of predisposing, reinforcing and enabling factors.

Given the above highlighted contributions to the ARRM, the ecological models and the PRECEDE PROCEED model, the findings from this research can be applicable beyond the specific institutional contexts investigated (schools), as well as beyond the specific country contexts (Uganda).

Generally, from the formulated framework, the following conclusions can be made:

- In line with the contentions of previous researchers, this study adds evidence to the finding that computer-assisted sexuality and HIV/AIDS interventions implemented in schools may have significant effects in improving young people's HIV knowledge, attitudes and perceived self-efficacy for adopting HIV preventive sexual behaviours, but no significant impact on condom use.

- Condom use was constrained by a variety of mediators, some of which confirm previous studies while others are new findings, as no published previous studies were found reporting similar constraints. Those that confirm previous studies are: lack of skills in using condoms, feelings of embarrassment in condom buying and negotiations, partner trust and interference in sexual pleasure. Those that are new findings in this research include: perceptions that condoms cause cancer and contain germs, and perceptions that young people don't fit in condoms adequately resulting in condoms slipping off and remaining in girls' bodies.

In addition, other identified constraints e.g. perceptions of condom inefficiencies in preventing HIV/AIDS, and lack of money to buy condoms appear not be documented in the literature.

Similar to the contentions of previous researchers, this study acknowledges that lack of classroom engagement in practical condom use skills may explain the limited degree of impact of the intervention on young people's condom use. The present study suggests that there are other mediators that contribute to this persistently reported knowledge-behaviour gap, other than lack of practical skills. These factors include condom use discouragement from teachers and over-emphasis on abstinence. These two constraints have not been raised in previous literature evaluating school-based sexuality and HIV interventions.

No other qualitative inquiry was found in the academic literature that has evaluated the impact of a school-based HIV/AIDS intervention by focusing on the experiences of the out-of-school young people who had undergone the intervention when they were still in schools. The approach sheds light on critical aspects that are germane for sustainable prevention of HIV/AIDS. This is done by illuminating the contexts in which both the intervention adoption is appreciated, and the subsequent risk reduction practices are initiated and sustained, amidst contextual mediators in the real world. This approach enabled the illumination of contextual mediators that may further explain the intervention's limited impact on condom use. Some of the contextual mediators identified by this study support contentions of previous literature (though not necessarily literature on school-based or computer-based interventions). Others add new insights to the existing literature, for instance:

- Studies evaluating school-based HIV interventions rarely incorporate gender-related constructs in their assessments. This study is one of the first school-based evaluations to specifically evaluate the impacts of such interventions on gender-related HIV vulnerabilities. This approach is vital in tackling the gender-related vulnerability of HIV/AIDS and pregnancy.
  For instance:

o The consideration of gender-based HIV/AIDS vulnerabilities in this study's impact assessment is a fruitful contribution. This is because; the existing gender-related HIV/AIDS studies have mainly been based in industrialised countries. Yet, compared to developing countries, the concept of gender ideologies in industrialised countries may take a different perspective. Despite the increasing feminisation of HIV/AIDS in Africa, gender-related HIV/AIDS vulnerabilities have been inadequately researched.

o The identification of parental role models as one of the mediators influencing young people's adoption of HIV preventive measures is a new insight that builds on the modest prevailing literature relating family environments with young people involvement in risky sexual behaviours.

- Compared to previous studies that mainly report the negative influences of peers regarding young people's sexual behaviours, this study asserts that peers can have both negative and positive influences on young people's adoptions of sexual behaviours.

- Last but not least, this framework highlighted the benefits of using information technology in sexuality and HIV education interventions. These benefits were: privacy and confidentiality of information, unlimited geographical accessibility of information, accessibility of the otherwise denied sexuality and HIV-related information, interactivity and active engagement, and social support and coping strategies. Such benefits promises to overcome the persistently reported challenges of sexuality and HIV education.

2.1.2 Framework for Mediators Influencing Intervention Implementation

Generally, this appears to be the first study to evaluate mediators for the implementation of computer-assisted sexuality and HIV interventions based on cross-case comparisons of experiences of two extreme cases: a school that completed the implementation (CIS) and a school that abandoned the implementation before its completion (AIS).

Although both the CIS and the CIS are Christian (Protestant) schools, the AIS is Church-founded, while the CIS is government-founded. Considering the AIS' religious foundation, it was anticipated that religious beliefs would have a significant influence on the intervention implementation. Indeed, although religious beliefs constrained condom education in both schools, this constraint was much felt in the AIS than in the CIS.

Surprisingly though, rather than religious influence, the major constraint for program implementation in the AIS was reported to be lack of administrative support which was attributed to changes in the administration that happened not long after the intervention was launched. Other mediators that contributed to the intervention abandonment   in the AIS which emerged from the findings include: low perception of HIV vulnerability, perceptions of sexual harassments from intervention teachers, shortage of computers and internet, lack financial teaching motivation, and lack of parent/public involvement in the activities of the intervention. Apart from lack of computers and internet, findings indicate that the rest of these constraints were more favourable in the CIS than in the AIS.

Contributions to Ecological Models of Health Promotion

Ecological models specifically posits that human behaviour is determined by individual-level factors (e.g. knowledge and attitudes), interpersonal factors (e.g. family, friends and neighbours), community factors (e.g. church, school), and public policy factors (e.g. intervention implementation policies).

In line with this contention, as indicated in figure 6 of chapter 8, this framework demonstrates that the implementation of HIV interventions in schools may be constrained or facilitated by a combination of individual, institutional and social-cultural and religious mediators.

Individual level mediators include perceived need for the intervention and possession of skills and efficacy for intervention adoption. Institutional mediators include support from management and match with schools routine workflows. Social cultural and religious mediators include cultural compatibility with sex and religious compatibility with condom education. Thus, this framework supports the applicability of ecological models in the context of HIV/AIDS, which implies that this framework can be applicable outside the particular context of this research. Noteworthy, there are some differences between the formulated framework and ecological models, which can be important modifications to ecological models. For example:

Regarding the individual level implementation mediators:

- The demonstrated positive relationship between anticipated adoption benefits and adoption decisions confirms and extends findings from ecological and other behavioural models. This is because, unlike the previous claims which mainly acknowledge this relationship at the level of an individual, this study demonstrates that the influence of the perceived benefits extends from the individual target audience to other concerned stakeholders. For example, much as young people in both the CIS and the AIS expressed the need for the intervention, their decisions to adopt the intervention were influenced by the attitudes of heads of schools, teachers and parents towards to the intervention.

- Unlike in ecological models, the devised framework indicates that the role of self-efficacy skills extends beyond an individual level. This study distinguishes between adoption self-efficacy skills (for young people) and delivery self-efficacy skills (for teachers).

The prevailing studies that generally concentrate mainly on teachers' levels of confidence and skills for delivering the intervention. This study is among the first studies to demonstrate how young people's lack of confidence in sex-communication limits their classroom discussions and hinders them from getting information about sensitive sexual issues challenging their lives.

Regarding the institutional implementation mediators:

The need for the financial motivation of teachers, and technological facilities extends ecological models. The role of incentives echoes the contentions of social marketing theory (Kotler and Roberto 2002).

- Some of the identified institutional mediators, e.g. management support and a match with routine workflow, confirm findings from previous literature.

  This study contends that technological mediators are not major influences in the implementation of school-based computer-assisted sexuality and HIV interventions. The researcher did not find any previous academic literature evaluating the mediators for the implementation of a computer-assisted school-based sexuality and HIV intervention.

- However, general literature evaluating the adoption of computer-based healthcare interventions also affirms that compared to technical mediators, social and organisational mediators are germane to the implementation and adoption of such interventions.

- Other institutional mediators bring new insights to the implementation of school-based sexuality and HIV interventions. These new insights include:

  o Teachers' lack of financial motivation, which was one of the major causes of intervention abandonment in the AIS.
  o Conflicting sexual health and HIV messages that were sometimes given to young people from peer-educators and intervention teachers.

- o Lack of computers and internet and lack of computer skills limited intervention accessibility and fidelity of implementation, and de-motivated stakeholders.
- o The influence of other teachers (who were not necessarily intervention teachers), school colleagues and friends on young people's decisions to adopt the intervention.
- o Shortages of intervention teachers in cases of transfers of trained teachers to other schools.
- o Need for direct implementation of the intervention by the Ministry of Education rather than NGO-based implementation.

Regarding the social-cultural and religious implementation mediators:

- Some of the identified social-cultural and religious incompatibilities confirm findings from previous studies. These include associating sex education and condom advocacy with sex experimentation and increased sex activity.

- Stakeholder resistance to teaching young people about homosexuality has not been reported in the related literature.

- The prevailing studies evaluating school-based interventions normally limit their investigations to internal school stakeholders only.

For instance, in Shepherd and colleagues' recent review (Shepherd et al 2010), only one study (i.e. Levy et al 1995) included parents. The present study's investigation of parents' views makes new contributions through:

- Bringing insights on how parents influence young people's adoption of HIV preventive measures/interventions.

- Demonstrating some parents' need for adjusting the intervention curriculum and implementing it in primary schools, and in community-settings to reach out-of-school young people.

