



Southern and Eastern Africa Consortium  
for Monitoring Educational Quality

## Pupil and Teacher Knowledge about HIV and AIDS in Zambia

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### Introduction

The HIV and AIDS pandemic presents a major challenge for the social and economic development of nations located in Sub-Saharan Africa. The Joint United Nations Programme on HIV and AIDS (UNAIDS, 2010: 180) has estimated that in this region there are more than 20 million people living with HIV, and that around 10 percent of these people are below the age of 15 years.

In 2009 governments and international donors together provided US\$ 15.9 billion for the global AIDS response (UNAIDS, 2010: 146). At this point of time there is no known cure for AIDS, and a vaccine for HIV still appears to be in a development phase.

The first case of HIV infection in Zambia was diagnosed in 1984. In 2009 around 980,000 Zambians were living with HIV and around 120,000 of them were children under the age of 15 years (UNAIDS, 2010: 180).

AIDS is widely accepted as being one of the main causes of a dramatic increase in the number of orphans. The estimated number of orphans aged 0-17 years due to AIDS in Zambia rose from 580,000 in 2001 to 690,000 in 2009 (UNAIDS, 2010: 186).

The UNAIDS organization has reported that the HIV prevalence rate in Zambia for adults aged 15-49 years in 2009 was 13.5% (UNAIDS, 2010: 181). This represented a small improvement on estimated rates from earlier years. This trend has been partly attributed to reductions in high-risk behaviour – but may also have been influenced by changes in the methodology for estimating HIV infection rates that occurred during 2007 (UNAIDS, 2007: 3).

The United Nations has recognized that the education sector has a critical role to play in terms of the delivery of effective HIV and AIDS prevention education programmes.

### The Education Sector Response

The Zambian Ministry of Education has responded to challenges in this area by implementing education initiatives that aim to ensure that all young people possess the basic knowledge that is required to make informed decisions about behaviours related to HIV and AIDS that will protect and promote their health.

The primary school level has been identified as a crucial access point for HIV and AIDS prevention education programmes because most children attend these schools, and because of the importance of improving the knowledge of children about HIV and AIDS before they become sexually active and/or involved in high-risk behaviours.

### The SACMEQ Research Programme

The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a network of 15 Ministries of Education: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Uganda, Zambia and Zimbabwe.

SACMEQ's main mission is to undertake integrated research and training activities that: (a) provide educational planners with the technical skills required to monitor and evaluate the quality of their own education systems, and (b) generate information that can be used to plan the quality of education.

The SACMEQ Consortium has undertaken three large-scale cross-national studies of the quality of education in Southern and Eastern Africa: the SACMEQ I Project (1995-1999), the SACMEQ II Project (2000-2004), and the SACMEQ III project (2007-2011).

**The SACMEQ III Project included an additional data collection concerned with a detailed assessment of pupil and teacher knowledge about HIV and AIDS.**

## A New HIV and AIDS Knowledge Indicator

In 2006 SACMEQ's Governing Body (the SACMEQ Assembly of Ministers of Education) expressed concern about the need for a well-designed indicator that could be used to guide informed debate about the effectiveness of HIV and AIDS prevention education programmes. The one indicator that has been widely used to judge these programmes (known as the "United Nations General Assembly (UNGASS) HIV-AIDS Knowledge Indicator for Young People") was considered to lack validity because it was based on a short list of five test questions that were problematic in terms of wording complexity, content coverage, and reliability.

The SACMEQ Ministers asked the SACMEQ III Project Research Teams to address information needs in this area by developing a valid SACMEQ HIV-AIDS Knowledge Test that would be suitable for administration to Grade 6 pupils (who have average ages of 13.5 years across the SACMEQ countries and 14.1 years in Zambia) and their teachers.

