

SACMEQ Educational Policy Research Series

The SACMEQ II Project in Botswana:
A Study of the Conditions of Schooling
and the Quality of Education.

Botswana
Working Report

by

Margaret Keitheile

and

Masego Mokubung

Ministry of Education

SACMEQ
Harare, Zimbabwe

Ministry of Education,
Botswana

Foreword

The origins of the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) date back to 1991, the year when several Ministries of Education in Eastern and Southern Africa started working closely with UNESCO's International Institute for Educational Planning (IIEP) on the implementation of integrated educational policy research and training programmes.

In 1995 these Ministries of Education formalized their collaboration by establishing a network that is widely known as SACMEQ. Fifteen Ministries are now members of SACMEQ: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Uganda, Zambia, and Zimbabwe.

SACMEQ is registered in Zimbabwe as an Independent Intergovernmental Non-profit Organization. Its Coordination Centre is located within UNESCO's Harare Cluster Office and is managed by a Director who works under the guidance of a six-member Managing Committee. SACMEQ's Assembly of Ministers meets every two years and provides overall policy guidance concerning SACMEQ's mission and programmes.

The focus of SACMEQ's capacity building programmes has been on building the capacity of Ministries of Education to monitor and evaluate the quality of their basic education systems. SACMEQ employs innovative training approaches that include a combination of face-to-face training, hands-on experience, computer laboratory sessions, and on-line support via the Internet. SACMEQ also encourages a unique form of collaboration among SACMEQ National Research Coordinators in the fifteen member countries as they share and exchange skills and successful experiences.

In September 2004 SACMEQ was awarded the Comenius Medal for its innovative approaches to delivering cross-national educational research and training programmes.

This report provides a description of the results of the SACMEQ II Project - SACMEQ's second major educational policy research project. The results of the SACMEQ I Project were reported in seven national reports for Kenya, Malawi, Mauritius, Namibia, Zambia, Zimbabwe, and Tanzania (Zanzibar).

The SACMEQ Data Archive was launched in June 2004. This valuable information resource contains data, data collection instruments, manuals, technical papers, and related publications from both SACMEQ projects. Copies of the archive may be obtained by completing the registration form on the SACMEQ Website (www.sacmeq.org).

Saul Murimba,
Director, SACMEQ Co-ordination Centre,
Harare, Zimbabwe.

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Chapter 1

Setting the Scene

Introduction

The purpose of this chapter is to furnish the non-Botswana reader with information about Botswana and the Botswana system of education that can serve as a context for better understanding the results of the survey that have been presented later in this report.

Botswana is a completely land-locked country and straddles the Tropic of Capricorn in the Southern African Plateau. It has a total surface area of about 582 000 square kilometres, which is about the size of France or Texas in the USA. Botswana shares borders with Namibia to the west, Zambia to the north, Zimbabwe to the northeast and South Africa to the south. According to the 1991 national population census, Botswana's population, which is small relative to the size of the country, was 1 326 796, of whom 634 400 were male and 692 400 were female. Botswana has 2.3 persons per square kilometre. In 1980, the world population density was 33 persons per km², making Botswana's average population density one of the world's lowest. The average population growth rate between 1981 and 1991 was 3.5 percent.

Botswana became a protectorate of the British Empire in 1885 and was then called Bechuanaland Protectorate. On September 30, 1966 Bechuanaland Protectorate became the independent Republic of Botswana. When Botswana achieved its independence there were 251 primary schools, nine secondary schools, two primary teacher training colleges, one trade school and no university. At independence, only 20 percent of school age group were enrolled in primary school, and only eight percent of school age group proceeded to secondary school. In the two decades following independence, the Ministry made great strides in providing the necessary school buildings in all parts of the country to allow children of school age to attend school. By 1986 just over 90 percent of school age children were in school and by 1996 this figure had risen to 96 percent. Although most parents see the value of education and send their children to school, there are still one or

two pockets in rural areas where the parents have not yet appreciated the value of education. Nevertheless, great progress has been made and it was anticipated that all children would be enrolled in school by the year 2002. Due to the critical shortage of well-trained workers to staff the public service, education was given the highest priority in the allocation of resources.

The official languages in Botswana are Setswana and English, the latter being the main language used in business. Presently the medium of instruction in school is Setswana from Standards 1 to 4 and English thereafter. The new policy on education requires that English be used as the medium of instruction from Standard 2. The date for implementation of this recommendation was the year 2002, after the necessary revisions of the curriculum have been effected.

The Structure of the School System in Botswana

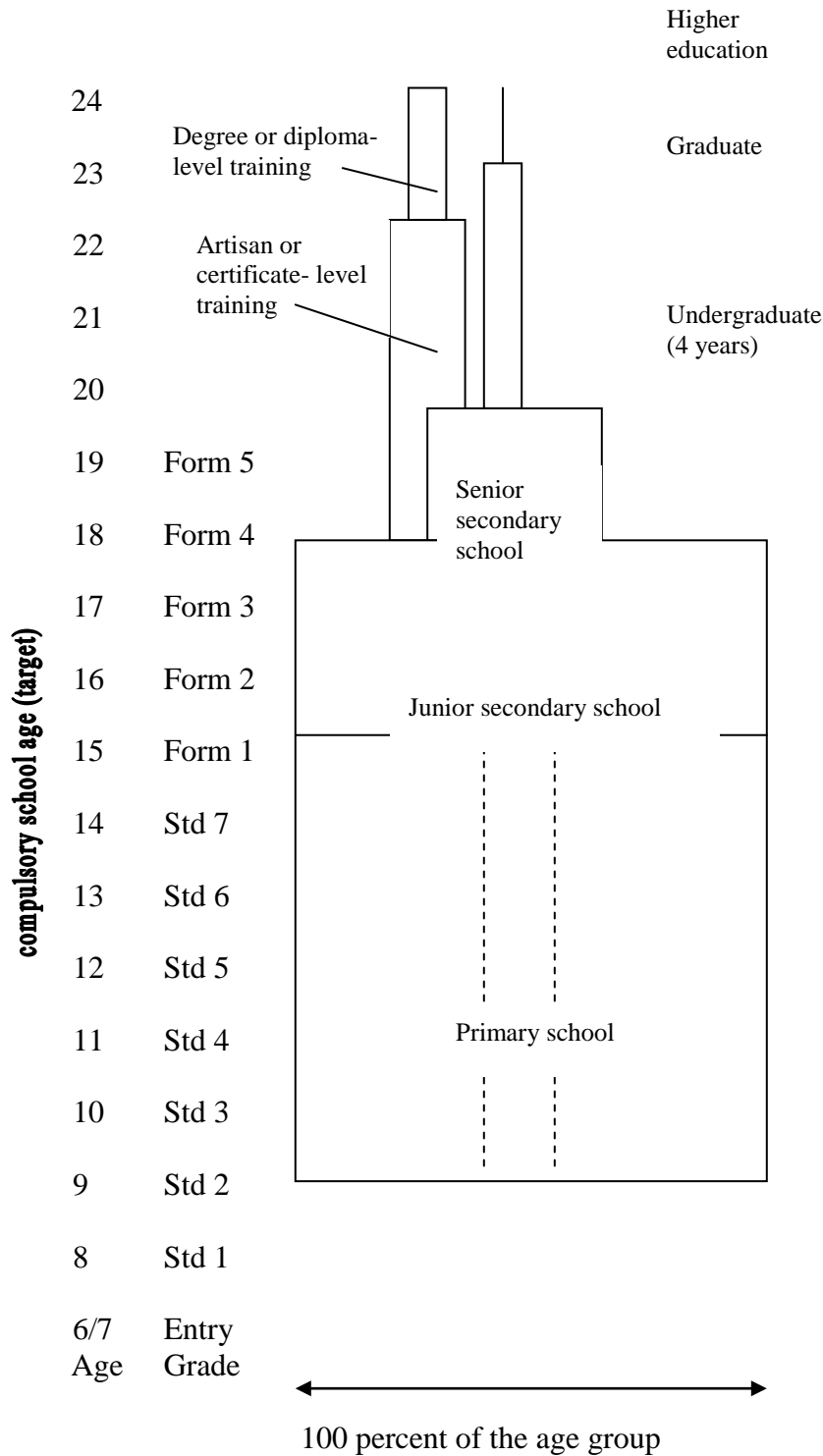


Figure 1: Botswana: Structure of the formal education system 1990^a

The structure of the education system in Botswana has been illustrated in Figure 1. This 7-3-2 structure consists of seven years of primary, three years of junior secondary and two years of senior secondary education. Currently, all school-age going children have a right to the first ten years of school. In 2000 there were 438, 711 school going children enrolled at primary and junior secondary (i.e. standard 1 through form 3). At primary school level for example, 100 percent of the 7-13 years were enrolled, while for the 6-12 age group only 90.1 percent of them were enrolled. The Primary School Leaving Examination (PSLE), taken at the end of the primary level, is no longer used for selection into junior secondary school. However, the Junior Certificate Examination (JCE) taken at the end of the junior secondary is used to determine progression into senior secondary school.

The Botswana General Certificate of Secondary Examination (BGCSE), which is taken at the end of senior secondary education, also determines entry into different tertiary institutions. All three examinations are local. The senior secondary schools available cannot absorb all JCE leavers. The pupils who do not follow the academic route can enroll for vocational education through apprenticeship or other forms of vocational training.

Children are eligible to enter Standard 1 in January once they have attained their sixth birthday. Promotion between standards is automatic, but the Revised National Policy on Education (RNPE) (1994) now allows for limited repetition for up to 12,5 percent of the class. Education is still free for Botswana children in all public primary and secondary schools. The answer to the question of how many children progress to the next level can be seen in Table 1.1. In this table, the reader can see how the children who were in Standard 6 in 2000 progressed since they started Standard 1 in 1995.

Table 1.1 Primary School gross progression rate*

| | Std 1 | Std 2 | Std 3 | Std 4 | Std 5 | Std 6 |
|------|-------|-------|-------|-------|-------|-------|
| 1995 | 100 | | | | | |
| 1996 | 100 | 92 | | | | |
| 1997 | 100 | 91 | 89 | | | |
| 1998 | 100 | 89 | 89 | 96 | | |
| 1999 | 100 | 90 | 88 | 96 | 85 | |
| 2000 | 100 | 91 | 88 | 95 | 86 | 83 |

*Gross progression rate based on total enrolment i.e. inclusive of repeaters (Botswana Education Statistics Report 2000)

It can be seen that 83 percent of the children who started school in 1995 were in Standard 6 at 2000.