- Demonstrating that some young people are dissatisfied with the fact that parents are not giving them enough and timely sexuality and HIV information.

- Demonstrating parents' lack of self-efficacy in parent-child sex communication, particularly in cases of opposite sex, condom education, and children born with HIV.

- Highlighting strategies for parental/public sensitisation and involvement in young people's sexuality and HIV interventions.

- Identifying potential collaborators that can work together for the effective implementation of school-based HIV interventions.

2.1.3 Stakeholder Segmentation

Contribution to the Social Marketing Model

In its principle of audience segmentation, social marketing advocates for the need to cluster the target audience in relatively homogenous groups in order to tailor the intervention according to the needs of each group (Kotler and Roberto 1989). The four stakeholder segments formulated in this research largely followed social marketing's principle of audience segmentation, thus, proving the applicability of this principle in the context of HIV prevention.

However, in social marketing, audience segmentation is restricted at individuals whose behaviours need to be changed. This has been a major criticism of social marketing approaches (Andreasen 2003). The stakeholder segmentation conducted in this research addressed this weakness by considering all relevant stakeholders including young people, teachers and parents.

Largely rooted in differing cultures, personal and religious values, stakeholders had different perceptions towards the integration of the intervention in schools. These perceptions shaped their views towards the usefulness of the WSWM intervention, which consequently influenced intervention adoption decisions.

Four stakeholder perception segments have been formulated, depending on their perceptions and adoption behaviours. Although some stakeholders can belong to more than one segments, the majority of stakeholders appeared to belong to the segment of innovation ambivalents.

Specifically, the four segments are:

- *Anti-innovation purists:* Five of the six parents interviewed from the AIS were anti-innovation purists. Anti-innovation purists were totally unsupportive of the intervention. This was due to their perceptions of possibilities of young people's sex experimentation and increased sex activity as a result of the intervention. They believed in aunt/uncle-led sex education for bridegrooms- and brides-to-be, claimed potential sexual harassment of young people from intervention teachers, and believed in religious-based abstinence-only interventions for young people.

- *Innovation ambivalents:* The majority of participants from both the CIS and the AIS (other than AIS's parents) appeared to belong to this segment. Innovation ambivalents had mixed feelings about the WSWM intervention. They acknowledged the importance of the intervention in HIV/AIDS and pregnancy prevention. However, they expressed either partial or total disapproval of some topics of the intervention, mainly topics on condom advocacy and homosexuality.

- *Innovation conformists*: This segment was made up of mainly young people from both the CIS and the AIS. The intervention adoption decisions of innovation conformists depended on other people's approval or disapproval.

  Either, felt obliged to conform and adopt the intervention where they received social encouragement from significant others. Or, they refrained from adopting the intervention due to social discouragement and worry from important others.

- ***Innovation receptives:*** These were mainly teachers, heads of schools, and parents mainly of the CIS who very supportive of the intervention, as they believed in provision of reliable sexuality and HIV education to young people rather than leaving them to be misled by information from unreliable sources.

Overall, segmenting stakeholders demonstrated new insights regarding how perceptions towards the intervention vary between different groups of stakeholders. This clustering provide avenues for devising implementation strategies aimed at specific segments, in order to better cater for the concerns of differing stakeholder groups.

2.1.4 Intervention Integration Framework

This research also offers fruitful recommendations summarised in a strategic framework, which is phrased in an acronym known as ISOSSIME. ISOSSIME is a short form of Inquire, Segment, Oblige, Support, Supplement, Involve, Motivate and Evaluate. ISOSSIME framework can be used to guide the integration of sexuality and HIV/AIDS education in schools. Details of ISOSSIME framework are presented in section 3.1.4 of this chapter.

2.2 Methodological Contributions

This thesis offers contributions to research methodology as follows:

2.2.1 The Quantitative Before-After Study with a Comparison Group

- This study is one among few studies to rigorously evaluate the impacts of a computer-assisted school-based HIV/AIDS intervention, using a before-after study of the intervention group together with a control group.

Compared to non-experimental designs or quasi (uncontrolled) experimental designs employed by many of the prevailing related studies, the results from this study are reliable outputs that provide meaningful lessons for integration of HIV/AIDS interventions in schools.

For example:

- The before/pre-test questionnaires helped in justifying the extent to which the impacts identified later in the post-test could be attributed to the intervention, rather than the initial status of young people's sexual behaviours, knowledge, skills and attitudes. This was because; results from the pre-test assessment provided a basis for comparisons with the post-test results.

- The use of the comparison group helped in justifying the extent to which identified impacts could be attributed to the intervention, rather than to any other external factors, e.g. mass media and passage of time.

- In addition, this study employed a previously validated questionnaire with proven reliability among diverse populations, pilot tested the questionnaire, minimised social desirability, cross-validated responses, and had low attrition rates.

2.2.2 Application of Mixed Qualitative and Quantitative Methods

The application of mixed methods in a complementary fashion enabled the use of the qualitative results to explain quantitative findings and vice versa. This approach provided avenues for capturing salient features that could not have been captured with a single method, as demonstrated below:

- The use of qualitative methods in investigating the impacts of the intervention on the out-of-school young people addressed the increasingly expressed dissatisfaction with survey-type HIV research reported in the literature. This approach provided guidance on the quantitative outcomes to be investigated, added explanations to the quantitatively assessed outcomes, and led to identification of contextual mediators of HIV prevention interventions.

- The quantitative before-after intervention study assessed the level of significance of the impacts of the intervention. Results from this investigation helped in demonstrating the level of significance of the impacts of the intervention which would have been impossible to demonstrate using qualitative approaches.

- The qualitative cross-case analysis assisted in obtaining in-depth and real-time understanding of mediators influencing the implementation of the WSWM intervention.

    Such detailed and contemporary insights would not have been obtained by employing quantitative methods. Some of the insights from this investigation assisted in explaining the puzzle of the knowledge-behaviour gap, persistently reported by related studies.

- This study's innovative approach of using telephone-based qualitative interviews minimised the possibilities of under-reporting of sexual behaviours and other sexual-related information. Many of the prevailing studies rely on face-to-face investigations/interviews. However, given sensitive/private nature of the subject of sexuality, such face-to-face interviews are liable to reporting bias due to social desirability.

2.2.3 A Shift from Individual-oriented to Integrative Approaches

- The major criticism of prevailing HIV prevention literature is the tendency to undertake single-level (mainly individualistic) and hypothetical-deductive investigations. This approach has starved HIV/AIDS prevention of the complex interrelationships between individual level mediators and contextual mediators. This study employed an integrative approach that took account of both individual and contextual mediators of HIV prevention. This approach provides an in-depth illumination of the intertwined relationships of both individual and contextual determinants of the adoption of HIV interventions/preventive behaviours.

2.2.4 A Long Follow-up of the Out-of-School Young People

- Behavioural evaluations of school-based HIV interventions have long been criticised for conducting short follow-up studies. This study's out-of-school investigation addresses this criticism. This investigation provided an opportunity to evaluate the impacts of the WSWM intervention in a long follow-up assessment. It involved participants whom a reasonable period of time (2-5 years) had elapsed since the completion of the intervention.

- The out-of-school investigation also offered an opportunity to evaluate the impacts of the intervention on young people who were outside the behavioural protective context of secondary schools.

This made it possible to evaluate the extent to which young people are practically applying the knowledge and skills gained from the intervention to overcome real world HIV-related problems.

- Previous literature claims that investigating sexual behavioural impacts of HIV interventions on under-age students has implications for the results of such evaluations.

This study addressed this issue by investigating the out-of-school young people who were older than in-school young people and whose sexual exposure and experience were likely to be greater than those of in-school young people.

2.2.5 A multi-perspective Investigation

- This study, involved the views of both the internal stakeholders (heads of schools, teachers and young people) and the external stakeholders (parents and intervention leaders). This multi-perspective approach distinguishes this study from related studies that mainly focus on internal stakeholders. Related studies tend to ignore the vital roles of external stakeholders (e.g. parents), in influencing young people's adoption of school-based HIV/AIDS interventions.

The role of parents in supplementing and influencing the prevention of HIV/AIDS among their children has not received attention in previous HIV/AIDS prevention research.

2.2.6 An Innovative selection of Cases for Inter-case Comparison

- This study selected and investigated two extremely contradictory cases; a school that completed the implementation of the intervention (CIS) and the school that abandoned the implementation of the intervention (AIS). This innovative selection enabled comparison of both the success story in the CIS with the failure story of the AIS.

  There is no previous study that compared a contemporary success story and a failure story in the implementation of a computer-assisted school-based HIV intervention.

3. Implications

The outcomes of this research make significant contributions to conceptual knowledge and practice for the current global aim of fighting HIV/AIDS among young people.

The insights, theoretical frameworks and the perception segments formulated in this thesis have implications for both practice and research.

3.1 Implications for Practice

The findings have practical implications for the design and implementation of HIV/AIDS interventions.

3.1.1 Improving the Impacts of HIV/AIDS Interventions

The framework for impact evaluation implies that efforts to address the HIV pandemic among young people may not be effective unless they are integrative in nature. School-based HIV/AIDS interventions should be supplemented with broader social and structural change interventions.

