Vicarious Versus Traditional Learning in Biology: A Case of Sexually Transmitted Infections (STIs) Topic in Secondary Schools, Tanzania

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Abstract: *The purpose of this study was to compare between learning sexually transmitted infections in Biology by observation and traditional classroom lecture method among secondary schools in Dar es Salaam, Tanzania. The study involved form three students from Perfect Vision and Benjamin Mkapa secondary schools. A total of 81 students were involved in the study of whom 37 were girls and 44 were boys. Both qualitative and quantitative data collection methods were employed where the former used interview and the later employed questionnaire and achievement test items as data collection tools. The study found that observational method was more effective and preferred by students as compared to traditional lecture method. Moreover, culture was found to be one of the barriers for learning. Training to teachers as well as students sensitization were the recommendations provided by the study so as to improve the situation. The study also recommended further research to be conducted on the knowledge of ICT to Biology teachers and how they use it for instructional purposes*

Key Words: Vicarious learning, Traditional classroom learning, Sexually Transmitted Infections

INTRODUCTION

Have you ever found yourself drawing pictures of a biology process as you studied for a test? If the answer is yes this is a sign that you have instinctively practiced vicarious learning (learning by observation) techniques. Students learn in many ways, like seeing, hearing, and experiencing things. Although all learners can use all of these sensory modes in learning, one mode is often dominant and preferred. Visual learners learn through seeing and prefer to learn through drawings, pictures, and other image-rich teaching tools. These students will find that confusing information makes more sense when it is explained with the aid of a chart or picture.

The main objective of this paper is to make a study on how vicarious learning can be employed in Biology specifically on the topic of sexually transmitted infections (STIs). STIs are infections which are capable of being spread from person to person through sexual intercourse, oral-genital contact, or in non-sexual ways and intravenous drugs. They are accompanied with symptoms such as sores, blood in urine, burning sensation when urinating, rashes, itching, bumps, warts and unusual genital discharge (Karl & Gabriele, 2005).

STIs are a serious problem in youths. Worldwide, the highest reported rates of STIs are found among young people aged between 15 and 24 years; up to 60 percent of the new infections and half of all people living with STIs globally are in this age group (Karl & Gabriele, 2005). The situation in Tanzania is worse; in the year 2002 about 2.2million adults and children were estimated to have been infected with STIs including HIV/AIDS (National AIDS Control Program, 2002). The crisis is severe particularly for youth. Approximately 17 percent of children below 15 years of age in Tanzania had been infected by STIs, and about 50 percent of the STIs occur before the age of 29 years (Kiishweko, 3013).

Vicarious learning is a learning style through observing the behaviour of other persons. It is based primarily on the work of Albert Bandura (1977). He demonstrated learning could occur in a simple process of observing. This theory is a bridge between behaviourist and cognitive learning theories and is characterized by four stages namely: attention, retention, motor reproduction, and motivation. Attention occurs when the individual notices something in the environment; in retention the individual remembers what was noticed; then reproduction where the individual produces an action and lastly motivation stage where the environment delivers a consequence (Huitt, 2004).

Specific emphasis should be placed on the role of consequences in the observational learning. Some experiments have added to the understanding of the role of consequences generally compared behaviour change between children who either observed a model who was rewarded and a model that was punished. It was revealed that, less behaviour change is observed when a child observes a model that is not friendly like being punished (Huitt, 2004). This study assumes that, that when students view the pictures of people affected by STIs and the suffering experienced by sick people like death through HIV/AIDS they will change their sexual behaviour

Sexually Transmitted Diseases (STIs) is a form four sub topic under the main topic *"Managing and control of HIV/AIDS and STIs"*. The general objective reads: *"Students should be able to apply appropriate skills in managing problems related to HIV/AIDS, drug/substance abuse, and sexual and reproductive health"*. An extract from the syllabus is displayed in Figure 1.
From the chart it can be depicted that students are expected to be able to outline ways of managing and controlling HIV, AIDS and STIs. However the instructional materials used by teachers include manuals and reports on HIV, AIDS and STIs. According to the vicarious learning theory, learners need to observe the objects to be learned, pay enough attention and later acquire behavioural change. Moreover, Flavel (1999) reveals that without proper and sustained attention being paid to the new information proper storage and retrieval cannot happen.

Main Topic	Sub Topics	Specific Objectives	Teaching/ Learning Strategies	Teaching and Learning Materials	Assessment	No. of Periods
HIV, AIDS AND STIs	Managing and control of HIV/AIDS and STIs	Students should be able to: -outline ways of managing and controlling HIV, AIDS and STIs	-the teacher to lead students to discuss ways of management and control of HIV,/AIDS and STIs -students to present their tasks in a plenary discussion and the teacher to make necessary clarifications	-manuals on management of HIV,/AIDS and STIs -reports on HIV,/AIDS and STIs - extracts/texts on HIV,/AIDS and STIs	-is the student able to outline ways of managing and controlling HIV, /AIDS and STIs?	6

Figure 1: An extract from Biology syllabus indicating STIs Topic
Source: URT (2010) p 192

From the chart it reveals that the strategies used by teachers include: studentôs discussion and plenary discussions. Moreover, the topic involves reading of manuals, reports as well as texts on the topic. Despite of all these the students are still affected by STIs including HIV/AIDS. Several studies indicate that, many students are sexually active at younger stages (Klepp, Ndeki, Thuen, & Leshabari, 1996). This is a prediction that students do not comprehend the lesson well. (Terry & Sten, 2007; Ogunjimi, 2006).