Enrolment ratios

In 2000 the Gross Enrolment Ratio (GER) for the age group 6-12 was 115.8 while the Net Enrolment Ratio (NER) for the same age group was 90.1. The latter implies that about 10 percent of the 6-12 years were not in school in 2000. On the other hand the GER for the 7-13 years was 118 percent while the NER was 100.1 percent. The GER of 118 percent implied that 18 percent of children outside the age range 7-13 were enrolled. The NER of 100.1 percent implied that all 7-13 children were enrolled in primary schools. The theoretical value of NER is 100 percent the 0.1 percent implies that there could be some inconsistencies in the reporting of age in the enrolment figures and or the population data.

The Administration of School Education

Botswana's Ministry of Education comprises nine departments and three supporting divisions. The nine departments are the following:

- Department of Ministry Management;
- Teaching Service Management that is responsible for employment of teachers;
- Department of Vocational Education and Training, responsible for technical education and training;

- Department of Non-formal Education;
- Department of Curriculum Development and Evaluation;
- Department of Primary Education;
- Department of Secondary Education;
- Teacher Training and Development; and
- Department of Student Placement and Welfare, that is responsible for placing students in higher institutions and universities, their sponsorship and welfare.

The three supporting divisions are:

- Division of Planning, Statistics and Research that is responsible for planning, monitoring and the evaluation of education policies;
- Division of Special Education that is responsible for education of children with special needs and
- Examination, Research and Testing Division that is responsible for national examinations.

For operation and management of schools, Botswana is divided into six primary education regions, namely, Central North, North, Central South, South Central, Southern and Western.¹

Financing of Education

Government is committed to its policy decision to invest heavily in human capital. There has therefore been rapid expansion of education and training, the major aim being to meet the skills' needs of an economy that was growing fast. In the 1993/94 financial year government allocated 22 percent of its total budget to education. In the 1999/2000 budget the largest share of the budget, comprising nearly one quarter went to education. Government spent P1.64 billion² of the recurrent budget on the Ministry of Education, and this constituted the largest portion (23%) of the recurrent expenditure bill. Education also received the third largest share of the development expenditure, standing at P548 million.

¹ For the purposes of this study, Botswana was divided into seven regions, with Gaborone taken as a separate region.

² In 2000, 1 Botswana pula (P) was equal to 0.2 US Dollars (\$).

Government directly finances educational institutions under the Ministry of Education (MOE) and provides loans and grants to students attending tertiary institutions both in Botswana and outside the country. Government also gives grants to non-governmental organizations that contribute to the education system through the establishment of pre-schools and private primary and secondary schools. The MOE shares the responsibility for primary education with the Ministry of Local Government, Lands and Housing (MLGLH). The MLGLH is responsible for the provision of school buildings, supplies, and teachers' housing and other related facilities such as textbooks, exercise books, school furniture.

Recent educational policy reviews and policy reforms

The first review of education, which served as the guiding force behind most education development up until 1992 took place in 1976. This led to the first National Policy on Education in 1977 that was known as *Education for Kagisano*³. In 1992, the government appointed the second National Commission on Education whose mandate was to review the education system and to advise on how best to ensure that it was responsive to the needs and aspirations of the people, bearing in mind Botswana's complex and ever changing socio-economic situation. Particular emphasis was to be on universal access to basic education, vocational education and training as well as preparation and orientation to the world of work. Recommendations that affected the primary sector were the reduction of class size from 45 to 30; upgrading of primary teachers from certificate to diploma level and the introduction of English as a medium of instruction at Standard 2. A National Council on Education was appointed to monitor and evaluate progress, advice and propose changes to policy.

In the year 2016 Botswana will be celebrating fifty years of independence. In 1996 the then president put together a task force to draft Botswana's long-term vision that is now popularly known as *Vision 2016*. One of the goals of Vision 2016 is to be an educated, informed nation by the year 2016. Botswana will have a system of quality education that is able to adapt to the changing needs of the country as the world around it changes.

³ "Education for Kagisano" is the name of that policy document

Strategies were formulated for making the Vision a reality. Among others, those that relate to Education are the following:

- Botswana must move quickly towards universal and compulsory education up to secondary level;
- Botswana must improve the quality and accessibility of its education system;
- A major campaign of teacher training at all levels must be launched;
- All schools in all parts of the country, regardless of the medium of instruction, must be properly equipped;
- There must be no gender discrimination in the education system.

The SACMEQ Consortium and its perceived importance and benefits with respect to educational policy research and training in Botswana

This study is part of the work of the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) whose origins lie in the work of a group of planning officers from SACMEQ's member ministries. (Moyo, G., Murimba, S., Nassor, S.M., Dhlamini, E., Nkamba, M and Chimombo, J. (1993). The first SACMEQ study took place in 1995/1996 (Kulpoo, 1998; Milner, Chimombo, Banda and Mchikoma, 2001; Machingaidze, Pfukani and Shumba, 1998; Nassor, 1998; Nkamba and Kanyika, 1998; Nzomo, Kariuki and Guantai, 2001; and Voigts, 1998). It involved a study of Reading Literacy in Grade 6. Botswana did not take part in that study. The second SACMEQ study took place in 1999-2000 and this publication reports the results of that study. SACMEQ II also focused on Grade 6 but this time it assessed achievement in both mathematics and reading literacy. The bulk of this report is concerned with the results of SACMEQ II.

Apart from the Grade 7 Primary School Leaving Certificate and the Standard 4 Achievement Test the other indicators of achievement have been from the 1989 Standard 4 IEA literacy study and the 2000 Monitoring Learning Achievement Study. One problem with the PSLE and Standard 4 tests is that these data are rarely analysed to

examine either the differences in achievement between the educational administrative regions in the country between different points in time. However the SACMEQ I results in terms of policy suggestions for action proved to be very useful to the Ministries of Education for those countries that took part in the study. These policy suggestions were not only to do with the Grade 6 achievement in Reading Literacy but also with actions required in order to improve the conditions of learning in the schools. The Botswana Ministry of Education was therefore more than pleased to participate in SACMEQ II because it would provide information on the conditions of schooling and also measure achievement in Reading Literacy and Mathematics.

Policy concerns

Following the 1996 and 1992 reviews of Botswana's education system, there were several reforms that shaped the development of education in Botswana, and the Ministry of Education needs to be informed on the changes in the provision of education and in the conditions of schooling. Such information should also guide the Ministry in making informed decisions as it pursues the objectives of Vision 2016. The major concerns that this study will address are the following:

1. How different are the inputs to schools in the various regions in terms of the kinds of homes the pupils come from?
2. How different are the conditions of schooling in the regions in terms of the textbooks and other supplies available to pupils, the adequacy of accommodation in the classrooms, the resources in the classrooms and the resources in the schools? Where are the conditions deemed to be inadequate and what action should the Ministry take?
3. How do the conditions of schooling in Botswana compare with the Ministry's own benchmarks standards? In which regions are there large gaps? Did the Ministry's benchmarks seem to be reasonable or are changes required?
4. How equitably have the educational inputs (both material and human) to primary school been allocated? For which types of input was there inequity? Is any action required by the Ministry?

5. What is the level of achievement of Standard 6 pupils in Reading and Mathematics? Can the achievement levels be said to be adequate or were there major problems? If so, where? What is the level of achievement of the teachers of the Standard 6 pupils in Reading and Mathematics? Is there any overlap in achievement between pupils and teachers?

The structure of the report

The rest of this report is devoted to supplying information from the SACMEQ study for the above questions. Chapter 2 provides a summary of the conduct of the study. This involves the clarification of the research questions, the development of the instruments and the subsequent scaling procedures; the description of the population; sampling procedures and the calculation of sampling errors; data collection procedures, data entry and the cleaning and weighting of the data.

Data on pupils' characteristics and their learning environments have been reported in Chapter 3. Information on teachers' characteristics and their viewpoints on teaching, classroom resources, professional support, and job satisfaction has been presented in Chapter 4. The analyses of the extent to which school heads' characteristics and their viewpoints on educational infrastructure, the organization and operation of schools, and problems with pupils and staff have been presented in Chapter 5. In Chapter 6, the results of the analysis of the equitable allocation of educational inputs to regions and also to school within regions have been reported. The achievement results of both pupils and teachers in reading and mathematics have been reported in Chapter 7 while in Chapter 8 the major results have been summarised and suggestions for action by the Ministry have been made.

Chapter 2

The Conduct of the Study¹

Introduction

In this chapter a description of the key elements of the study design has been provided as well as the methodological procedures followed in the conduct of the study. These are the planning of the study, instrument construction, sampling, data collection, data entry, cleaning and merging, data analysis and presentation and the writing of the policy report.

Planning of the study

SACMEQ makes every attempt to ensure that its research activities address the key concerns of the ministries of education, and so as a starting point for this research study, key decision makers in the fourteen active SACMEQ II member ministries were offered the opportunity to articulate the major policy concerns that were of interest to their ministries. These policy concerns and the specific research questions emanating from them had to be identified before the study could begin. In each of the countries the SACMEQ National Research Coordinators (NRCs) were responsible for discussing the high-priority policy concerns with the senior members in their ministries of education. The responses were then analysed in order to identify groups of 'General Policy Concerns'. Through this process, the large number of policy concerns from the different countries was reduced to twenty general policy concerns which can be summarised under the following five themes:

- Pupils' characteristics and their learning environments
- Teachers' characteristics and their views about teaching, classroom resources, professional support, and job satisfaction
- School head's characteristics and their views about educational infrastructure, the organization and operation of schools, and problems with pupils and staff

¹ A very detailed account of the conduct of the SACMEQ II study has been presented on the SACMEQ website: www.sacmeq.org.