## The SACMEQ HIV-AIDS Knowledge Test (HAKT)

The SACMEQ HIV-AIDS Knowledge Test (HAKT) was designed to provide a valid assessment of pupil and teacher knowledge about HIV and AIDS with respect to the topics specified in official school curriculum frameworks, textbooks, and teaching materials used by the SACMEQ countries.

The 86 HAKT test items covered 43 curriculum topics, and they were focused on an assessment of "the basic knowledge about HIV and AIDS that is required for protecting and promoting health". These topics were grouped into five main areas: definitions and terminology; transmission mechanisms; avoidance behaviours; diagnosis and treatment; and myths and misconceptions.

The HAKT was administered in late 2007 to 61,396 Grade 6 pupils and 8,026 teachers in 2,779 schools across the 15 SACMEQ countries. In Zambia the HAKT was administered to 2,895 Grade 6 pupils and 265 Grade 6 teachers in 157 schools.

The advanced psychometric analyses applied to these data indicated that the HAKT had a high level of reliability, and that it was suitable for placing pupils

and their teachers on a common scale of knowledge about HIV and AIDS.

The performance of pupils and teachers on the HAKT was assessed by applying two complementary scoring procedures:

(a) "**HAKT Scores**" – these were Rasch-scaled scores on the HAKT that were transformed to a Grade 6 pupil average of 500 and standard deviation of 100.

(b) "**HAKT Minimal Knowledge Scores**" – these were dichotomous scores that indicated whether pupils or teachers reached (score=1) or did not reach (score=0) SACMEQ's "minimal" HIV and AIDS knowledge benchmark (defined as mastery of half of the official curriculum assessed by the HAKT).

**Table 1** contains summarized information about these two scores for Grade 6 pupils and teachers in Zambia's 9 education provinces and the SACMEQ countries. Two sets of figures have been presented in the table for these groups of respondents: (a) the Average HAKT Scores, and (b) the Average HAKT Minimal Knowledge Scores (these proportions were expressed as percentages in the table).

For example, the third row of figures in **Table 1** indicated that: (a) the average HAKT Scores for pupils and teachers in Zambia's Northern Province were 513 and 738, respectively, and (b) the percentages of pupils and teachers in Northern Province that reached the minimal level of knowledge on the HAKT were 48% and 95%, respectively.

**Table 2** contains the average HAKT Scores for groups of Zambia's Grade 6 pupils defined by four demographic variables: Socioeconomic Status, Location, Gender, and Age.

For example, the first row of figures in **Table 2** indicated that pupils from high socioeconomic status families had a slightly higher average HAKT Score (491.7) than pupils from low socioeconomic status families (485.1), and that the difference between these two averages (6.6) did not exceed two standard errors of sampling (15.8).

Note that SACMEQ Projects use pupils as the units of analysis. Therefore, teacher statistics such as means refer to teacher characteristics associated with the average pupil.

## Pupil Knowledge Levels

### (a) SACMEQ Countries

The average HAKT Scores for Grade 6 pupils provided a means of making **relative comparisons** of knowledge levels among SACMEQ countries. The results presented for countries in the first column of **Table 1** showed that: (a) Grade 6 pupil averages ranged from a low of 453 in Mauritius to a high of 576 in Tanzania, and (b) the Zambian pupil average of 488 was 12 score points below the SACMEQ overall average of 500.

The average HAKT Minimal Knowledge Scores for Grade 6 pupils provided a means of making **normative comparisons** of knowledge levels among SACMEQ countries. (*NOTE: It was expected that 100% of pupils in all SACMEQ countries should reach the minimal knowledge level.*)

The results presented for countries in the second column of **Table 1** showed that: (a) the percentages of pupils with minimal knowledge ranged from 17% in Mauritius to 70% in Tanzania, and (b) the percentage of Zambia's pupils that reached the minimum knowledge level was a low value of 35%. That is, the percentages of pupils reaching the minimal knowledge level in Zambia and all other SACMEQ countries were far below the expected level of 100%.