Several studies on STIs have been conducted but most of them evaluating sexual behaviour. Following HIV pandemic from 1980ï1990s, the focus on sexual evaluation intensified. The researchers have been investigating sexual behaviour in a variety of contexts but focusing on similar purposes (Kapinga, Hunter & Nachtigal, 1994; Kessy, 1996). Moreover, Lal, Vasan, and Sankara (2000) studied on knowledge and attitude of students towards sexually transmitted diseases and sexuality; Terry and Sten (1987) studied on the presence of STIs in adolescents; while Kennedy, Mwambete, and Zephania **(**2006) did a study on knowledge of sexually transmitted diseases among secondary school students in Dar es Salaam, Tanzania. However, no studies have been done to assess whether the students

comprehend STIs lesson or the effectiveness of methods employed in teaching STIs in Biology subject.

This study aims at assessing the teaching methods employed by Biology teachers in teaching STIs in secondary schools, including the application of vicarious learning theory.

METHODOLOGY

This study assumed mixed method approach whereby interview, questionnaires as well as achievement test items were used as data collection tools. The study was conducted in Dar es salaam, where two schools were involved namely Benjamin William Mkapa and Perfect Vision secondary schools sec school from Ilala and Kinondoni districts respectively. A total of 89 respondents were involved in the study, of whom 50 were students from Benjamin Mkapa secondary school, 36 were students from Perfect Vision High School while 8 were teachers from the two schools as shown in Table 1. Of all respondents, 41.57 percent (*N*=37) were girl students 49.44 percent (*N*= 44) were boy students while 3.37 percent (*N*=3) and 5.62 percent (*N*=5) were male and female teachers respectively

Table 1: Distribution of Subjects by School and Gender

	Students School	**Students**		**Teachers**		**Total**
	Perfect Vision	Males 18	Females 13	Males 2	Females 1	34
	Benjamin Mkapa	26	24	1	4	55
Total		**44**	**37**	**3**	**5**	**89**
		49.44%	**41.57%**	**3.37%**	**5.62%**	**100.0%**

RESEARCH INSTRUMENTS

Two types of instruments were used for the study a questionnaire and achievement test items. The former was used to obtain views of respondents on observational versus traditional instructional methods while the later was provided to assess the knowledge gained by the respondents after learning about STIs through observation and traditional methods. SPSS tool version 17 was used to analyze the results obtained from the study. The mostly used statistics was frequencies and descriptive statistics including cross tabulation. The results were displayed on tables as well as histograms as indicated on the next section

RESEARCH FINDINGS AND DISCUSSION

The Methods Employed by Teachers in Teaching STIs

The aim of this objective was to find out from the participants the methods employed by Biology teachers in teaching STIs in their respective schools. Descriptive statistics shows that Biology teachers from both schools teach by traditional method that is lecture method. 91.4 percent of the subjects (*N*= 74) responded that Biology teachers teach by traditional methods while 2.5 percent (*N*=2) and 6.2 percent (*N*=5) reported that their teachers teach by providing handouts and observation respectively.

Results in Table 2 reveal that the current form of instruction is traditional classroom lecture as opposed to other methods. Lecturing is one of the traditional methods that teachers used for education. Lectures are common of most classes including secondary schools. It is popular because it allows a teacher to deliver a large amount of information for a short time. A lecturer just speaks to the class and dictates information while learners remain passive (Fletcher, 1999).

Table 2: Methods Used by Biology Teachers to Teach STIs

		Method Used By Biology Teachers			Total
		Lecture	Handbooks	Observation	
Students School	Perfect Vision	29	0	2	31
	Benjamin Mkapa	45	2	3	50
Total		74	2	5	81
Percentage		91.4%	2.5%	6.2%	100.0%

Teaching Method Preferred by the Students

Among the 81 students who were asked to tell their preference method, most of them indicated that they prefer most the observational methods 87.7 percent (N=717); 4 percent (N=6) said they prefer handbooks; while 4.9 percent (N= 4) prefer traditional method as illustrated in Table 3.

Table 3: Student's Most Preferred Method

Students Preferred Method	Mean	N	Percentage	Std. Deviation
Lecture	1.50	6	7.4%	.548
Handouts	1.75	4	4.9%	.500
Observation	1.62	71	87.7%	.489
Total	1.62	81	100%	.489

These results were supported by an achievement test that was provided after being taught through the three methods as displayed in Figure 1.

The Most Effective Method

The most effective method was obtained by providing instruction through the three methods.