- Equity in the allocation of human and material resources among regions and among schools within regions
- The reading and mathematics achievement levels of pupils and their teachers

Each of the general policy concerns have been presented in Appendix 2.1. For each of the twenty general policy concerns specific research questions were developed. For each specific research question a dummy table (blank table) was developed. In Chapters 3-7 in this report the results have been presented in a series of tables. The blank versions of these tables were the dummy tables. The main reasons for producing the dummy tables were that this process forced the NRCs to (a) check that the data collection instruments covered all information needs, (b) ensure close linkages between the specific research questions and the questions on the data collection instruments, (c) reach agreement on the selection of variables and the types of data analyses to be applied, and (d) design and justify the data tabulation templates to be used in reporting the data analyses. It is important to note that this meant that the study was based solely on what the participating ministries had deemed to be important general policy concerns. In all, there were 20 general policy concerns that encompassed 75 specific research questions that resulted in around 150 dummy tables.

Instrument construction

Each of the 150 dummy tables included the names of variables to be used as well as the form in which they would be analyzed. These variables were listed. Most of them could be regarded as variables for which information would be required from pupils, teachers, or school heads using questionnaires. A few of the variables required information to be collected from pupils and teachers using tests.

Questionnaire construction

The variables in the dummy tables were listed, and for each variable a decision had to be made about the number of questions that would be required to construct each variable. In some cases (e.g. pupil gender) only one question was needed. For another variable (e.g. school enrolment) two questions had to be added together (boys' enrolment and girls' enrolment). In other cases, several variables had to be formed (e.g. 'possessions in the home',

‘quality of home’ and ‘parental education’ to form a construct known as ‘home background’). Since many of the variables were to be used for examining change over time, then it was important to use, as far as possible, the same questions as had been used in SACMEQ I.

Questions were developed for each variable or each sub-part of a variable required. These were then trialed in the pilot study and, where necessary, revised.

Test construction

Tests had to be constructed in reading and mathematics both for pupils and for teachers. The two sets of tests (for pupils and teachers) had to be calibrated so as to be on the same scale. For the pupil tests there was also the wish to be able to compare reading scores with the International Association for the Evaluation of Educational Achievement (IEA) Reading Literacy study and mathematics scores with the IEA’s Third International Mathematics and Science Study (TIMSS). Hence there had to be “anchor items” or common items with these tests from the other studies. Most importantly, however, the structure of the pupil tests was congruent with the content (domains) and behaviours (skills) derived from detailed analyses of the curricula, syllabi, exams, and textbooks used in the SACMEQ countries. The selection of teacher test items had to cover the full range of pupil item difficulties – but did not contain too many easy pupil test items. In addition, in order not to antagonize teachers with an extended testing session, the teacher tests had a much smaller number of test items than the pupil tests.

The reading tests

“Reading literacy” was defined as “the ability to understand and use those written language forms required by society and/or valued by the individual.” This was the definition that had been used in SACMEQ I and also in the IEA Reading Literacy Study. The reading domains that were agreed were:

Narrative prose: Continuous texts in which the writer aims to tell a story – whether this be fact or fiction.

Expository prose: Continuous text in which the writer aims to describe, explain, or otherwise convey factual information or opinion to the reader.

Documents: Structured information organized by the writer in a manner that requires the reader to search, locate, and process selected facts, rather than to read every word of a continuous text.

At the same time a hierarchy of skills was proposed (a dimension of increasing competence) that could be applied to both of the SACMEQ studies. A blueprint of the test in terms of items and domains by hierarchy has been presented in Table 2.1. In the final version of the SACMEQ II reading test there was a total of 83 test items, with (a) 32, 26, and 25 items allocated to the narrative, expository, and documents domains, respectively; and (b) 6, 22, 26, 18, and 11 items set at skill levels 1 to 5, respectively.

Mathematics test

For mathematics a similar exercise was undertaken except this time there had been no SACMEQ I test in mathematics. The resultant domains were:

Number: Operations and number line, square roots, rounding and place value, significant figures, fractions, percentages, and ratios.

Measurement: Measurements related to distance, length, area, capacity, money, and time.

Space-Data: Geometric shapes, charts (bar, pie, and line), and tables of data.

In the final version of the SACMEQ II pupil mathematics test there was a total of 63 test items, with 27, 18, and 18 items allocated to the number, measurement, and space-data domains, respectively, and 6, 20, 17, 12, and 8 items set at skill levels 1 to 5, respectively.

Immediately after the test blueprints had been developed the NRCs worked in teams to either select or write all of the required test items for the SACMEQ II tests. As items were prepared they were classified according to the cells in the test blueprints. For each cell *twice* as many items as required were prepared so that the rejection of poor items after the trial testing did not result in a shortage of items in some cells. Most test items were in multiple-choice format with four options per item. The item pools were then sent to all countries for review by panels of curriculum specialists. This resulted in editorial changes to the items and recommendations for additional items by the panel members who made sure that the items met the requirements of the respective national curricula.

The main challenge in the construction of the reading and mathematics tests for teachers was to “fine-tune” the difficulty range of test items so that it would suit the higher levels of competence that were expected of teachers. At the same time it was important to ensure that there was sufficient “item overlap” with the pupil tests to permit the performance of teachers and pupils to be measured on the same scale.

In the reading test for teachers, several passages were selected because of the more subtle nature of the messages that they conveyed, and the less-visible underlying assumptions of the writers. For example, one passage on the topic of “smoking” required the teachers to identify the unstated values and beliefs of the writer. Another passage on the topic of “effective thinking” required the teachers to identify assumptions made by the writer about the readers

and their knowledge of the topic. These kinds of skills were far beyond the competencies that had been identified from the analyses of Standard 6 curricula.

The “extra” reading and mathematics items for teachers were expected to assess the higher competence levels of teachers – but not to be so difficult that the teachers would be daunted by the challenge. In addition, the selection of easier test items that “overlapped” with the pupil tests had to be made with extreme care because the teachers may have felt insulted if these items were ridiculously easy or if they were concerned with issues that would only interest young children.

In the teacher reading test the extended levels of competence mainly focused on expository texts – rather than on documents or narratives. It was felt that the use of narratives and documents at this level would have required very complex and long texts that would have generally extended the time required to complete the test.

In the teacher mathematics test the extended levels of competence mainly emphasized problem solving strategies that required the extraction of information from verbal, graphic, or tabular presentations. For these items, the teachers were expected to follow three steps: to identify the nature of the problem, to transform the problem into mathematical language, and to solve the problem. In some cases this required the rearrangement of information, and in others it meant translating the problem into one or more equations and then solving the equations.

The tests (and questionnaires) were piloted in all countries. In Botswana the pilot study was conducted in 30 schools selected from the South Central and Southern regions, comprising 600 pupils. The pilot study took place in August, 1999. The pilot study also provided an opportunity for the training of the 9 data collection team leaders, who took part in the main study at the end of September 2000. The data were returned to a central data processing centre at IIEP in Paris.

Three kinds of scores

It was decided to derive and use three kinds of scores from the tests. These have been described below.

The calculation of scale scores (Rasch)

The data from the trial-testing phase were subjected to Rasch and Classical item analyses in order to detect items that did not “fit” the relevant scales, or that were “behaving differently” across subgroups of respondents defined by gender and country. The poor quality test items were rejected – keeping in mind the need to prepare a “balanced” test across skill levels and domains. The Rasch and classical item analyses were also undertaken a second time after the main testing.

In the case of the measurement of reading performance, there were three groups of respondents: the SACMEQ I pupils, the SACMEQ II pupils, and the SACMEQ II teachers. Each group completed a reading test that was “different but overlapped”. That is, each group completed a reading test that contained some unique test items and some items that also appeared on one or both of the other two tests. In the case of numeracy measurement, the tests were also “different but overlapped”, however there were only two groups of respondents: the SACMEQ II pupils and SACMEQ II teachers.

Although data were gathered at different time points for the SACMEQ I (1995-1997) and SACMEQ II (2000-2002) projects, it is possible to think of the reading and mathematics tests used in the projects as two “artificial” or “composite” tests of 148 different reading items and 91 mathematics items, respectively. This conceptualisation of the tests implies that the three sets of reading test respondents and the two sets of mathematics test respondents can each represent a single group of respondents for the purposes of undertaking “concurrent” scaling of the tests using the Rasch Model.

For the 148-item “composite” reading test there were 36 items that came only from the SACMEQ I pupil reading test, 52 test items that came only from the SACMEQ II pupil

reading test, and 26 items that came only from the SACMEQ II teacher reading test. An additional 34 items were located in more than one test, with 9 of these items being located in all three tests, and 3 sets of items associated with pairs of tests. For the 91-item “composite” mathematics test there were 50 items that came only from the SACMEQ II pupil mathematics test, and 28 items that came only from the SACMEQ II teacher mathematics test. An additional 13 items were located in both tests.

Both the reading and mathematics data matrices were analysed using computer software that applied the Rasch Model of measurement (Andrich and Luo, 2000). The first step was to calibrate the test items by calculating the Rasch difficulty values for each item within the 148-item reading test and the 91-item mathematics test. The results of the calibration were then used to calculate reading and mathematics scores for all pupils and teachers in all countries.

The final test was deemed to be valid. In each of the SACMEQ countries the Ministry specialists were asked to identify those items that were in the curriculum. These items were named ‘essential’ items and formed a subset of all the items in the test. However, for SACMEQ I in Botswana the correlation between the ‘essential’ items and all items was 1.00 and for SACMEQ II the correlation was 0.98. Indeed, in order to ensure that it was fair to compare all countries on the total test score the correlations between the ‘essential’ items and all items were calculated in every country and in all cases the results was between 0.98 and 1.00. This is proof that the tests were valid for Botswana and also for other countries.

The mean for all SACMEQ countries was set at 500 and the standard deviation at 100. For Botswana, the mean pupil score for reading was 521.1. The mean teacher reading score for all SACMEQ countries was 733, while the mean for Botswana teachers was 757.7. This meant that in reading, both Botswana learners and teachers scored above the SACMEQ means. The SACMEQ mean score for mathematics was also 500 while the SACMEQ II mean for pupils in Botswana was 512.9. The SACMEQ mean for all teachers was 791 while that for teachers in Botswana was 753.3.