This approach will create supportive social-cultural, religious and economic environments and common visions among all relevant stakeholders.

In order to cater for mediators beyond the individual level that might interfere with the practical application of knowledge and skills gained and attitudes changed, there is a need to intervene at a community level. Intervening at community level reinforces recommendations made by others (e.g. Mavedzenge et al 2010; UNAIDS 2004; Auerbach et al 2009; DFID 2008; Dolan et al 2010).

Specifically, interventions at an *individual* level should aim at:

- Improving individual knowledge of HIV/AIDS by providing reliable, unambiguous and scientifically accurate information about HIV transmission and prevention.

- Encouraging healthy sexual behaviours and lifestyles e.g. encouraging young people to abstain from sex or to otherwise consistently use condoms and be faithful to their partners. Influencing behaviour should take priority over influencing knowledge and attitudes.

- Changing individual attitudes towards unhealthy sexual behaviours. This can be done through: (1) utilisation of personal testimonies, simulations and role models to discourage perceptions of invulnerability to HIV; (2) reducing adherence to infidelity norms; (3) reducing negative attitudes towards condom use; (4) discouraging attitudes towards gender inequality to safer sex decision making.

- Equipping young people with skills necessary to protect themselves from HIV. This can be done through employing role playing and modelling to equip them with practical skills.

These skills can include: (1) condom acquisition and condom use skills; (2) negotiation and insistency skills for condom use; (3) assertive sexual communication skills to reject unwanted sexual advances; (4) peer resistance skills.

- Ensuring that young people have access to friendly sexual and reproductive health services. This includes accessibility to condoms at affordable prices and from friendly places where they will not feel embarrassed or intermediated. Advocating the use condom without making them available may have limited impacts on condom use. Free distribution of condoms to young people (e.g. from youth centres) can provide accessibility to those who cannot financially afford them.

- Provision of incentives may encourage young people to adopt HIV preventive measures. The role of incentives in influencing behavioural change is also acknowledged in previous behavioural change literature (Hill 2001; Dolan et al 2010; Kotler et al 2002). In case of advocating sex abstinence, young people can be encouraged to set commitments for abstaining from sex up to a certain period of time e.g. up to the age of 25 years. Successful accomplishment of this commitment can then be rewarded with incentives. Using incentives can be particularly beneficial if they are targeted to coincide with one's most vulnerable time.

  For example, targeting young people during their adolescent years when they are more likely to start experimenting with sex or to be more actively involved in sexual activities.

  However, giving incentives for behavioural change is not without weaknesses. One of the challenges is that people are not likely to sustain the adopted behaviour beyond the duration of the incentives (Dec et al 1999). The other challenge is that people are not likely to adopt other behaviours where incentives are not involved (Dolan et al 2010).

Reasons for these challenges may be due to the possibility that external rewards may interfere with perceptions of personal feelings of obligations to adopt healthy behaviours. Nevertheless, it can be possible that behavioural impacts obtained from incentives result in decisions, commitments and changes that eventually translate into long-lasting behavioural change.

Interventions at an *interpersonal/community* level should aim at:

- Changing negative partner attitudes towards condom use. This can be done by: (1) involving sexual partners of young people in the intervention; (2) implementing parallel community-based interventions targeted at changing the negative attitudes of community members about condom use.

- Reinforcing positive influences from peers who are role models of HIV prevention, while at the same time addressing negative peer influences that discourage adoption and maintenance of HIV preventive measures.

Beyond the interpersonal level, there is a need to intervene at social-cultural and religious levels in order to change social-cultural and religious norms and values that encourage and reinforce risky sexual behaviours.

Interventions at a *social-cultural/religious* level should aim at:

- Addressing social norms that tolerate HIV risky practices in men e.g. practices of having multiple sexual partners at the same time. Such norms increase boys' vulnerability to HIV by driving them to prove their masculinity, often unprotected as condoms are taken to interfere with their sexual performance.

This can be addressed by supplementing school-based interventions by society/community-based interventions.

- Dealing with norms that condemn females' condom buying and negotiation by relating such practices to prostitution. These norms constrain girls' capacity to take active roles in HIV prevention.

  Addressing norms that associate girls' virginity with marital gains. Although such norms encourage girls' engagement in sex abstinence, they at the same time increase their vulnerability to HIV. As indicated in this study, virgin girls are often innocent targets of men, which can increase their vulnerability to HIV. Also, such norms interfere with girls' confidence to seek sexual health advice in fear of exposing their sexual activity.

- Dealing with religious incompatibility issues which constrain condom use and condom advocacy. This can be done by involving religious communities in the design and implementation of HIV interventions.

- Reinforcing religious recommendations of preserving sex for marriage especially for those who are not yet sexually active.

- Reinforcing religious values of partner faithfulness in young people who are sexually active.

Interventions at an economic level can aim at:

- Economic empowerment of young people, girls in particular. This will enable them to take active control of their sexual lives, including: (1) avoiding commercial sex; (2) taking an active role in safe sex negotiations; (3) reducing their exposure to sexual abuse.

3.1.2 Effective Implementation of HIV/AIDS Interventions

The framework for analysing the mediators influencing the implementation of the intervention suggests that effective implementation of HIV/AIDS interventions requires multilevel strategies. These strategies involve harmonizing individual-level integration mediators with institutional, social-cultural and religious mediators.

At an *individual* level, all concerned stakeholders should be sensitised about the benefits of the HIV intervention and should be equipped with knowledge and relevant skills to adopt the intervention or support the adoption of the intervention. For instance:

- Intervention teachers should be selected on grounds of personal interest and enthusiasm in young people's sexual health, and should be continuously trained in skills-based and interactive sexuality education. This training will equip them with self-confidence and interactive teaching skills, including tactics required for including role modelling and practising of skills in intervention delivery. This can be done through both pre-service training at teacher training institutions and in-service training offered by experienced sexual health educators.
This recommendation echoes recommendations made in previous literature. In addition, teachers should also be encouraged to faithfully implement all the topics of the intervention.
Otherwise, even a well-designed and comprehensive intervention may not yield positive behavioural impacts if some sessions are skipped or partially covered, as was the case of condom education in this study.

- Teachers should also have on-going access to specialists to enable continuous competency development and to help them in dealing with challenging issues that might emerge in the course of delivering the intervention. This may include linking intervention teachers to reproductive health specialists from local health centres.

It may also include the approach used in the CIS of inviting sexual health specialists to tackle emerging challenges issues.

- Peer educators should be selected on the basis of: (1) personal interest in young people's sexuality and HIV education; (2) good relationship with young people; (3) exemplary sexual behaviours. They should be trained in order to equip them with the skills, knowledge and confidence to discuss with their fellows about sexual health and HIV issues.

- Young people need to be assured of the confidentiality of the information they discuss in class, and if possible separated into same-sex groups for the entire curriculum or for some parts of the curriculum. Noteworthy however is that as Wight and Abraham (2000) contend, separating classes into same-sex groups for the entire curriculum may constrain the depth of discussions about topics that require views of mixed sexes. These topics include discussions about gender norms. This approach may also constrain confidence in sex communications with the opposite sex.

- Parents and other influential members of the community need to be sensitised and empowered to be involved in educating young people about sexuality and HIV/AIDS prevention issues. This orientation should include: (1) training in communication skills for sexual health as well as equipping them with knowledge and skills to pass on to young people; (2) empowering them to ensure protective and supportive familial environments; (3) encouraging them to live as role models of HIV prevention themselves.

  Parent/community sensitisation and involvement can be achieved through: (1) invitations to the launching of the intervention and encouraging their voluntary participation in the classroom delivery of the intervention; (2) sending them written materials about the activities of the intervention; (3) introducing the intervention during parents' meetings;

(4) giving young people holiday assignments that require to be discussed with parents/guardians; (5) inviting parents during the end of intervention exhibitions.

At the *institution/school* level there is a need for:

- Good school administration that: (1) supports and gives priority to the intervention; (2) gets involved in intervention activities; (3) supports and encourages intervention teachers; (4) creates supportive environments for the delivery of the intervention.

- School level and national level policies for prioritising school-based HIV/AIDS education should be put in place. In addition, as acknowledged by UNESCO (2009), policy level advocacy-lobbying and community support should be emphasised. Implementation policies should aim at addressing the issues that the present study summarised in the ISOSSIME framework, which is discussed in section 3.1.4 of this chapter.

- Direct implementation of the intervention by Ministries of Education can improve intervention prioritisation. Implementing the intervention by a donor-funded NGO was rather seen, by some stakeholders, to be politically motivated by their own ambitions. This perception contributed to low prioritisation of the implementation of the WSWM intervention.

- Another way of improving prioritisation of sexuality and HIV/AIDS education is to cover the subject under a broader compulsory health promotion subject.

  For instance, in the United Kingdom, sexuality education has recently been made part of the new Personal, Social and Health Education (PSHE), and is to become a statutory part of the national curriculum in 2011 (Teachernet 2009).

- There is a need for evidence-based interventions that are designed with input from relevant stakeholders including young people themselves. This will not only ensure that the needs of young people are effectively met, but will also bring into consideration the concerns of various stakeholders regarding the intervention.