**The results described above indicated that major alarm bells should be ringing in Zambia because in 2007 around two thirds of the Grade 6 pupils (65%) lacked the minimal knowledge about HIV and AIDS that is required for protecting and promoting health. In all other SACMEQ countries the situation was also very serious - with a majority of Grade 6 pupils in most countries lacking minimal knowledge.**

### (b) Zambia's Education Provinces

The figures for Zambia's education provinces presented in the first column of **Table 1** showed provincial variations in average Grade 6 pupil knowledge about HIV and AIDS. The relatively high average HAKT Score for Northern Province (513) placed it just below the two highest scoring countries (Tanzania and Swaziland). In contrast, the average HAKT Scores for Copperbelt (458), Southern (473), and Luapula (474) Provinces placed them close to the two lowest scoring countries (Mauritius and Lesotho).

The average HAKT Minimal Knowledge Scores for Zambia's education provinces in the second column of

**Table 1** also illustrated provincial variations in Grade 6 pupil knowledge about HIV and AIDS. The percentage of pupils in Northern Province (48%) that reached SACMEQ's minimal knowledge benchmark was more than twice as high as the percentage observed for Copperbelt Province (22%).

## Teacher Knowledge Levels

In the third and fourth columns of figures in **Table 1** the average HAKT Scores and average HAKT Minimal Knowledge Scores have been presented for teachers in the SACMEQ countries and Zambia's education provinces. The figures showed that the average HAKT Score for teachers exceeded 700 for most SACMEQ countries, and for SACMEQ overall it reached 746 – almost 250 score points above the Grade 6 pupil average of 500.

In Zambia, the average HAKT Score for teachers was 744 at the national level, and was in the range of around 715 to 785 for all education provinces. The percentages of teachers that reached SACMEQ's minimal knowledge benchmark of mastering at least one half of the official school curriculum were around 100% for all SACMEQ countries and all Zambia education provinces.

The major contrast between the high knowledge levels of teachers and the low knowledge levels of their Grade 6 pupils came as a complete surprise to Zambia's SACMEQ Research Team. They had assumed that teachers with high levels of basic knowledge about HIV and AIDS should be able to transmit this important information to their pupils. This assumption was obviously faulty and certainly requires further research in order to provide an explanation for the substantial "knowledge gap" between pupils and teachers.

## Demographic Differences in Knowledge

In **Table 2** some research results have been presented in order to examine demographic differences in the HIV and AIDS knowledge of Zambia's Grade 6 pupils. Four variables were used to generate groups of pupils for making comparisons of average HAKT Scores. Differences in group averages were greater than two standard errors (\*\*) for only the Gender variable – with boys demonstrating higher levels of knowledge about HIV and AIDS. No significant differences were observed for pupil groups defined by Socioeconomic Status, Location, and Age.

## Four Research-Based Conclusions

### 1. Low Pupil Knowledge Levels

Knowledge levels about HIV and AIDS among two thirds (65%) of Zambia's Grade 6 pupils in 2007 were below SACMEQ's "minimal" benchmark (which was defined as mastery of at least half of the official school curriculum). In addition, the average score of Zambia's Grade 6 pupils on the SACMEQ HIV-AIDS Knowledge Test was 12 score points below the SACMEQ overall average.

The Ministry of Education should acknowledge that HIV and AIDS prevention education programmes need to be monitored and evaluated in order to ensure that they are working effectively.

### 2. Large Provincial Differences in Knowledge

There were substantial differences in average Grade 6 pupil HIV and AIDS knowledge levels among education provinces in Zambia.

The Directorate of Planning and Standards should: (a) investigate the reasons for these differences, and (b) find out why pupil knowledge levels about HIV and AIDS were so low in Copperbelt, Southern, and Luapula Provinces.

### 3. A Pupil-Teacher "Knowledge Gap"

There was a large HIV and AIDS "knowledge gap" between Zambia's Grade 6 pupils and their teachers.