The identification of ‘derived’ skill competence levels

For each set of tests (pupil and teacher for reading and pupil and teacher for mathematics) the items were first arranged in order of difficulty, and then examined item-by-item in order to describe the specific skills required to provide correct responses. When items had been linked to specific skills, they were placed into groups or clusters of test items such that the items in each group had similar difficulty values and shared a common “theme” with respect to the underpinning competencies required to provide correct responses.

The three tasks of defining specific skills for each test item, identifying groups of items with similar difficulties, and then naming the “theme” (or competency level) linked to each group were extremely difficult because it required the NRCs to first reach agreement on how the respondents arrived at correct solutions, and to then name the competency required. This required the NRCs to use their practical knowledge of the ways in which pupils solve problems, and then to portray this with a meaningful description of the thought processes that had been applied. The skills audit for the reading and mathematics tests resulted in the identification of eight levels of competence for each test. This was more than what had been proposed in the test blueprints. For both tests there was a strong correspondence between the descriptions of the five blueprint levels and most of the derived levels arising from the skills audit – which suggested that the three “extra” levels were defining more detail on the same reading and mathematics scales.

The skill levels *with examples of items* characterising each level have been presented in detail in Appendix 2.2.

An abbreviated version has been presented in Table 2.1. It will be seen that the levels are hierarchical. It is then possible to calculate the percentage of pupils reaching any one level. These have been presented in Chapter 7 in this report and can also be regarded as being more meaningful than other scores because the competency levels indicate exactly what pupils can and cannot do.

Table 2.1: The final skill levels for the SACMEQ reading and mathematics tests

| Level | Reading | Mathematics |
|-------|--|--|
| 1 | Pre-reading: Matches words and pictures involving concrete concepts and everyday objects. Follows short simple written instructions | Pre-numeracy: Applies single step addition or subtraction operations. Recognises simple shapes. Matches numbers and pictures. Counts in whole numbers. |
| 2 | Emergent reading: Matches words and pictures involving prepositions and abstract concepts; uses cuing systems (by sounding out, using simple sentence structure, and familiar words) to interpret phrases by reading on. | Emergent numeracy: Applies a two-step addition or subtractive operation involving carrying, checking (through very basic estimation), or conversion of pictures to numbers. Estimates the length of familiar objects. Recognises common two-dimensional shapes. |
| 3 | Basic reading: Interprets meaning (by matching words and phrases, completing a sentence, or matching adjacent words) in a short and simple text by reading on or reading back. | Basic numeracy: Translates verbal information presented in a sentence, simple graph or table, using one arithmetic operation in several repeated steps. Translates graphical information into fractions. Interprets place value of whole numbers up to thousands. Interprets simple common everyday units of measurement. |
| 4 | Reading for meaning: Reads on or reads back in order to link and interpret information located in various parts of the text. | Beginning numeracy: Translates verbal or graphic information into simple arithmetic problems. Uses multiple different arithmetic operations (in the correct order) on whole numbers, fractions, and/or decimals. |
| 5 | Interpretive reading: reads on and reads back in order to combine and interpret information from various parts of the text in association with external information (based on recalled factual knowledge) that ‘completes’ and contextualizes meaning. | Competent numeracy: Translates verbal, graphic, or tabular information into an arithmetic form in order to solve a given problem. Solves multiple-operation problems (using the correct order of arithmetic operations) involving everyday units of measurement and/or whole and mixed numbers. Converts basic measurement units from one level of measurement to another (for example, metres to centimetres) |
| 6 | Inferential reading: Reads on and reads back through longer texts (narrative, document, or expository) in order to combine information from various parts of the text so as to infer the writer’s purpose. | Mathematically skilled: Solves multiple-operation problems (using the correct order of arithmetic operations) involving fractions, ratios, and decimals. Translates verbal and graphic representation information into symbolic, algebraic, or equation form in order to solve a given mathematical problem. Checks and estimates answers using external knowledge (not provided within the problem). |

- | | | |
|---|--|--|
| 7 | Analytical reading: Locates information in longer texts (narrative, document, or expository) by reading on and reading backing order to combine information from various parts of the text so as to infer the writer’s personal beliefs (value systems, prejudices, and/or biases). | Problem solving: Extracts and converts (for example, with respect to measurement units) information from tables, charts, visual and symbolic presentations in order to identify, and then solve multi-step problems. |
| 8 | Critical reading: Locates information in longer texts (narrative, document, and expository) by reading on and reading back in order to combine information from various parts of the text so as to infer and evaluate what the writer has assumed about the topic and the characteristics of the reader – such as age, knowledge, and personal beliefs (values systems, prejudices, and/or biases) | Abstract Problem Solving: Identifies the nature of an unstated mathematical problem embedded within verbal or graphic information, and then translate this into symbolic, algebraic, or equation form in order to solve the problem. |

The specification of minimum and desirable levels of reading

In SACMEQ I each of the Ministries of Education established expert national committees that included inspectors, teacher leaders, and teachers. The committees were asked to identify the reading performances that they would expect from a pupil who (a) would *barely survive* during the next year of schooling (the “Minimum” level), and (b) was *guaranteed to succeed* during the next year of schooling (the “Desirable” level). It was the average cut-off levels established in SACMEQ I that were used in SACMEQ II. This was only for reading because this was the only subject matter tested in the SACMEQ I Project. It was thought that this would be one further indicator of importance for policy-makers.

Sampling

The “best” sample design for a particular project is one that provides levels of sampling accuracy that are acceptable in terms of the main aims of the project, while simultaneously limiting cost, logistic, and procedural demands to manageable levels. The major constraints

that were established prior to the preparation of the sample designs for the SACMEQ II Project have been listed as follows.

Target Population: The target population definitions should focus on Grade 6 pupils attending registered mainstream government or non-government schools. In addition, the defined target population should be constructed by excluding no more than 5 percent of pupils from the desired target population.

Bias Control: The sampling should conform to the accepted rules of scientific probability sampling. That is, the members of the defined target population should have a known and non-zero probability of selection into the sample so that any potential for bias in sample estimates due to variations from “epsem sampling” (equal probability of selection method) could be addressed through the use of appropriate sampling weights.

Sampling Errors: The sample estimates for the main criterion variables should conform to the sampling accuracy requirements that the standard error of sampling for the pupil tests should be of a magnitude that is equal to, or smaller than, what would be achieved by employing a simple random sample of 400 pupils.

Response Rates: Each SACMEQ country should aim to achieve an overall response rate for pupils of 80 percent. This figure was based on the wish to achieve or exceed a response rate of 90 percent for schools and a response rate of 90 percent for pupils within schools.

Administrative and Financial Costs: The number of schools selected in each country should recognize limitations in the administrative and financial resources available for data collection.

Other Constraints: The number of pupils selected to participate in the data collection in each selected school should be set at a level that will maximize validity of the within-school data collection for the pupil reading and mathematics tests.

The Specification of the Target Population

For Botswana, the *desired* target population was all pupils enrolled in Grade 6 in the '9th month of the school year (i.e., in September 2000). The net enrolment ratio in Botswana in 2001 was 87.2. However, in Botswana it was decided to exclude certain pupils. These were pupils in schools having fewer than 15 Grade 6 pupils in them, pupils in 'inaccessible schools, and pupils in special schools. In all 1512 pupils from 117 schools were excluded but this only amounted to 3.5 percent of all pupils. In Botswana there were 723 schools having 42804 pupils. After excluding the 3.5 percent of pupils the defined population from which a sample had to be drawn consisted of 41292 pupils from 606 schools.

The number of school required in the sample is in part a function of the intra-class correlation (ρ) which is an indicator of the proportion of variation (in achievement in this case) among schools of total variation. The following is the formula often used for estimating the value of ρ in situations where two-stage cluster sampling is employed using (approximately) equal sized clusters).

$$\text{estimated } \rho = (b \cdot s(a)^2 - s^2) / (b - 1)s^2$$

where $s(a)^2$ is the variance of cluster means,
 s^2 is the variance of the element values, and
 b is the cluster size.

The ρ value for Botswana was thought to be about 0.30. That is 30 percent of the variation was among schools and 70 percent within schools. Therefore, in the case of Botswana a ρ of 0.30 was used. In the end a sample of 166 schools was drawn.

In Table 2.2 the numbers of schools and pupils in the planned and achieved samples have been presented. The sample was stratified into regions and the number of schools required for each region can be seen. The actual number of schools was 606.

In all 91.8 percent of the planned number of pupils were in the final sample and 100 percent of the schools. The reason for the shortfall in learner numbers was absenteeism by some learners in some of the schools on the day of data collection. However, sampling weights were used to correct for disproportionality among strata in the calculation of all statistics.

It will be recalled that the major aim of the sampling was to have the equivalent of a simple random sample of 400 pupils. In Botswana, this was 649 for reading achievement and 682 for mathematics. Hence the sample was a very good one for Botswana.

Table 2.2. Number of schools and pupils in the planned and achieved samples (SACMEQ II)

| District | Planned sample | | Achieved sample | | Percent achieved | |
|-----------------|----------------|-------------|-----------------|-------------|------------------|-----------|
| | Schools | Pupils | Schools | Pupils | Schools | Pupils |
| Central North | 25 | 500 | 25 | 493 | 100 | 99 |
| Central South | 30 | 600 | 30 | 583 | 100 | 97 |
| Gaborone | 20 | 400 | 20 | 391 | 100 | 98 |
| North | 20 | 400 | 20 | 394 | 100 | 99 |
| South Central | 30 | 600 | 29 | 594 | 97 | 99 |
| South | 25 | 500 | 22 | 484 | 88 | 97 |
| West | 20 | 400 | 20 | 383 | 100 | 96 |
| Botswana | 170 | 3400 | 166 | 3322 | 98 | 98 |

Throughout the report wherever a percentage or mean has been presented the accompanying sampling error has been presented. This has been explained at the beginning of Chapter 3.

The main data collection

The main data collection took place between 20-29 September 2000. Data collection manuals had been written indicating what the data collectors had to do from when they entered a school to when they returned the package of instruments to the regional office. A team of 9 data collection team leaders were centrally trained in Gaborone to ensure uniformity in data collection throughout the country. The training of data collectors included actual data collection in a few schools in Gaborone that were not included in the SACMEQ II sample.