- Proper timetabling by integration of the intervention in the schools' main timetable to avoid clashing with schools' routine workflows.

- Creation of supportive school environments and intervention ownership by the entire school communities, including orienting and involving school teachers who are not necessarily intervention teachers. This direct involvement of other teachers in the activities of the intervention in the CIS played a great role in creating supportive environments for the implementation and adoption of the intervention. Formation of a school health promotion council and including other teachers on this council can lead them to be actively involved in promoting young people's health, including sexual health (see Coyle et al 1999).

- Provision of computers and internet connections to schools will enable young people to enjoy the benefits of a computer-based intervention, including increased intervention accessibility, privacy and confidentiality and interactivity. Exploiting the potentials of computers to generate tailored interventions may result in interventions that better target the varying needs and priorities of young people.

- Provision of teaching allowance or/and reduction of academic workload for intervention teachers in order to encourage their participation in the delivery of the intervention.

- Extension of HIV interventions to community settings, in order to reach disadvantaged vulnerable young people who never got the opportunity to go to school, or who dropped out of school at a younger age.

- Modification of the intervention curriculum in order to implement it in primary schools, as recommended by many of the stakeholders interviewed, including parents. The in-school quantitative assessment indicated that young people's age at first sex was as early as 5 years. The overall average age at first sex was 11 years. This early involvement in sexual activities indicates the need to also intervene at the primary level.

Regarding *social-cultural and religious* contexts:

- The objectives and contents of the intervention should be culturally and religiously compatible with the values and beliefs of the potential adopters and supporters of the intervention. One way of achieving this is by involving relevant stakeholders in the planning, design and implementation of the intervention.

- To generate social collaborating conditions, there is a need to understand the local context and dismantle the prevailing myths and misconceptions about sex education at a societal level.
  This can be achieved through public sensitisations aimed at emphasising the benefits of sex education, as well as through public involvement.
  A multi-sector collaboration approach that includes all relevant sectors and stakeholders is a sine qua non for intervention acceptability, sustainability, and the subsequent adoption of advocated behaviours.

  Thus, there is a need for sufficient solidarity between different sectors, policy makers, leaders of the intervention, educationalists, schools, and local communities in the planning, design and implementation of the intervention.

- As suggested by young people, parents should be encouraged to exemplify desired HIV preventive behaviours since their behaviours is likely to influence the behaviours of their children/young people.

This should include encouraging them not to adopt polygamous practices, as well as avoiding the practice of giving gifts and other favours to seduce young people into sexual activities.

- Concerns of age-appropriateness can be minimised by tailoring the intervention to better meet the differing needs of young people of different age groups. Rather than generic 'one-size fits all' interventions which assume that the young have similar needs, interventions need to target specific preventive methods to specific individuals. Computers can be used to tailor the intervention, for example: (1) messages of abstinence and delay of sex onset can be targeted at young people who are not yet sexually active; (2) messages of condom use and secondary abstinence can be targeted at those who are already sexually active. Another worthwhile alternative approach can be to give young people all the correct information they need in order to protect themselves against HIV/AIDS irrespective of their age, while at the same time warning them of the dangers of early and increased sex activity.

3.1.3 Addressing the Concerns of the Stakeholder Perception Segments

Four perception segments of stakeholders have been formulated by this study: anti-innovation purists, innovation ambivalents, innovation conformists and innovation receptives. It is vital that the various sources of competition that interfere with intervention adoption for each segment are dealt with.

To improve intervention adoption in different segments, a variety of strategies can be employed:

- Of special attention are the anti-innovation purists, who should be the primary focus of interventional strategies. Anti-innovation purists require educational and attitudinal/cultural change interventions or dialogues.

These dialogues should be aimed at sensitising them about the positive benefits of the sexuality education in order to clear out negative perceptions of the intervention. Such sensitisation can include presenting empirical evidence that refutes the allegations that sex education leads to sex experimentation. This will ensure that the objectives of the HIV intervention do not collide with the normative social expectations that prevail among anti-innovation purists.

- Innovation ambivalents require explicit education about the benefits of particular topics of the intervention that appeared to contradict their values. In particular, attempts to make condom education acceptable are required. This may include: (1) sensitising stakeholders about the benefits of condom advocacy weighted against its disadvantages; (2) giving a proper account of how the subject of condoms is introduced to young people and of what particular age group or behavioural characteristics.

  Also, stakeholders' opposition to the topic, content and the approach used to deliver the intervention topic about homosexuality must not be ignored. Respecting the views of stakeholders will help in addressing the apparent significant ambivalences of this cluster about the usefulness of some topics of the intervention.

- Innovation conformists require interventional strategies that aim at creating conducive social environments that are supportive of intervention adoption. Such strategies will ensure supportive encouragements from significant others (e.g. peers, family and teachers), thus providing fertile ground for the adoption of the intervention.

- Innovation receptives require action-oriented interventional strategies including self-efficacy enhancements through continuous-training, technical support and provision of incentives to motivate their participation.

3.1.4 ISOSSIME: The Intervention Integration Framework

Overall, the recommendations proposed in this research can be summarised in a strategic framework, which can be used to guide the integration of sexuality and HIV/AIDS education in schools. This framework can be phrased in a simple acronym (ISOSSIME) written in full form as Inquire, Segment, Oblige, Support, Supplement, Involve, Motivate and Evaluate. Below is a summary of how the recommendations are captured in the ISOSSIME framework:

Inquire: This consists of a formative research that can employ qualitative and quantitative data collection methods to collect initial data from young people, parents, school administration, teachers, district heads, health organisations and community leaders. The aim of this inquiry is to assess the occurrence, spread and severity of the problem, including identifying: (1) salient features of HIV preventive behaviours; (2) drivers and inhibitors of un-risky sexual behaviours; (3) population age-group most affected; (4) sexual health and HIV needs and preferences of young people;
(5) perceived benefits and barriers of implementing the intervention and adopting the healthy sexual behaviours including both individual and contextual mediators; (6) gaps in young people's HIV knowledge, attitudes and skills.

Segment: The analysis of the data collected in the first phase above (Inquire) should inform segmentation of young people into relatively homogenous groups. This approach enables the tailoring of intervention to better cater for individual and group differences in sexual health and HIV/AIDS needs.

In addition, other relevant stakeholders e.g. parents and teachers can be segmented so that sensitisation and advocacy messages can be tailored specifically to address their concerns about the intervention.

Segmentation can be based on demographic variables e.g. gender and age, frequency of current behaviour e.g. sexual activity versus abstinence, intentions to adopt the behaviour, readiness to change and psychosocial variables e.g. perceptions, values, life styles, personality characteristics. After segmentation, stakeholder-driven and iterative approaches should then be used to design the intervention according to the identified varying needs of different segments formulated.

Oblige*:* This involves putting in place policies for prioritising HIV/AIDS education. The government should formulate and implement national-level and school-level policies for prioritising the intervention implementation, including: (1) making the intervention a compulsory part of the broader curriculum in both primary and secondary level; (2) ensuring direct implementation of the intervention by the Ministry of Education; (3) committing schools to ensure fidelity of implementation of the intervention.

Support*:* This includes focusing on: (1) proper timetabling of the intervention; (2) strategies for ensuring availability of computers and internet connections and other intervention consumables; (3) addressing issues of confidentiality; (4) setting standards for teacher-student relationships; (5) creating supportive environments for program delivery;
(6) setting strategies for parent/community involvement; (7) setting strategies for teacher training and motivating; (8) ensuring access to local sexual and reproductive health experts and services.

Supplement*:* This includes employing a variety of intervention supplementary and supportive activities including: (1) social mobilisation through community sensitisation and involvement; (2) implementing parallel interventions at community level to supplement school-based interventions and cater for vulnerable young people who are not in schools;
(3) creating supportive social environments for the adoption of the advocated HIV preventive behaviours; (4) altering risky norms and reinforcing existing favourable HIV/AIDS preventive behaviours; (5) sensitising and clearing away misconceptions associated with sex education.

Other supportive strategies include: (1) training and encouraging parents to communicate sexual and HIV/AIDS issues to young people; (2) implementing related but age-appropriate interventions in primary schools; (3) ensuring that young people have accessibility to friendly sexual and reproductive health services, including contraceptive services.

Involve: This includes: (1) involving all relevant stakeholders including young people, parents, educationists, policy makers, practitioners and religious leaders in major phases of the intervention, including planning, design and implementation phases; (2) identifying network opinion leaders who can change or enforce network norms regarding HIV/AIDS prevention; (3) participation of community members in defining and addressing HIV/AIDS problems prevailing in a community; (4) social planning and social actions that involve effecting changes in community practices in attempt to address social injustices prevailing among disadvantaged populations, e.g. addressing gender biased social norms that increase women's vulnerability to HIV/AIDS. Multi-sector and multi-stakeholder involvement is crucial for intervention acceptability, relevancy and sustainability purposes, which minimise the social and economic costs of intervention adoption.

Motivate: Provide incentives to intervention teachers e.g. by giving teaching allowances and/or reducing the academic teaching. In cases where the intervention is a major part of the school curriculum, teachers can be completely relieved from teaching other subjects. Young people can also be given incentives as a motivation to adopt healthy sexual behaviours.