The results were computed into percentage and results displayed on histograms as displayed on Figure 1

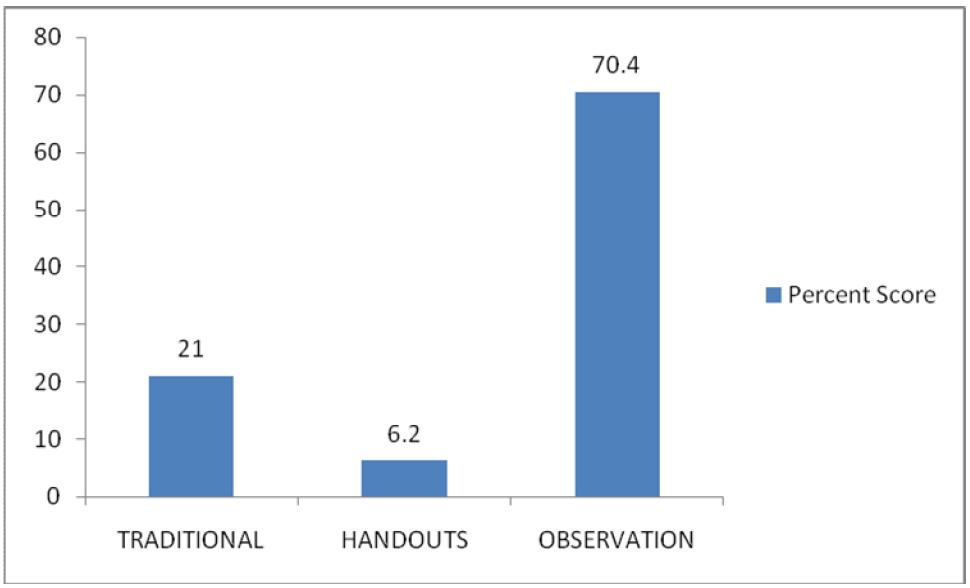

Figure 1: The Most Effective Method for Teaching STIs

Subjects who were taught through observational method, that is, those who were able to see the STI pictures (M= 70.4) performed better than those taught through traditional lecture method (M= 21) and handout method (M= 6.2). The meaning of such results is that observed information helps people learn more information in less time than traditional classroom lectures. According to literature, this type of method requires the teacher to have ample time for preparation but it simplifies the work because the information can be stored in a computer for use in the future (Najjar, 1996). When teachers were interviewed of this situation most of them declare that is the best method but they fail to practice it due to lack of enough time, poor facilities, and poor motivation:

"Put yourself in my position, I don't have enough time to search the pictures. Where will I get them? I cannot afford a computer, because my salary is not enough. Nowadays we opted for alternative to practical because the government cannot buy practical reagents"

Cultural Barriers Hindering the Learning of STIs

Participants were asked if there are cultural barriers which could hinder them from observing STI pictures. Results from cross tabulation indicates that, among the 81 participants 61.7 percent (N= 50) responded ñYesò to the question that asked ñDoes

your culture prohibit watching STI pictures?ò The rest 38.3 percent (N=31) responded ñNoò to the same question (Table 4)

Table 4: Percentage of Students Prohibited by Culture from Watching STD Pictures

Students School	Does Your Culture Prohibit Std Pictures		Total
	Yes	No	
Perfect Vision	23	8	31
Benjamin Mkapa	27	23	50
Total	50 61.7%	31 38.3%	81 100.0%

As revealed in Table 4, although students came from different cultural backgrounds, more than 50 percent responded that there are some cultural barriers in learning STI pictures by observation because they involve reproductive parts which they believe they should not be exposed freely. Generally, most youths are not informed of sexual matters including STIs by their parents. Such information are considered to be taboo and provided traditionally by family elders just before marriage. Hence much information is lacking especially during puberty when curiosity of sexual matters is heightened among youths (Ogunjimi, 2006).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the findings several conclusions were made. Firstly, Biology teachers from most of secondary schools teach STIs by traditional classroom lecture method. Hence students are not shown the STI pictures. Secondly, secondary school students prefer the vicarious method of learning of which they are able to see real pictures of the infections; thirdly, the fact that students were able to see the real pictures of STIs led them to score higher than lecture and handout methods in the achievement tests which in turn made observational method to be more effective. Fourthly, most students demonstrated that their cultures do not allow them to see such pictures because they involve reproductive parts.

Recommendations

As far as the findings are concerned the following recommendations were made

- Due to the fact that observational methods are more effective than traditional lecture and handout methods, the Ministry of Education and Vocational Training should conduct training to respective Biology teachers on how they can obtain such pictures from different sources and how to present them to learners

- School heads in collaboration with Biology teachers should invite guest speakers like physician doctors, expert teachers and the like so as to facilitate on the teaching of STIs
- Some of the cultures are outdated. Students should be sensitized by their teachers to learn by pictures because STIs are dangerous including HIV/AIDS. As discussed in the introduction, children start sexual practice earlier these days hence they need to be aware of the symptoms and report immediately to hospitals if any. Some students may opt to be health doctors and will be needed to study and treat people with such diseases.
- It is recommended that further research should be conducted on the knowledge of ICT to Biology teachers and how they can use it for instructional purposes.

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