The training was repeated in the regions for more familiarity with the data collection manual and for the benefit of the assistant data collectors. The schools were notified about the data collection several weeks in advance. When the data collectors arrived at the school, they had to meet with the school head to verify the details of the school and what was required. They had to ensure a testing room with 20 well-placed sitting and writing places was available. They then had to further ensure that the class registers were available and that the selected learners were present.

Data were collected on two consecutive days. On the first day, data collectors administered the learner questionnaire and reading test in addition to the school head questionnaire as well as the teacher questionnaire and teacher test. Upon leaving the school, data collectors had to check all the information collected, before returning to the school the following day for the administration of the learner mathematics test.

Data entry and data cleaning

A team of 6 temporary staff were appointed and trained in the use of WINDEM, a special data entry package to be used in SACMEQ. The numbers of keystrokes required to enter one copy of each data collection instrument were as follows: pupil questionnaire: 150; pupil reading test: 85; pupil mathematics test: 65; teacher questionnaire: 587; teacher reading test: 51; teacher mathematics test: 43; school head questionnaire: 319; school form: 58; and pupil name form: 51

In the case of Botswana the total number of keystrokes was as follows: pupil questionnaire: 762,600; pupil reading test: 429,080; pupil mathematics test: 328,250; teacher questionnaire: 358,657; teacher reading test: 15,504; teacher mathematics test: 14,061; school head questionnaire: 86,130; school form: 39,150; and pupil name form: 259,284. That is, a total of 2,292,716 keystrokes were required to enter all of the data for Botswana.

An experienced keyboard operator can work at a rate of 25 keystrokes per minute (working from multi-paged questionnaires and stopping occasionally to clarify individual questionnaire entries with the supervisor). Assuming that this kind of work rate could be

sustained for, say, around a maximum of six hours per day, then the whole data entry operation for Botswana was estimated to amount to around 255 person days of data entry work. This implied an estimated five weeks of work for the 10-person data entry team that operated in Botswana. However, the work was completed in 3 months.

At the end of this procedure the data files were sent by email to the unit 'Monitoring Educational Quality' at the IIEP in Paris. Many consistency checks were made for many variables as well as for the identification codes used. The IIEP team had many queries. The first data files were sent to Paris in February of 2001 and after fifteen to-ings and fro-ings the files were finally declared to be clean on 5 December of 2001.

Merging, weighting, and the statistical analyses

The merging process required the construction of a single data file for each school system in which pupils were the units of analysis. This was achieved by "disaggregating" the teacher and school head data over the pupil data. That is, each record of the final data file for a country consisted of the following four components: (a) the questionnaire and test data for an individual pupil, (b) the questionnaire and test data for his/her mathematics and reading teacher, (c) the questionnaire data for his/her school head, and (d) school and pupil "tracking forms" that were required for data cleaning purposes.

The merged file enabled linkages to be made among pupils, teachers, and school heads at the "between-pupil" level of analysis. To illustrate, with the merged file it was possible to examine questions of the following kind: "What are the average reading and mathematics test scores (based on information taken from the pupil tests) for groups of pupils who attend urban or rural schools (based on information taken from the school head questionnaire), and who are taught by male or female teachers (based on information taken from the teacher questionnaire)?"

The calculation of sampling weights could only be conducted after all files had been cleaned and merged. Sampling weights were used to adjust for missing data and for variations in probabilities of selection that arose from the application of stratified multi-

stage sample designs. There were also certain country-specific aspects of the sampling procedures, and these had to be reflected in the calculation of sampling weights.

Two forms of sampling weights were prepared for the SACMEQ II Project. The first sampling weight (RF2) was the inverse of the probability of selecting a pupil into the sample. These “raising factors” were equal to the number of pupils in the defined target population that were “represented by a single pupil” in the sample. The second sampling weight (pweight2) was obtained by multiplying the raising factors by a constant so that the sum of the sampling weights was equal to the achieved sample size.

The Rasch scaling could only be conducted after all countries data files had been cleaned. Some countries took a long time over this and it was only in 2003 that the final country was ready and the scaling and scoring could begin. This is not an easy process and took some time. Once this had been completed then all of the calculation required for the dummy tables could be undertaken. This was done by the Paris ‘Monitoring Educational Quality’ team and sent out to countries.

Chapter 3

Pupil's Characteristics and their Home Environments

Introduction

In this chapter, key information about Standard 6 pupils and their home environment has been provided. Although the range of factors within pupils' home environment is a very broad one, this chapter focuses on a small set of key variables that are expected to have an effect on their learning. It is a matter of common sense that some home environments and some of the practices within them are more supportive of pupil learning than others. Homes that possess many resources ordinarily create more learning opportunities for pupils than those homes that do not. As such, schools that draw pupils from homes with a higher socio-economic status tend to be "better" schools than those that attract pupils from homes with a low socio-economic status. Such information can serve as a baseline against which comparisons can be made across different geographical units and over time. The question this chapter addresses is: What were the characteristics of the Grade 6 pupils and their home environment?

Interpretation of the data analyses

When interpreting the results presented in this report, it must be noted that the variables presented represent only a small subset of a much broader range of variables derived from the data collected. The rest of the variables are presented as descriptive statistics in a separate publication, and readers interested in these can obtain these from the Ministry.

Another important point to take note of is that, with each statistic presented, there is a corresponding sampling error (SE) provided alongside it. Providing the reader with standard errors of sampling is important because the results presented are based on a sample of Standard 6 pupils, not on the entire population. In the case of Botswana, the sample estimate of the population percentage would have a standard error of ± 2.5 percent. This sampling accuracy implies that, 95 percent of the time, we are sure that the population value lies within ± 5 percent of the sample estimate. In other words, the limit is

two standard errors of sampling. This level of accuracy also applies to the sampling errors for means presented in this study.

The reader must be advised, however, that the standard error for the entire sample will invariably be smaller than the standard error for subgroups of the sample. This is mainly due to the fact that the size of the subgroups is much smaller than the total sample size, and higher levels of accuracy for subgroups would have required a substantial increase in the size of these subgroups, with implications for cost, time and logistics.

The foregoing is illustrated in Table 3.1. The standard error for the age of entire sample of Standard 6 pupils in Botswana is given as 0.41 months. This implies that, given that the mean age for the sample is 157.8 months, we can be 95 percent confident that the mean age of pupils in Standard 6 in Botswana lies between 156.98 months (i.e. $157.8 - 2(0.41)$) and 158.62 months (i.e. $157.8 + 2(0.41)$). Please note, however, that the standard error for each of the regions is greater than the standard error for Botswana as a whole. It should be noted that standard errors for the regions vary considerably, and this is partly due to the differences in the distribution of pupils among schools within the different regions. In addition, the structure of the sample design employed was different from region to region.

Lastly, the results presented are based on data collected from the school (i.e. school heads), reading and mathematics teachers and pupils. However, data from schools and teachers were aggregated over pupil data. It should be noted therefore that in this study, the pupil is the unit of analysis. Percentage of variables that describes teachers and schools therefore should be interpreted as referring to “the percentage of pupils taught by teachers, or attending schools, with the particular characteristic” as the case may be.

Specific policy questions related to educational input

In order to guide the data analysis, the very broad educational policy question posed in the introductory paragraph of this chapter was divided into three specific questions.

These three questions were used to develop a more structured response to the educational policy issues surrounding the main question. These questions are stated below.

- a) What were the personal characteristics (for example age and gender) and home background characteristics (for example, parent education, regularity of meals, home language, etc.) of Standard 6 pupils that might have implications for monitoring equity, and/or that might impact upon teaching and learning?
- b) What are the school context factors experienced by Standard 6 pupils (such as location, absenteeism (regularity and reasons), standard repetition, and homework (frequency, amount, correction, and family involvement)) that might impact upon teaching/learning and general functioning of schools?
- c) Did Standard 6 pupils have sufficient access to classroom materials (for example, textbooks, readers, stationery) in order to participate fully in their lessons?
- d) Did Standard 6 pupils have access to library books within their schools, and (if they did have access) was the use of these books being maximized by allowing pupils to take them home to read?

What were the personal characteristics and home background characteristics of Standard 6 pupils that might have implications for monitoring equity, and/or that might impact upon teaching and learning?

The age and gender distribution

Data on the characteristics of Standard 6 pupils, with a focus on the means, percentages and sampling errors of pupils' age and their sex, have been presented in Table 3.1.

Table 3.1. Means, percentages and sampling errors for the pupil age and sex (SACMEQ II)

| Region | Age (months) | | Sex (female) | |
|-----------------|-----------------|------|-----------------|------|
| | Mean | SE | % | SE |
| Central North | 158.5 | 1.20 | 49.0 | 2.09 |
| Central South | 158.6 | 0.81 | 52.0 | 1.07 |
| Gaborone | 153.4 | 1.25 | 54.3 | 1.62 |
| North | 155.3 | 0.71 | 49.7 | 2.04 |
| South Central | 157.1 | 0.94 | 50.4 | 1.27 |
| South | 157.3 | 0.99 | 51.9 | 1.93 |
| West | 164.7 | 1.82 | 50.1 | 2.32 |
| Botswana | 157.8 | 0.41 | 51.0 | 0.64 |

The Standard 6 pupils in the year 2000 would ideally have started schooling in 1995, and at this time the official age of entry into Standard 1 was 6 years. Data for this study were collected in October 2000. At the time of data collection, the average age of a Standard 6 pupil was therefore expected to be approximately 139 months. The figure of 139 months was derived by adding the six years of study to 6 years (the minimum entry age).

The data show that the mean age of Standard 6 pupils in the sample was 157.8 months, suggesting that they were about one and half years older than expected. This is partly because of the presence of repeaters as shown in Table 3.2. Another reason could also be that some parents prefer to wait until their children were old enough to travel longer distances to school. From the data in the table it can be seen that over one third of the Standard 6 pupils in 2000 reported to have repeated a class at least once. Table 3.1 also shows the distribution of boys and girls in 2000. These figures are not different from the 1991 national census figures which gave the ratio of boys to girls as 50.01 (CSO projections 1991-2021). The figures show that there were gender-based disparities in Botswana Standard 6 pupils' access to schooling in the year 2000.