Evaluate: Employ robust methodologies to assess both the implementation the impacts of HIV interventions. Controlled before-after studies on large samples and long follow-up periods can yield more reliable results.
Outcome measures should include sexual behaviours, knowledge, attitudes, skills and biological indicators e.g. prevalence of STDs including HIV/AIDS and pregnancy rates. Further recommendations for evaluating school-based HIV/AIDS interventions are presented in section 3.2 below.

3.2 Implications for Research

Formulated frameworks: The frameworks provide insights into varieties of intertwined mediators that influence the adoption and impacts of the school-based sexuality and HIV intervention. However, these frameworks should be viewed as preliminary and future research should be targeted at fully developing them. This includes: (1) adding more themes/subthemes, establishing and verifying relationships between themes/sub-themes; (2) determining the relative contribution of each theme; (3) developing and validating appropriate scales for each sub-theme.

Large scale Randomised Control Trials (RCTs): In cases where experimental conditions permit the use of RCTs, the approach can minimise participant allocation bias and yield more reliable results for the quantitative impact evaluation.

Single-gender focus group discussions: Experience from this study suggests that, given the sensitive nature of sexual issues, compared to mixed-gender focus group discussions, single-gender focus group discussions may improve participant efficacy to openly discuss issues related to sexuality and HIV prevention.

Remote interviewing: Rather than face-to-face interviews, telephone interviews and other forms of remote interviewing can reduce bias and social desirability constraints that are normally associated with self-reporting of sensitive sexual information.

Social desirability: This can be minimised by: (1) using codes rather than participant names on questionnaires; (2) peer-led administration and distribution of questionnaires rather than adult/researcher/teacher-led administration of questionnaires; (3) assuring participants of the confidentiality of their responses; (4) assuring participants that their answers will not be graded; (5) cross-validating of participant responses.

Peer-led versus teacher-led interventions: Given the prevailing inconclusive findings about the effectiveness of peer-led interventions over teacher-led interventions, there is need for more research assessing: (1) whether or not peer-led interventions are more effective than teacher-led; (2) whether utilising both peers and teachers in a single intervention is more effective than relying purely on peers or teachers.

Parental influence: More empirical research is needed to document: (1) the influence of parents on young people's adoption of sexuality and HIV/AIDS interventions; (2) the influence of parents on young people's adoption of HIV/AIDS preventive behaviours. One way of doing this is to comparatively investigate a school-based intervention complemented with a parent-focused intervention, and a school-based intervention without any parallel intervention focusing on parents.

Other approaches include investigating relationships between parent-child sex communications or comparing parents' sexual behaviours with young people's sexual behaviours.

Long-term follow-up: It is beneficial to include long-term follow-ups for behavioural assessments, given that behavioural change is a gradual process. Given the knowledge-behaviour gap, short follow-ups may miss out on capturing behavioural change impacts of the HIV interventions. Also, long-term follow-ups are helpful in exploring the extent to which short-term benefits e.g. increase in knowledge and attitudinal changes can be maintained. This is particularly crucial given that related studies (e.g. Yzer et al 2000) report inabilities of the target audience to sustain the reported impacts on attitudes and intentions to use condoms after the intervention.

Influence of contextual mediators: Rather than exclusively focusing on individual level mediators, there is a need to conduct contextual analysis in order to understand the influence of contextual mediators (e.g. sexual relationship characteristics and religious beliefs) on the adoption and maintenance of HIV preventive measures.

Provision of individual-level incentives*:* There is a need to assess the extent to which provision of incentives combined with setting commitments can encourage young people's adoption of HIV preventive behaviours. Challenges to be considered here include: (1) how long incentives should last for effective behavioural change; (2) behavioural sustainability after incentives are removed or whether behavioural impacts from incentives are self-sustaining; (3) how incentives can be introduced without creating perceptions of devalued personal responsibility to be in control of one's own behaviour.

Self-reported investigations*:* Many of the prevailing evaluations of sexuality and HIV interventions have mainly focused on self-reported investigations. To reduce the potential bias and unreliability associated with self-reporting of sexual behaviours especially among young people, where possible, evaluations can incorporate assessments of biological indicators of sexual activity e.g. testing participants for pregnancy, and sexually transmitted diseases including HIV/AIDS. This reinforces a recommendation from a recent systematic literature review of HIV prevention in young people in Sub-Saharan Africa (Mavedzenge et al 2010).

Parental/public involvement*:* It is necessary to identify more strategies for parental/public involvement in the activities of the intervention, including innovative ways of encouraging parents to communicate sexual and HIV/AIDS issues to their children. This may include assessing which parental involvement strategy is most effective in fostering parent-child sex communication and subsequent young people's behavioural change.

Stakeholder segments*:* More explorations are required on the formulated stakeholder segments to shed more light on: (1) their characteristics; (2) what motivates their perceptions; (3) strategies that can be used to influence intervention adoption for each segment.

Computer-assisted interventions: It is necessary to access: (1) how computer-tailored sexuality and HIV interventions compare with traditional interventions that are not tailored to user needs; (2) whether the online access of sexuality and HIV information has an effect on the frequency of young people's consultations with facility-based sexual health consultants; (3) whether the online access of sexuality and HIV information has an effect on the relationship between young people and facility-based sexual health consultants; (4) what particularly motivates young people to seek sexuality and HIV information from online sources; (5) the extent to which young people can make sense of the contents of sexuality and HIV online sources; whether un-moderated sexuality and HIV online sources are more efficient than those that are moderated by counsellors or other sexual health experts; (6) how the challenge of digital exclusion can be minimised; (7) the challenges presented by un-moderated sexuality and HIV online sources and how such challenges be overcome/minimised.

Overall, there is a need to rigorously evaluate school-based HIV/AIDS interventions in order to provide lessons for possible replications of future interventions. Combining both qualitative and quantitative methods is instrumental in discovering salient features and assessing the significance of themes identified.

4. Study Limitations

Despite the above discussed strengths, this study had some limitations:

Short follow-up period for the before-after intervention study

 The major limitation of this study is the duration of the follow-up. This study conducted a short follow-up interval of 7 days after the completion of the intervention for the in-school young people.

Thus, it remains unknown whether the reported knowledge, attitudes, skills and behaviours could be maintained for a longer time. In addition, it is unknown whether significant changes in sexual behaviours would have occurred in a longer follow-up.

Noteworthy, the researcher intends to carry out a long follow-up to assess the extent of knowledge retention, maintenance of skills attained and the long-term impacts of the intervention on sexual behaviours.

Participant allocation to the intervention and the comparison groups

If the experimental conditions permitted, rather than using pre-existing groups in two schools, randomly allocating participants to the intervention and control groups within the same school would have improved the reliability of the results. However, given the free interaction of young people in the school environment, drawing groups within the same school would have been reliable to a challenge of ensuring that participants in the control group are completely uninfluenced by the intervention. Stephenson et al (2008) also warns about this potential methodological bias resulting from the spreading of the school-based sexuality interventions to control groups. In addition, this approach was not feasible due to the researcher's limited control on the implementation procedures of the intervention. Nearly all the young people in senior one of the intervention group had registered to attend the intervention. This implies that there were not enough participants to be allocated to the comparison group. The only option was to draw the comparison group from another school, separate from the intervention school. Thus, rather than composing and randomly allocating groups, this study relied on groups that pre-existed in separate schools. The fixed schools' implementation procedures and timetables of the intervention dictated the choice and the number of participants. Nevertheless, the pre-test analysis indicated no significant differences between the intervention and the comparison groups.

Out-of-school multiple case investigation

The results from the out-of-school young people should be treated with some caution. This is because:

- 10 of the 20 telephone contacts were obtained from the intervention teachers. It is possible that intervention teachers provided contacts of participants whom they believed were more likely to report positive impacts of the intervention.

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- 13 of the 20 participants were former peer educators of the intervention. Given their close relationship with the intervention, responses from peer educators may not necessarily be representative of many young people who have received the intervention.

- The amount of time that had elapsed since the out-of-school participants completed the intervention ranged from 2-5 years. Although the interview questions were asked in retrospective of the intervention, it is possible that simply the passage of time or other external mediators could have influenced their sexual behaviours, HIV/AIDS knowledge, attitudes, and self-efficacy. It is also possible that their responses depended on the extent to which they could remember and relate their real world experience with the sexual behaviours, knowledge, attitudes and skills obtained from the intervention.

The Cross-case analysis investigation

In both the CIS and the AIS, interviewed parents were recommended by the intervention teachers and young people, and their selection depended on their homes' proximity to the school and involvement in the program activities. Thus, the responses from the parents should be treated with caution, as intervention teachers and young people may have provided contacts that they believed were more likely to report positive impacts of the intervention.

5. Conclusion

School-based computer-assisted HIV/AIDS interventions can provide innovative ways of preventing HIV among young people of diverse backgrounds in Africa. However, questions of technological and social and organisational readiness cannot be overlooked. This is because: (1) such interventions are health interventions implemented in educational centres; (2) there are limited technological facilities, poor infrastructure and low levels of computer literacy in Africa; (3) there are prevailing norms that associate young people's sex education with sex experimentation.