The Directorate of Curriculum and Directorate of Teacher Education should: (a) investigate why well-informed teachers were not able to transmit this important knowledge to most of their pupils, and (b) review pre-service and in-service training programmes to ensure that teachers are trained in both subject matter knowledge ("what to teach about HIV and AIDS"), and pedagogy ("how to teach about HIV and AIDS").

### 4. Demographic Differences in Knowledge

There were significant differences in knowledge about HIV and AIDS between groups of Zambia's Grade 6 pupils defined by Gender.

The Directorate of Planning should mount a research study to find out why boys appeared to know more about HIV and AIDS than girls.

## A Concluding Comment

It is clear from the SACMEQ III Project research results that the time has come for the Zambian Ministry of Education to take stock of the effectiveness of current HIV and AIDS prevention education programmes for young people in Zambia. All children need to have the basic knowledge about HIV and AIDS that is required to protect and promote health. The SACMEQ research results showed that two-thirds of Grade 6 pupils in Zambia during 2007 did not have this minimal level of knowledge.

This is indeed alarming because Grade 6 pupils in Zambia (with an average age of 14.1 years) are entering a stage of mental and physical development where they may become sexually active, and/or may choose to become involved in high-risk behaviours.

The Ministry of Education should therefore take immediate action to: (a) address the research-based conclusions presented above, and (b) facilitate the development and implementation of more effective HIV and AIDS prevention education programmes that focus on the upper grades of primary school.

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### References

UNAIDS (2007). AIDS Epidemic Update: December 2007. New York: Joint UN Programme on HIV-AIDS

UNAIDS (2010). Global Report. New York: Joint UN Programme on HIV-AIDS.

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**Table 1**  
Pupil and Teacher Scores on the  
SACMEQ HIV-AIDS Knowledge Test (HAKT)

	PUPILS		TEACHERS	
	HAKT Score	Reached Minimal Level (%)	HAKT Score	Reached Minimal Level (%)
TANZANIA	576	70	724	99
SWAZILAND	531	52	759	100
Zambia: Northern	513	48	738	95
MALAWI	512	43	714	99
Zambia: Eastern	510	46	739	100
KENYA	509	39	793	100
Zambia: Western	509	46	714	97
MOZAMBIQUE	507	40	741	99
SOUTH AFRICA	503	35	781	100
NAMIBIA	502	36	764	99
ZANZIBAR	501	38	657	94
BOTSWANA	499	32	782	100
Zambia: Central	498	36	759	100
Zambia: Lusaka	491	35	751	100
UGANDA	489	33	708	98
<b>ZAMBIA</b>	<b>488</b>	<b>35</b>	<b>744</b>	<b>98</b>
SEYCHELLES	488	25	789	99
Zambia: North Western	485	33	742	100
ZIMBABWE	477	30	785	99
Zambia: Luapulu	474	27	751	100
Zambia: Southern	473	29	784	100
LESOTHO	465	19	751	98
Zambia: Copperbelt	458	22	714	95
MAURITIUS	453	17	698	98
<b>SACMEQ</b>	<b>500</b>	<b>36</b>	<b>746</b>	<b>99</b>

**Table 2**  
Average HAKT Scores for Zambia Pupils  
across Four Demographic Variables

DEMOGRAPHIC VARIABLE	1st Group	2nd Group	Diff (SE)
<b>Socioeconomic Status</b> (Low/High)	485.1	491.7	6.6 (7.9)
<b>Location</b> (Isolated-Rural-Town/City)	488.4.0	487.0	-1.4 (11.9)
<b>Gender</b> (Males/Females)	496.3	479.4	-16.9 (6.8)**
<b>Age</b> (Younger/Older)	487.4	488.9	1.4 (7.4)

Diff = Difference

**Figure 1**  
Variation in pupil knowledge about HIV and  
AIDS among SACMEQ school systems  
and among provinces in Zambia