Language, attendance and repetition rates of Standard 6 pupils

The percentages, means and sampling errors of the language pupils used in their home, their rate of absenteeism and repetition rates have been presented in Table 3.2, together with the corresponding sampling errors.

Table 3.2. Percentages, mean, and sampling errors for speaking English, days absent, and repetition (SACMEQ II)

| Region | Speak English | | Days absent | | Repetition | |
|-----------------|---------------|------|-------------|------|------------|------|
| | % | SE | Mean | SE | % | SE |
| Central North | 66.7 | 3.55 | 0.4 | 0.07 | 37.2 | 2.94 |
| Central South | 70.3 | 2.82 | 0.4 | 0.08 | 25.7 | 2.31 |
| Gaborone | 90.7 | 2.25 | 0.4 | 0.08 | 27.5 | 3.01 |
| North | 73.5 | 4.30 | 0.3 | 0.05 | 33.7 | 3.57 |
| South Central | 75.1 | 3.49 | 0.2 | 0.04 | 29.5 | 2.02 |
| South | 74.3 | 3.62 | 0.5 | 0.09 | 28.7 | 2.14 |
| West | 75.1 | 3.10 | 0.8 | 0.08 | 45.5 | 3.55 |
| Botswana | 74.0 | 1.34 | 0.4 | 0.03 | 31.4 | 1.02 |

Table 3.2 shows the results of the three questions asked, the first being whether pupils spoke English sometimes, often or all the time when they were not in school. In 2000 English was used as a medium of instruction from Standard 5 upwards. From Standard 1 to 4 the medium of instruction was Setswana, with English taught as a subject. For some of the pupils, therefore, English was spoken as a third or fourth language. Since all subjects except Setswana are conducted in English, a good command of English is therefore an advantage. In Botswana a large percentage (74%) of the Standard 6 pupils spoke English at least sometimes. This means that 26 percent never spoke English at home. English is spoken the least in the Central North region (66.7%).

Since the more days a pupil is absent the more the pupil misses opportunities for learning, it can be assumed that absenteeism negatively affects pupils' performance. A question was therefore asked concerning the number of days the pupils were absent during the

month prior to data collection. From the results presented in Table 3.2 it can be seen that a Standard 6 pupil in Botswana was absent for two fifths of a day in the month preceding data collection in 2000. The highest absenteeism was reported in the West region where the mean was 0.8 day, and the lowest was in the South Central region where the rate was 0.2 day. These rates of absenteeism are very low, and this is commendable. In fact, one could say absenteeism was not a problem in Botswana. In 2000 Government provided a free mid-morning meal to all public schools. Pupils attending schools located in remote areas actually received two meals per day. The low rate of absenteeism could therefore be attributed to the feeding scheme that served as an incentive for attendance, especially for those children coming from poor families.

As mentioned earlier, repetition rates in Botswana were fairly high, and this is worrying. The 2000 Standard 6 pupils had been asked whether they had repeated a class at least once, and the results presented in the table show that 31.4 percent of the pupils in Botswana had repeated a standard at least once. The West region was the worst affected in this regard, with almost half of the pupils (45.5%) reporting that they had repeated at least once. There are several reasons why repetition rates in this region were so high. It is important to note that the West region is where one of Botswana's marginalized ethnic minority groups, the San (sometimes referred to by the now derogatory term "Bushmen") are found. Most people from this ethnic group still survive on hunting wild animals and gathering wild fruits. Many of them therefore move to good hunting areas during the hunting season together with their children. Another possible reason for the high repetition rates could be the long distances some pupils in this region have to walk to school. During cold winters and in the rainy season, some pupils are likely to stay home. It is important for the Ministry to address this problem since poor attendance frequently leads to dropout.

Policy suggestion 3.1: Ministry of Education's Research Unit must conduct an investigation into the problem of high rates of repetition in order to establish its causes and recommend appropriate interventions to be implemented.

Reasons for Absenteeism

Pupils who reported having been absent were further asked to indicate the reasons for their absence. Percentages and standard errors for the different reasons provided have been presented in Table 3.3.

Table 3.3. Percentages and sampling errors for reasons for pupils' absenteeism (SACMEQ II)

| Region | Illness | | Family reasons | | Fees | | Work | |
|-----------------|-------------|-------------|----------------|-------------|------------|-------------|------------|-------------|
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 81.8 | 2.87 | 7.9 | 3.06 | 2.3 | 1.58 | 1.0 | 1.02 |
| Central South | 66.9 | 5.17 | 14.3 | 3.51 | 2.6 | 1.36 | 2.6 | 1.89 |
| Gaborone | 54.1 | 7.11 | 15.5 | 6.02 | 1.7 | 1.73 | 7.4 | 4.26 |
| North | 71.4 | 6.79 | 9.6 | 3.77 | 0.0 | 0.00 | 0.0 | 0.00 |
| South Central | 76.7 | 3.88 | 13.6 | 4.06 | 0.0 | 0.00 | 0.1 | 0.12 |
| South | 79.8 | 3.34 | 12.6 | 3.56 | 0.0 | 0.00 | 1.7 | 1.20 |
| West | 70.7 | 6.66 | 9.9 | 2.64 | 0.6 | 0.58 | 4.5 | 1.51 |
| Botswana | 72.7 | 1.98 | 12.0 | 1.38 | 1.1 | 0.41 | 2.3 | 0.64 |

Of the four reasons presented in Table 3.3, the most common in Botswana was illness (72.7 %). A small percentage from some regions cited fees and work as the reasons for being absent. Education in Botswana is free, but pupils are expected to contribute towards the payment of cooks for the school feeding programme. This is called a Feeding Fee, and it ranges from P15 to P20 (US\$4) per term. Furthermore, policy does not allow the exclusion of pupils from school due to non-payment of any fee. Nevertheless, there have been isolated cases of exclusion on such grounds.

Child labour has never been a problem in Botswana, and those who attributed their absence to “work” could have been referring to the demands of family responsibilities such as looking after younger siblings, the elderly or the sick. It is therefore commendable that Botswana has made every effort to remove work and school fees as barriers to children’s participation in education. While the private schools can exclude a

child from their schools for non payment of school fees, such children have the option to attend public schools.

What were the home circumstances of Standard 6 pupils?

Pupils' place of residence during school term

Table 3.4. Means, percentages and sampling errors for place where pupils stayed

| Region | Place where pupils stay during the school week | | | | | | | |
|-----------------|--|-------------|------------------|-------------|--------------|-------------|---------------|-------------|
| | Parent/Guardian | | Relatives/Family | | Hostel/Board | | Self/Children | |
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 81.4 | 2.28 | 16.1 | 1.96 | 1.5 | 0.63 | 1.0 | 0.43 |
| Central South | 76.3 | 3.39 | 15.1 | 1.84 | 5.3 | 2.69 | 3.3 | 1.01 |
| Gaborone | 86.0 | 2.76 | 13.2 | 2.61 | 0.6 | 0.40 | 0.2 | 0.25 |
| North | 88.2 | 1.52 | 10.8 | 1.25 | 0.3 | 0.27 | 0.7 | 0.52 |
| South Central | 86.9 | 2.27 | 10.0 | 1.67 | 0.7 | 0.39 | 2.4 | 1.09 |
| South | 86.9 | 2.16 | 12.0 | 2.10 | 0.2 | 0.17 | 1.0 | 0.61 |
| West | 71.4 | 3.82 | 17.1 | 2.19 | 8.1 | 3.74 | 3.4 | 1.27 |
| Botswana | 82.4 | 1.08 | 13.3 | 0.76 | 2.3 | 0.68 | 1.9 | 0.35 |

during the school week (SACMEQ II)

Pupils were asked to indicate the place where they ordinarily stayed during the school week. The percentages and standard errors showing their responses have been presented in Table 3.4.

From Table 3.4 it can be seen that in 2000 the majority of the Standard 6 pupils (comprising 82.4 %) stayed with their parents or guardians. This was followed by those who stayed with other relatives or another family (13.3 %). The rest were either in a boarding school or stayed alone or with other children. The Central South and the West regions had the highest number of pupils who did not live with their parents. It is common practice for parents in these two regions to go and work either in the eastern part

of the country or in South Africa, leaving their families behind. Botswana does not provide boarding facilities for its schools except for a few remote schools mostly found in the West region. That is why the highest number of pupils who said they lived in hostels or boarding facilities was found in West region (8.1%).

The presence of books that pupils can have access to generally provides pupils with enhanced learning opportunities. Pupils were therefore asked to estimate the number of books in the homes where they stayed during the school week. The purpose was to relate the average number of books in the home to reading achievement at a later stage. As has been reflected in Table 3.5, the average Standard 6 pupil in Botswana in 2000 came from a home with 25 books. As expected, a pupil in Gaborone came from a home with the highest average number of books (50). The least number of books were found in the Central North and West regions.

Possessions in the pupils' homes

Pupils were also asked to indicate the possessions they had in the home. They had to pick these from a carefully selected set that included a daily newspaper, weekly or monthly magazine, radio, television set, video cassette recorder (VCR), cassette player, telephone, refrigerator, car, motor cycle, bicycle, piped water and electricity. For each available item a pupil obtained a score of 1, and zero if it was not available in the home. These scores were then summed to form an 'Index of possessions'. This was used to reflect the material wealth of the household. Homes that had all the items received a score of 13 while those that had none received a score of zero. As was expected, Gaborone reflected the highest score of 7.6. The Central North and the West regions had the lowest scores of 4.4 and 4.2 respectively.