This thesis has explored how the WSWM school-based computer-assisted HIV/AIDS intervention was implemented in Ugandan schools, the nature of its subsequent impact on young people's HIV/AIDS knowledge, attitudes, skills and behaviour, as well as the benefits of using information technology in sexuality and HIV/AIDS-related interventions. Overall, this evaluation involved 584 quantitative questionnaires answered by 292 participants, 53 interviewees and 2 focus group discussions comprising 50 participants. Regarding the impact evaluation, results from both the out-of-school and in-school young people affirm school-based HIV/AIDS interventions can be effective in improving young people's HIV/AIDS knowledge, attitudes and skills, sex abstinence and number of partners. However, the impact of such interventions on condom use remains unclear.

This study affirms that although often neglected, contextual mediators significantly influence individual decisions to adopt or not adopt HIV preventive measures. These contextual mediators include relationship characteristics, familial mediators, peer norms, gender-biased social norms, economic constraints and religious beliefs. The identified contextual mediators offer potentially powerful insights into what needs to be considered beyond the narrow focus of the individual level. This will help in developing and implementing interventions which view behaviour as a product of both individual decisions and a wider system. Such a perspective is more likely to yield effective and sustainable behavioural change.

Regarding the mediators influencing the adoption of the intervention, the experiences of the two schools investigated in this research (the school that completed the intervention and the school that abandoned the intervention) fruitful insights. These experiences suggest that the "successful" implementation was strongly influenced by interplay of both individual and contextual level mediators, which were more favourable in the "successful" school than in the "failure" school.

These mediators included: the perceived need for the intervention, confidence and consuming skills, management support and priorities, match with routine workflows, institutional climate, technological readiness, teaching motivation, cultural compatibility, as well as public/parental sensitisation and involvement.

Four perception clusters: anti-innovation purists, innovation ambivalents, innovation conformists and innovation receptives have been formulated and strategies to improve intervention adoption in each cluster have been suggested.

Regarding the benefits of using information technology in sexuality and HIV/AIDS-related interventions, the computer-based nature of the WSWM intervention website and online support centre offered many benefits. These benefits are: privacy and confidentiality of information, unlimited geographical accessibility, source of the otherwise denied sexuality information, interactivity and engagement, and social support and coping strategies.

Generally, with emphasis on efficacy skills and supportive environments, school-based computer-assisted sexuality and HIV/AIDS interventions can be instrumental in fighting HIV/AIDS among young people.

Overall, experiences from this evaluation suggest that to generate concomitant mutual efforts, rather than exclusively focusing on individual level mediators, there is an urgent need to shift to integrative approaches. Integrative approaches combine individual level change strategies with contextual level change approaches in the design and implementation of interventional strategies to fight against HIV/AIDS. Such approaches will offer fruitful insights behind the persistently unsuccessful attempts to combat HIV/AIDS in Africa. While more work is needed to further expand and empirically test the formulated frameworks, these frameworks, together with the four stakeholder clusters devised by the present study are systematic steps towards this integrative paradigm shift.

Compared to prevailing related studies, this study contributes an original piece of work to the literature in five major aspects.

- It is the first study to explore the impacts of a sexuality and HIV/AIDS intervention from the experiences of out-of-school young people that had completed the intervention while still in schools.

- It is the first study to evaluate a computer-assisted sexuality and HIV/AIDS education intervention implemented in schools in Uganda. The highlighted benefits of using information technology in sexuality and HIV/AIDS-related interventions offer some promises in overcoming the repetitively reported challenges associated with traditional face-to-face interventions.

- This study is the first to investigate contextual mediators influencing the adoption and maintenance of sexual behaviours promoted by a computer-assisted sexuality and HIV/AIDS education intervention.

- This study is among the first school-based evaluation to specifically evaluate the impacts of such interventions on gender-related HIV vulnerabilities.

- Lastly, this study is among the first study to evaluate the impacts of school-based computer-assisted HIV intervention using a robust methodology: (1) the study was composed of large samples in the intervention group and the comparison group for both the pre and post intervention assessments; (2) complementary employed mixed methods of quantitative and qualitative investigations; (3) conducted a comprehensive and multi-perspective cross-case comparison of two extreme cases.

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APPENDICES

Appendix A: Before-After Intervention Study

A1: Survey Used

Hey students, did you know that globally, **6000 youth** are **infected** with **HIV/AIDS daily**, yet **50%** of youth in the hardest hit countries are still **not aware** of **how HIV is transmitted** (UNAIDS, 2006)?

We are interested in **finding out how** we can **improve** the **sexual** and **HIV/AIDS education** for **young people**. We will be **very grateful** if you can take some time and **answer** the following **questions**.

Your answers will not be used for any other purpose apart from using them to improve the development of sexual health and HIV/AIDS education programs. Remember there is no right or wrong answer because any thing you write down will help us understand what we should teach young people.

☞**Please remember:**
Do not put your name on this form.
Your answers are private. We will not tell anyone what you write.
You are not being graded on this exercise.
Please take your time and answer carefully.

☞**Social demographic questions**

1. What is your gender? ❏ Male ❏ Female
2. In which year were you born? ----------------------
3. Which class are you in ……………………..
4. What is your religion? Please check the religion that applies to you:
    ❏ Christian   ❏ Muslim
5. Which of the following best describes you?
    ❏ Both of my parents are still alive ❏ One or both of my parents is/are dead
6. What is the occupation/job of your parents/guardian?-----------------------------

☞**Question 7: Number of sexual partners and age at first sex**
   a) In the **past 3 months**, how many different people have you had sexual intercourse with? Please tick only one box on the statement that is true about you.
   b) I had sex with only one person in the past 3 months ❏
      I had sex with 2 or more people in the past 3 months ❏
      I have not had sexual intercourse in the past 3 months ❏
b). If you have ever had sex, how old (in years) were you when you first had sex? ---------------------

☞**Question 8: Condom use and condom use at last sex**

   c)   a) In the following statements, Please tick only one box on the statement that is true about you.

I have ever used a condom during sex Yes ❑   No ❑

I used a condom during my last sex Yes ❑   No ❑

d) Please give reasons for your use and non-use of a condom during you last sex-------
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☞**Question 9: HIV/AIDS Knowledge**

a) Do you know anyone who has HIV/AIDS? ❑ Yes   ❑ No

b) How would you know that a person has HIV/AIDS? ------------------------------------
----
----

c)

No	Please tell us the extent you agree or disagree with the following statements. Don't worry about getting the right answer, just say what you think. Please put a tick ✔ in the appropriate square.	Answer				
		Strongly agree	Agree	Disagree	Strongly disagree	No answer
1	Showering, or washing one's private parts after sex keeps a person from getting HIV/AIDS.					
2	Eating healthy foods can keep a person from getting HIV/AIDS.					
3	Taking the Birth Control Pill keeps a woman from getting HIV/AIDS.					
4	A person with HIV/AIDS can look and feel healthy.					
5	There is a vaccine that can stop people from getting HIV/AIDS.					
6	A person can get HIV/AIDS even if she or he has sex with another person only one time					
7	People are likely to get HIV/AIDS by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV/AIDS.					

☛**Question 10:**
a) Gender Equity in safer sex decision making

No	Please tell us the extent you agree or disagree with the following statements. Don't worry about getting the right answer, just say what you think. Please put a tick ✔ in the appropriate square.	Answer				
		Strongly agree	Agree	Disagree	Strongly disagree	No answer
1	If a girl carries a condom, her partner will think that she am planning to have sex.					
2	A girl loses a man's respect if she asks him to use a condom.					
3	It is embarrassing for a girl to buy or ask for condoms.					
4	Using a condom is a sign of not trusting your partner.					
5	Condom use initiation and preparation should only be done by men.					
6	If a girl carries a condom it means they are experienced in sexual matters.					
7	Girls who carry condoms and insist on using them are prostitutes and such girls are not respected					
8	It is okay for a girl to suggest condom use.					

b) Attitudes towards norms that condone multiple sexual partners for men

To what extent do you believe in the following statement: Whereas it is ok for boys/men to have more than one sexual partner at the same time, girls/women should only have one sexual partner.

❑Strongly agree   ❑Agree   ❑Disagree
❑Strongly disagree   ❑No answer

Hey girls, the fun still continues for you!

d) Girls' perception of condom assertiveness self-efficacy

This question is only meant for girls. Please answer this question if your gender is **female (girls)**. The following questions intend to understand what you (girls) would do in different circumstance.

You may not have actually done these things, but we would like you to tell us your opinions in order to know what to include in sexual health and HIV/AIDS education. Please see table below:

No	Please tell us the extent you agree or disagree with the following statements. You may not have actually done these things, but we would like you to tell us your opinions. Please put a tick ✔ in the appropriate square.	Answer				
		Strongly agree	Agree	Disagree	Strongly disagree	No answer
1	I could have sex without a condom if my partner doesn't like them, even if I want to use one.					
2	I could make sure my partner and I use a condom when we have sex.					
3	I could have sex without using a condom or latex barrier if my partner wants.					
4	I could insist on using a condom even if my partner doesn't want them.					
5	I could refuse to have sex if my partner refuses to use a condom.					

✿ You finished! ✿ ✿   Fantastic! ✿ ★ ★ ★ ★ ★ ★ ★ ★ ★
Thank you for your help! ★

A2: Codes Used in Data Entry and Analysis

Question 1: Social-demographic details
1. 1. Gender
      1 = Male
      2 = Female

2. Age
      11-13 = 1
      14-16 = 2

3. Class: All respondents reported being in senior ones.

4. Religion
      1 = Christian
      2 = Muslim

5. Which of the following best describes you?
      1 = One or both parents dead
      2 = Both parents alive.

6. Parents' occupation
      2 = Professional
      3 = Non-Professional.

Question 7a&b: Number of sexual partners in the last three months, and age at first sex
a).
1 = I had sex with only one person in the last 3 months
2 = I had sex with 2 or more persons in the last 3 months
3 = I have not had sex in the last 3 months
b). Age at first sex
      1 = 5-10 years
      2 = 11-16 years

Question 8: Condom use and Condom use at last sex

I have ever used a condom during sex (1=yes, 0=no)
I used a condom during my last sex (1=yes, 0=no)

Reasons for non-condom use
1 = Do not know how to use condoms
2= Still too young to fit in condoms and condoms can remain in a girl's body.
3 = Condoms cause cancer and its fluid contain germs
4 = One can still get AIDS even if condoms are use since they not a 100% effective
5 = Embarrassing to buy and suggest condoms use.
6 = Condoms are expensive to buy
7 = Wanted to know whether I can pregnant a girl
8 = Knew that we didn't have HIV/AIDS

9 = Condoms interfere with sexual pleasure

Coding for reasons for students' non-use of condoms at last sex
1 = Do not know how to use condoms.
2 = Still too young to fit in condoms and condoms can remain in a girl's body.
3 = Condoms cause cancer and its fluid contains germs
4 = One can still get AIDS even if condoms are used since they not 100% effective
5 = Embarrassing to buy and suggest condoms use.
6 = Condoms are expensive to buy
7 = Knew that we didn't have HIV/AIDS
8 = Condoms interfere with sexual pleasure

Question 9: HIV/AIDS Knowledge

Know any one who has HIV
  1 = Yes
  2 = No
How do you know that a person has HIV/AIDS

  1 = From blood test
  0 = From HIV/AIDS symptoms

Likert-scaled assessment of HIV/AIDS knowledge
  1 = Strongly agree
  2 = Agree
  3 = Disagree
  4 = Strongly disagree

Question 10a) (Gender Equity in safer sex decision making), 10b) (Attitudes towards norms that condone multiple sexual partners for men), and 10d) (Girls' perception of condom assertiveness self-efficacy)
  1 = Strongly agree
  2 = Agree
  3 = Disagree
  4 = Strongly disagree

Appendix B: Interview Guide for Out-of-School Young People

Dear respondent, we are interested in learning how the adoption of the WSWM can be improved by exploring stakeholder perspectives. This also includes finding out how the system has impacted your attitudes and your sexual health behaviours. The information collected may be published but the names of schools and respondents won't be included in the report. So, feel free to share your experience of the system.

Social demographic Information
 ✓ **Age**
 ✓ **Gender**
 ✓ **Marital status**
 ✓ **Education level/current occupation**

- ✓ **Religion**
- ✓ **Elapsed time since completing the WSWM**

Question 1: Program influence on Sexual Behaviours

1. Do you think the WSWM influenced your sexual behaviors?
2. How did the WSWM program influence your sexual behaviours? e.g.
   Abstinence
   Faithfulness and
   Condoms use

Question 2: Program influence on HIV/AIDS-Related knowledge and Attitudes

1. How do you feel the WSWM program influenced your HIV-related attitudes/perceptions?
1. Was there any difference in your feelings of being at risk of getting infected with HIV/AIDS before and after completing the WSWM program?
2. If yes, what in particular changed your feelings of getting HIV/AIDS after completing the WSWM program?
3. After completing the WSWM, how did you feel regarding the possibility of getting HIV/AIDS?
4. What HIV/AIDS-related risks were highlighted by WSWM?
5. What measures are you putting to avoid these risks?
6. What motivates you to adopt those measures?
7. What constraints you from adopting these measures?

Question 3: Program influence on HIV/AIDS-Related self-efficacy Skills

1. Do you think the WSWM influenced your skills to avoid HIV/AIDS risks?
2. What HIV/AIDS risk reduction skills do you think you gained from the WSWM?
3. Are you are currently putting to use the skills you gained from the WSWM to prevent yourself from HIV/AIDS?
4. How you are currently putting to use the skills you gained from the WSWM to prevent yourself from HIV/AIDS?
5. How are you employing the skills obtained from the WSWM to refuse unwanted sex or/and negotiate condom for use, or to abstain from sex?
6. How easy is it for you to employ the HIV/AIDS reduction skills obtained from the WSWM?

Question 4: Contextual mediators of HIV/AIDS prevention

1. What makes it easy/hard for you to adopt and maintain the reported sexual behaviour? e.g.
   - ✓ The nature of your relationship
   - ✓ Your family/parents
   - ✓ Your peers
   - ✓ The societal that you live in
   - ✓ Your religion
   - ✓ Finances

Question 5: Computer-related benefits of the WSWM intervention
How do you think the computer-assisted WSWM program compares with face-to-face sexuality and HIV/AIDS programs? e.g.
In terms of:
- Accessibility
- Privacy
- Engagement
- Nature of support

End of the interview guide

Appendix C: Interview Guides for the Internal and External Stakeholders

C2. Interview Guide for Head of Schools and Intervention Teachers

Social demographic Information
- ✓ Job title
- ✓ Age
- ✓ Gender
- ✓ Religion
- ✓ Relationship/involvement in the program

Factors for completed implementation and adoption of the WSWM

Individual-level contexts

1. What motivated you to implement the WSWM?
2. Do you think the WSWM is important? Why?
3. For how long has the WSWM been implemented?
4. How is the WSWM program implemented e.g.
   - ✓ Student enrolment
   - ✓ When the program is taught
   - ✓ Duration of the program
5. Do you think the program has been effective in achieving its aims?
6. Do you feel you are confident enough to handle students' sexual and reproductive issues within the WSWM teaching context?
7. Is there is any lesson of the WSWM that makes you uncomfortable to discuss in class? What is the lesson? What particularly makes you uncomfortable about this lesson? What modifications do you feel should be made on this lesson? What other forms of asCIStance do you think would increase your confidence in delivering this lesson?
8. Do you feel you the computer skills necessary to deliver the program?
9. Do students seek advice privately, outside of classroom sessions? Do you feel confident to deal with this?
10. Given an opportunity to add or remove items from the lessons, which items would you add or remove and why?

Institutional level contexts

1. What factors favour the implementation of the WSWM in this school?
2. What factors constrain the implementation of the WSWM in this school?
3. How do you think the following have supported or constrained the implementation and adoption of the WSWM in this school?
   - ✓ School management
   - ✓ Other teachers
   - ✓ Program timetabling
   - ✓ Institutional climate
   - ✓ Computers and internet
   - ✓ Support and facilitation for program teachers
4. Did students consistently attend all the WSWM lessons? What can be done to ensure consistency attendances?
5. What other factors do you think have facilitated or impeded the implementation of the WSWM in the school?
6. How could the teacher's role in the WSWM activities be made more effective?

Social-religious contexts

1. What social-religious factors facilitate or impede the implementation of the WSWM?
2. How do you think the following have supported or constrained the implementation and adoption of the WSWM?
   1. Cultural norms
   2. Religious values
   3. Public/parents' attitudes
3. What do you think of public/parent involvement in activities of the WSWM e.g. parent-child sexual communication?
4. How is the public/parents currently involved in the activities of the WSWM?
5. How best do you think we can involve the public/parent in the activities of the WSWM?
6. Apart from parents, who else in particular do you think can be involved to better maximise the impacts of the WSWM? How can they be involved?

End of head teachers'/program teachers' interview guide

C3. Interview/Focus Group Discussion Guide for Students

Social demographic Information

- ✓ Age
- ✓ Gender
- ✓ Religion
- ✓ Parents occupation
    - o Professional jobs
    - o Non-professional jobs
- ✓ Parent status
    - o Orphan

       o   Not orphan
- ✓ Attendance of the program

Individual contexts

1. What motivated you to join the WSWM?
2. Why do you think that the WSWM is important for you?
3. To what extent did the WSWM meet your expectations?
4. What do you think would have been done to effectively meet your expectations?
5. Do you feel you are confident enough to openly discuss sexual and reproductive issues during the classroom delivery of the WSWM? What particular lesson of the WSWM makes you uncomfortable to discuss in class? How can your confidence be enhanced?
6. Do you seek advice privately, outside of classroom sessions? Do you feel confident to deal with this? Are there any challenges involved during after-class consultations?
7. How do you think a teacher-delivered WSWM compare with a peer-delivered WSWM in terms of your feelings of confidence in discussions?
8. Are there any difference in the levels of trust between the answers provided by teachers and those provided by peer educators? Which ones do you trust most?
9. Do you feel you have the computer skills necessary to deliver the program?