Table 3.5 Means and sampling errors of pupil home-related characteristics (SACMEQ II)

| Region | Books at home (number) | | Possessions at home (index) | | Meals (index) | | Parent education (index) | |
|-----------------|------------------------|------|-----------------------------|------|---------------|------|--------------------------|------|
| | Mean | SE | Mean | SE | Mean | SE | Mean | SE |
| Central North | 13.0 | 2.46 | 4.4 | 0.35 | 10.9 | 0.14 | 3.0 | 0.14 |
| Central South | 18.3 | 3.17 | 5.1 | 0.26 | 10.9 | 0.18 | 3.0 | 0.10 |
| Gaborone | 50.0 | 9.15 | 7.6 | 0.46 | 10.8 | 0.15 | 4.3 | 0.19 |
| North | 21.5 | 3.88 | 5.7 | 0.32 | 10.9 | 0.11 | 3.6 | 0.16 |
| South Central | 33.4 | 5.80 | 6.1 | 0.28 | 10.8 | 0.12 | 3.3 | 0.14 |
| South | 26.8 | 5.98 | 5.7 | 0.41 | 10.5 | 0.16 | 3.0 | 0.17 |
| West | 14.3 | 4.37 | 4.2 | 0.36 | 9.9 | 0.18 | 2.8 | 0.19 |
| Botswana | 24.7 | 1.99 | 5.5 | 0.13 | 10.7 | 0.06 | 3.2 | 0.06 |

Regularity of meals

One factor that is believed to influence participation in class is that of regularity of meals and, consequently, the nutritional status of pupils. Chronic and periodic hunger associated with irregular meals can affect a child's concentration in class. A question was therefore asked concerning the number of meals pupils normally had per day. The 'Index of regular meals' was created by giving a minimum of 1 score for each of the three meals (breakfast, lunch and supper), and a maximum score of 4 for each one of them. A pupil who ate no meals at all for the whole week had a score of 3, one who ate all meals a score of 12. The figures shown in Table 3.5 indicate that the average meal index for a pupil in Botswana was 10.7, which is quite high. Taking into account the fact that schools in Botswana implemented a school feeding programme, the situation with regard to feeding and nutrition was very good. Furthermore, with the exception of the meal index for West region that fell far below the mean, the meal indices for the rest of the country showed no major disparities.

Parents' education

There is a strong association between a child's performance in school and its parents' level of education. A more educated parent is believed to understand and appreciate the value of education and is therefore not only more likely to take part in a child's school work, but can give more meaningful support to the child (e.g. help with homework) than a parent whose level of education is low. Pupils were therefore asked questions on their parents' level of education and an index was derived from this. The scores ranged from 1 = no education to 6 = training after secondary education. The responses for both parents were summed and divided by 2 in order to create an index. The national average index for Botswana was 3.2. Once again, Gaborone had the highest index of 4.3, and the lowest was for West region (2.8).

Lighting in pupils' homes

In order to do homework (that requires reading and writing) at night, pupils need access to good lighting, and electricity is the most common source of power for lighting. However, in some countries not all homes have access to electric power, especially those located in isolated villages in the rural areas. On the other hand, most urban centres have access to electricity. In Botswana, there are other sources of lighting besides electricity, among them gas, paraffin and candles. Homes with electricity are also in a better position to provide power for equipment and devices such as radio, television, video cassette players and recorders, all of which can facilitate learning. Pupils were therefore asked to indicate the type of power, if any, used for lighting in their homes. The percentages and standard errors for the various categories of power have been presented in Table 3.6.

Table 3.6. Percentages and sampling errors for the lighting in pupils' homes (SACMEQ II)

| Region | No light | | Candle/Oil Lamp | | Gas lamp | | Electric lighting | |
|-----------------|----------|------|-----------------|------|----------|------|-------------------|------|
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 5.3 | 2.19 | 76.0 | 4.66 | 2.0 | 0.58 | 16.7 | 4.91 |
| Central South | 8.1 | 2.52 | 72.7 | 3.59 | 3.1 | 0.81 | 16.2 | 3.05 |
| Gaborone | 0.0 | 0.00 | 42.9 | 5.74 | 2.8 | 0.77 | 54.2 | 6.07 |
| North | 1.5 | 0.57 | 68.1 | 6.97 | 1.5 | 0.55 | 28.9 | 7.13 |
| South Central | 2.1 | 1.46 | 70.4 | 3.90 | 2.3 | 0.68 | 25.2 | 4.04 |
| South | 2.2 | 0.74 | 76.1 | 5.34 | 2.6 | 0.69 | 19.1 | 5.28 |
| West | 3.7 | 0.84 | 72.3 | 4.34 | 2.0 | 0.90 | 22.0 | 3.95 |
| Botswana | 3.8 | 0.71 | 70.1 | 1.82 | 2.4 | 0.29 | 23.7 | 1.80 |

It is encouraging to note that only a small percentage of pupils came from homes that had no lighting (3.8%). The majority of pupils came from homes that used either candles or paraffin lamps, except for Gaborone where the most common source of lighting was electricity (54.2%).

Quality of pupils' homes

Since the material used to build homes generally reflects the quality of pupils' dwelling place, pupils were asked to indicate the material that was used to make the floors, roof and walls of the house where they lived during term time. The percentages and sampling errors for the materials used to make floors, walls and roofs in Standard 6 pupils' homes, as well as the overall index reflecting the quality of their homes, have been presented in Tables 3.7-3.12.

Table 3.7. Percentages and sampling errors for structure of floors in pupils' homes (SACMEQ II)

| Region | Not sealed | | Wood | | Cement | | Carpet/Tiles | |
|-----------------|------------|------|------|------|--------|------|--------------|------|
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 26.5 | 5.38 | 0.0 | 0.00 | 67.0 | 4.88 | 6.5 | 1.94 |
| Central South | 20.0 | 2.49 | 2.1 | 0.68 | 72.7 | 2.74 | 5.1 | 0.97 |
| Gaborone | 1.5 | 0.66 | 0.3 | 0.28 | 55.5 | 6.60 | 42.7 | 6.79 |
| North | 11.8 | 4.11 | 0.2 | 0.23 | 78.8 | 3.67 | 9.2 | 1.93 |
| South Central | 7.0 | 2.30 | 0.3 | 0.23 | 77.2 | 3.91 | 15.5 | 3.82 |
| South | 14.6 | 4.21 | 0.0 | 0.00 | 71.2 | 5.09 | 14.2 | 4.84 |
| West | 29.0 | 5.93 | 3.5 | 0.96 | 58.6 | 4.67 | 8.8 | 2.25 |
| Botswana | 15.9 | 1.45 | 0.9 | 0.18 | 70.2 | 1.69 | 13.0 | 1.35 |

Most Standard 6 pupils in Botswana described the floors of their homes as being covered with cement (70.2 %). Only 13 percent had floors covered with carpet or tiles. Of the approximately 16 percent who said their homes were not sealed, the highest number was located in the West region (29 %) followed by the Central North. As can be expected the best floors were found in Gaborone where 55 percent of the homes were covered with cement only and over 42 percent with either carpet or tiles. In the next table information has been given on the quality of the walls of the homes.

Table 3.8. Percentages and sampling errors for structure of walls in pupils' homes SACMEQ II)

| Region | Not sealed | | Stones | | Sheets/Wood | | Cut stone/Bricks | |
|-----------------|------------|------|--------|------|-------------|------|------------------|------|
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 4.8 | 1.41 | 36.6 | 5.72 | 5.6 | 1.67 | 53.1 | 6.77 |
| Central South | 7.3 | 1.72 | 28.0 | 3.26 | 5.2 | 1.79 | 59.5 | 4.09 |
| Gaborone | 2.1 | 0.91 | 16.0 | 3.54 | 6.1 | 1.43 | 75.8 | 4.84 |
| North | 7.8 | 3.81 | 31.5 | 4.47 | 8.0 | 1.56 | 52.7 | 5.22 |
| South Central | 4.6 | 1.51 | 22.6 | 2.80 | 6.3 | 1.37 | 66.4 | 4.44 |
| South | 6.8 | 2.92 | 27.7 | 4.58 | 7.9 | 1.76 | 57.6 | 5.86 |
| West | 28.0 | 5.40 | 32.4 | 4.09 | 11.6 | 2.48 | 27.9 | 4.74 |
| Botswana | 7.8 | 0.92 | 27.8 | 1.59 | 6.8 | 0.68 | 57.6 | 2.04 |

From Table 3.8 it can be seen that Gaborone still emerged as having the best homes in terms of the material the walls were made from. Most of the pupils in Gaborone (75.8 %) lived in homes with walls that were made from cut stone or bricks. In Botswana as a whole, the walls were mostly made of bricks (57.6 %) followed by stone (27.8 %). In all of the regions bricks or cut stones were used in more than fifty percent of households except in West region where only 27.9 percent of pupils' homes were made of bricks or cut stone. Pupils in West region also reported the highest number of pupils' homes whose walls were not sealed (28 %).

In 2000, the vast majority of pupils in Botswana lived in houses whose roofs were made of metal or asbestos (see Table 3.9). By metal/Asbestos pupils meant corrugated iron which is one of the most commonly used material for roofing in the country. The second most common option was 'Not sealed'. Pupils whose homes were grass thatched must have understood not sealed as meaning grass, as living in a house without a roof at all is a somewhat rare phenomenon in Botswana. Traditionally, Botswana use grass to thatch their huts. The majority of houses in Gaborone either had corrugated iron roofing (53.6%) or were tiled (38.1%). In 2000 tiles were the most expensive of the given options and were therefore mainly found in urban areas. Cement concrete was the least

selected by pupils because it is not very common since it is mainly used in multi-storey buildings.

Table 3.9. Percentages and sampling errors for structure of roof in pupils' homes (SACMEQ II)

| Region | Not sealed | | Metal/Asbestos | | Cement concrete | | Tiles | |
|-----------------|------------|------|----------------|------|-----------------|------|-------|------|
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 38.9 | 6.51 | 47.0 | 5.87 | 3.2 | 0.89 | 11.0 | 2.00 |
| Central South | 31.4 | 3.18 | 57.2 | 3.74 | 2.9 | 1.12 | 8.5 | 1.47 |
| Gaborone | 2.8 | 1.18 | 53.6 | 4.87 | 5.4 | 1.93 | 38.1 | 4.66 |
| North | 28.6 | 6.09 | 54.0 | 5.94 | 2.5 | 1.10 | 14.9 | 3.91 |
| South Central | 14.8 | 3.55 | 64.3 | 5.02 | 6.5 | 1.83 | 14.4 | 2.89 |
| South | 22.5 | 5.24 | 60.8 | 5.04 | 7.4 | 3.41 | 9.4 | 2.62 |
| West | 43.5 | 6.66 | 41.3 | 5.99 | 7.4 | 2.63 | 7.9 | 3.57 |
| Botswana | 26.0 | 1.85 | 55.6 | 2.00 | 5.0 | 0.77 | 13.4 | 1.07 |

An index was created of the quality of homes that the pupils lived in. Since walls, floors, roofs and lighting constitute the key features of houses, these were used to get an index of the quality of the home. The overall index of the quality of the home therefore took into account the quality of the materials for the walls, floor and roof as well as the type of lighting in the home. If a home was made of the lowest quality of materials for the floor, walls and roof as well as the worst form of lighting, it got score of 4. If, on the other hand, it was made of materials of the highest quality, and had the best type of lighting, the score was 16.