Institutional contexts
1. Did you attend all the fourteen lessons of the program? If no, what were the reasons for not attending some lessons?
2. What can be done to ensure that you consistently attend all the WSWM lessons?
3. How often do you normally use/access the WSWM? How do you think your accessibility to the WSWM program can be improved?
4. Did you experience any encouragements or discouragements at school regarding your adoption of the WSWM program?
5. How do you think the following have supported or constrained the implementation and adoption of the WSWM in this school?
   - ✓ School management
   - ✓ Other teachers
   - ✓ Your friends
   - ✓ Program timetabling
   - ✓ Institutional climate
   - ✓ Computers and internet

Social-religious contexts
1. What social-religious factors influence your joining of the WSWM?
2. How do you think the following have supported or constrained your adoption of the WSWM?
   - ✓ Cultural norms
   -    Religious values
   - ✓ Public/parents' attitudes
   - ✓ Peer norms
3. What is your opinion about the following?

       ✓ Young people should not be educated about sexual health and HIV/AIDS since they are not supposed to indulge themselves in sexual practices.

       ✓ Young peoples should not be taught about condoms since they are not expected to use condoms; but instead should abstain from sex.

4. What do you think of public/parent involvement in activities of the WSWM e.g. parent-child sexual communication?
5. How is the public/parents currently involved in the activities of the WSWM?
6. How best do you think we can involve the public/parent in the activities of the WSWM?
7. Apart from parents, who else in particular do you think can be involved to better maximise the impacts of the WSWM? How can they be involved?

End of students' interview guide

C4. Interview Guide for Parents

Social demographic Information
       ✓ Age
       ✓ Gender
       ✓ Religion

After a quick introduction of the intervention:

Individual and social-religious contexts

1. What do you think about the idea of integrating sexuality and HIV education in secondary schools?
       ✓ Recommend it?
       ✓ Age appropriateness?
       ✓ Content satisfaction?
       ✓ Advantages?
       ✓ Disadvantages?
2. How important do you think is the teacher's role in young people's sexual health and HIV/AIDS awareness and prevention?
3. How do you think a teacher-delivered sexual health and HIV/AIDS education compare with a parent-delivered sexual health and HIV/AIDS education? Which one do you recommend?
4. Have you ever communicated to your child about sexuality and HIV issues? What motivated you? What is your experience e.g. are you confident about it? Do you have the time and knowledge?
5. What is your opinion about the following?
       ✓ Young people should not be educated about sexual health and HIV/AIDS since they are not supposed to indulge themselves in sexual practices.
       ✓ Young peoples should not be taught about condoms since they are not expected to use condoms; but instead should abstain from sex.

6. What do you think of parent/community/public involvement in sexuality and HIV education to their children?
7. Would you personally be interested in being involved in such a program? What would motivate you to be involved in such a programme?
8. *How best do you think you can be involved in your children's sexuality and HIV issues?*

End of parents' interview guide

C5. Interview Guide for the WSWM Intervention Leaders

Social-demographic information
- ✓ Relationship/involvement in the program
- ✓ Age
- ✓ Gender
- ✓ Religion

Individual contexts

1. Why do you consider the WSWM as an important program?
2. How do you ensure that teachers have the skills and confidence to deliver the WSWM?
3. Is there any confidence/skills-related problem reported by teachers regarding their ability to deliver the WSWM? What is it and what measures are you putting to minimise the problem?

Institutional contexts

4. How do you ensure that schools actually implement the program as intended?
5. How do you ensure that the WSWM is allocated time on the school's timetable?
6. Do schools have computers and internet for delivering the program?
7. How does a computer/web-based sexual health and HIV/AIDS education compare with other traditional face-to-face sexual health and HIV/AIDS education programs?
8. What role does ITC play in the WSWM?

Social-religious contexts

9. Comment about the culture acceptability of the WSWM?
10. Are there contents of the program reported not to be culturally and religiously accepted? What are they?
11. Are there contents of the WSWM that teachers are finding difficult to deliver in class? What are these contents?
12. How is the public/parents involved in the activities of the WSWM

End of the WSWM leaders' interview guide

C6: Secondary Data Sources from WSWM Workshop Proceedings
Below is the Scanned First Page of the WSWM 34-paged Document.

1

THE SCHOOLNET UGANDA – WORLD STARTS WITH ME (WSWM)

CORE TEAM ORIENTATION WORKSHOP

HELD AT

MUKONO DFI FROM 7th – 9th JANUARY, 2008.

Figure 1 : SchoolNet Uganda -WSWM Core team

Introduction:

The WSWM teachers in Uganda schools implementing The World Starts With Me (WSWM) are supported by a team of Sexual Reproductive Health Consultants (SRHC), Teacher Support Specialists (TSS) and Student Peer Educators (SPE). The SRHC, TSS and the SPE form the SchoolNet Uganda-WSWM Core team.

The Sexual Reproductive Health Consultants (SRHC) and the Teacher Support

C7: Example Screen for Lesson 9 (Protect Yourself: STIs and HIV/AIDS)

C8: Secondary Data Source from the WSWM Online Support Centre

The world starts with me!
ONLINE SUPPORT CENTER

HOME | ABOUT | QUESTIONS & ANSWERS | ARTICLES & POEMS | VIDEOS | PHOTOS | TESTIMONIES | REPORTS | CONTACT

Dear Counselor, is it possible for an HIV positive person to give birth to an HIV negative child?

Posted in HIV/AIDS, Pregnancy on 14th May, 2011 with 0 Responses

Many people think that because they or their partners are HIV positive, they can't have HIV negative children. Recent developments in science have made it possible for an HIV positive person to have HIV negative children.

An HIV positive woman with an HIV negative partner can become pregnant without endangering her partner by using artificial insemination where the sperm from the HIV negative male partner is placed into the woman's genital tract using artificial means rather than by natural sexual intercourse. Though using artificial insemination instead of unsafe sexual intercourse provides protection of the man from HIV infection, it does nothing to reduce the risk of HIV transmission to the baby. The baby can still get infected with HIV during pregnancy, labour and delivery and through breastfeeding.

If the woman is HIV negative and the man is HIV positive, the only effective way to prevent HIV transmission is by sperm washing. Sperm washing involves separating sperm cells from seminal fluid and then testing these for HIV before artificial insemination. The HIV virus lives in the seminal fluids and not in the sperm. Sperm washing is a very effective way to protect both the mother and her baby but is expensive and may not available in most health centres.

If both the man and the woman are HIV positive, it is still risky to have sexual intercourse without a condom. This is because there are different strains of HIV. If one
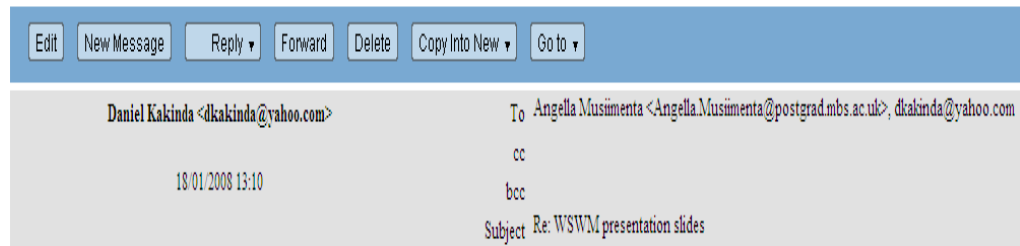
search site...

Are you troubled or wondering about any SRHR problem, issue or situation, wait no further. Please use the button below and ask or inquire from our counsellor. Our counsellor is more than delighted to give a response which will help you out.

ASK THE COUNSELLOR

Question Categories

Body Changes (20)   Defilement (3)

Drugs and Drug   Gender (3)
Abuse (1)
                           Menstruation (12)
HIV/AIDS (14)
                           Pregnancy (16)
Peer Pressure (2)
                           Rights (5)
Relationships (24)
                           Sex (25)
Self Esteem (2)

C9: Gaining Access to the WSWM Intervention: Email communication with the Executive Training Director (Daniel Kakinda)

| Edit | New Message | Reply ▾ | Forward | Delete | Copy Into New ▾ | Go to ▾ |

Daniel Kakinda <dkakinda@yahoo.com>	To	Angella Musiimenta <Angella.Musiimenta@postgrad.mbs.ac.uk>, dkakinda@yahoo.com
	cc	
18/01/2008 13:10	bcc	
	Subject	Re: WSWM presentation slides

lo Angella,
It was nice having you at our workshop and we are
looking forward to working with you.

I will forward them either over the weekend or early
next week.

Still busy with the workshops.

Daniel

--- Angella Musiimenta
<Angella.Musiimenta@postgrad.mbs.ac.uk> wrote:

>
> Hello Daniel,
>
> Thank you very much for the useful insights about
> the WSWM project, above
> all, thanks for the consent, and for your fruitful
> contribution towards my
> project methodology.
>
> Kindly forward me the slides of your presentation,
> and p'se if possible
> always update me about the progress of the project;
> including the existing
> international workshops.
>
> Many thanks
>
> Angella Musiimenta