Based on the responses given by pupils in describing the homes where they lived during the school week, pupils in Gaborone lived in the best homes, with a mean index of 12.8. This is not surprising since it is the capital city and the most well developed of all the urban centres. Most of the houses in Gaborone are supplied by the Botswana Housing Corporation. The corporation builds houses that meet certain minimum quality, and leases or sells them. In addition, there are institutional houses provided for different categories of workers. Government as well as the private sector also offer mortgages to

those who qualify, and this makes it easier for people to build good quality houses, mostly in the urban areas.

Table 3.10. Means and sampling errors for the general quality of pupils' homes (SACMEQ II)

| Region | General quality of pupil's homes (Index) | |
|-----------------|---|------|
| | Mean | SE |
| Central North | 9.8 | 0.41 |
| Central South | 10.0 | 0.18 |
| Gaborone | 12.8 | 0.31 |
| North | 10.5 | 0.39 |
| South Central | 11.1 | 0.27 |
| South | 10.4 | 0.41 |
| West | 9.1 | 0.43 |
| Botswana | 10.5 | 0.13 |

It is not surprising that the homes of the lowest quality were found in West region since this is where the San people are found. Some of the San people are semi-nomadic, and this style of life generally does not encourage the construction of structures that are as strong, durable and of high quality since they are frequently left idle for long periods, or are altogether permanently abandoned.

Policy suggestion 3.2: In view of the unfavourable circumstances affecting pupils from the marginalized, minority ethnic or social groups (e.g. those in the West and North Central Region), the Ministry of Education should examine the possibility of providing additional boarding facilities for children who need them, but balance this against the provision of more flexible schooling arrangements for the children of those communities that choose to retain their traditional ways of life.

Livestock in pupils' homes

One of the measures of wealth, or socio-economic status of the families Standard 6 pupils came from is the number of livestock owned by the family. Generally, the more the livestock, the greater the wealth! However, in Botswana it is common for those people

who ordinarily live in urban areas to own livestock at a cattle post some distance away from the town or city. These are probably the livestock to which many urban pupils were referring. The types of livestock selected for this purpose were cattle, sheep, goats, horses or donkeys, pigs and chickens. The means and sampling errors for the number of the different livestock have been presented in Table 3.11.

Table 3.11. Means and sampling errors for the amount of livestock at pupils' homes (SACMEQ II)

| Region | Cattle | | Sheep | | Goats | | Horses/ Donkeys | | Pigs | | Chickens | |
|-----------------|--------|------|-------|------|-------|------|--------------------|------|------|------|----------|------|
| | Mean | SE | Mean | SE | Mean | SE | Mean | SE | Mean | SE | Mean | SE |
| Central North | 21.6 | 3.89 | 4.8 | 1.27 | 14.1 | 1.89 | 7.7 | 1.61 | 2.0 | 1.40 | 18.3 | 3.34 |
| Central South | 22.3 | 3.67 | 4.7 | 1.19 | 16.6 | 1.66 | 9.0 | 1.67 | 0.6 | 0.22 | 16.0 | 1.47 |
| Gaborone | 17.6 | 3.15 | 5.0 | 1.24 | 13.8 | 2.43 | 5.5 | 1.49 | 1.1 | 0.30 | 13.7 | 2.26 |
| North | 16.6 | 4.25 | 2.3 | 0.71 | 11.3 | 1.99 | 3.8 | 0.53 | 0.3 | 0.11 | 15.7 | 1.42 |
| South Central | 10.7 | 1.51 | 1.8 | 0.33 | 10.5 | 1.58 | 3.8 | 0.54 | 0.6 | 0.21 | 15.9 | 1.32 |
| South | 11.6 | 2.00 | 3.5 | 0.64 | 12.6 | 2.03 | 5.8 | 0.65 | 0.1 | 0.05 | 11.2 | 1.03 |
| West | 27.3 | 7.35 | 5.9 | 2.14 | 20.5 | 3.00 | 11.9 | 2.97 | 1.6 | 1.28 | 16.1 | 2.54 |
| Botswana | 17.6 | 1.36 | 3.9 | 0.41 | 13.9 | 0.75 | 6.7 | 0.55 | 0.9 | 0.25 | 15.4 | 0.75 |

From Table 3.11 it can be seen that the wealthiest region in terms of livestock was West region. As has already been indicated, pupils from urban areas who indicated how much livestock they had were referring to the livestock kept at cattle posts or farms and not in the towns and cities. It is also important to note that, while West and Central North had the lowest "Index of Possessions" (Table 3.5), they are the wealthiest when measured in terms of the livestock in their homes.

How much did parents help children with their schoolwork?

Parental involvement in a child's school work is very important. A child's education should ideally be a joint effort between the home and the school. Pupils were therefore

asked questions relating to how much interaction they had with their parents or someone at home. Such interaction varied in terms of the nature and intensity of involvement.

Help with school work

One set of questions focused on the assistance pupils received with homework. It does not take much perspicacity to realise that pupils who receive help with homework at home have a comparatively higher opportunity to learn than those who do not get help. More importantly, the nature of such assistance is important. Some forms of help (e.g. helping with the homework) are more effective than others (e.g. where the parent simply ensures that homework has been done).

Table 3.12. Means and sampling errors for the assistance pupils received at home with school work.(SACMEQ II)

| Region | Home assistance 'most of the time' with school work | | | | | |
|-----------------|---|------|------------------------|------|--------------------------|------|
| | Ensure homework done | | Help with the homework | | Look at school work done | |
| | % | SE | % | SE | % | SE |
| Central North | 47.4 | 4.01 | 37.4 | 4.50 | 28.3 | 3.42 |
| Central South | 39.1 | 3.62 | 32.3 | 2.96 | 32.2 | 3.16 |
| Gaborone | 57.3 | 4.52 | 44.1 | 3.56 | 42.8 | 4.50 |
| North | 46.9 | 4.74 | 36.5 | 2.66 | 39.0 | 4.86 |
| South Central | 48.4 | 4.09 | 37.1 | 2.93 | 39.3 | 2.44 |
| South | 46.3 | 4.59 | 37.0 | 2.64 | 34.8 | 3.80 |
| West | 32.4 | 4.02 | 22.8 | 2.60 | 26.2 | 4.64 |
| Botswana | 45.2 | 1.63 | 35.4 | 1.27 | 34.5 | 1.39 |

The results presented were disappointing. Relatively few parents helped pupils with their school work. Less than half of the parents or guardians ensured that children had done their homework, and only 35 percent of them helped with homework. Even fewer parents or guardians looked at the homework their children had done. Less than half of the Standard 6 pupils in Botswana indicated that they had someone at home who ensured that they had done their school work. On whether someone at home actually helped with the

homework and whether they looked at the work that had been done, even less involvement was reported (35% and 34.5% respectively).

Gaborone, an urban region, registered the highest percentage of pupils who received all three forms of assistance while the lowest percentages were recorded in the West region. The disparity between urban and rural areas was expected since one assumes that there are more educated parents in the urban areas than in the rural areas. Most of the uneducated parents, even if they had interest in assisting their children with homework, would not be literate enough to assist. Other reasons could be that the parents feel that it is not their responsibility to help their children with school work, but rather that of the teachers. The more educated the parents are, the more one expects them to pay attention to their children's school work.

Assistance with reading

Pupils were also asked to indicate the type of assistance they received in their homes with reading, and the percentages of pupils who received assistance as well as the standard errors of sampling associated with these percentages have been presented in Table 3.13.

Table 3.13. Means and sampling errors for the assistance pupils received at home with Reading (SACMEQ II)

| Region | Home assistance 'most of the time' with school work | | | |
|-----------------|---|------|----------------------------------|------|
| | Ask to read | | Questions on school reading work | |
| | % | SE | % | SE |
| Central North | 21.7 | 2.96 | 24.0 | 3.23 |
| Central South | 23.5 | 2.89 | 25.5 | 2.78 |
| Gaborone | 23.6 | 2.30 | 33.8 | 2.30 |
| North | 22.0 | 2.35 | 21.5 | 2.42 |
| South Central | 28.4 | 2.34 | 27.8 | 2.43 |
| South | 24.1 | 1.82 | 22.9 | 2.52 |
| West | 24.0 | 2.81 | 17.8 | 1.97 |
| Botswana | 24.3 | 1.02 | 25.0 | 1.06 |

Only 24.3 percent of pupils in Botswana ever had someone at home ask them to read for them or asked them questions about what they had read. While the figures are disappointingly low, there was no major difference across all regions. Even Gaborone recorded very low percentages of pupils who were asked by their parents or guardians to read, or who were asked some questions on what they had read. This should be cause for concern to the Ministry.

Assistance with mathematics

Pupils were finally asked to indicate to what extent they received assistance with the Mathematics homework assigned to them. The percentages and sampling errors of pupils who reported that they received assistance “most of the time” have been presented in Table 3.14.

Table 3.14. Means and sampling errors for the assistance pupils received at home with school mathematics work (SACMEQ II)

| Region | Home assistance ‘most of the time’ with school work | | | |
|-----------------|---|------|--------------------------------------|------|
| | Do mathematical calculations | | Questions on school mathematics work | |
| | % | SE | % | SE |
| Central North | 22.7 | 3.08 | 24.6 | 2.83 |
| Central South | 25.7 | 2.35 | 23.9 | 2.60 |
| Gaborone | 29.4 | 2.32 | 31.3 | 2.61 |
| North | 20.2 | 2.81 | 19.3 | 2.52 |
| South Central | 24.2 | 2.48 | 30.0 | 2.43 |
| South | 22.7 | 2.36 | 29.6 | 3.02 |
| West | 20.1 | 2.66 | 21.8 | 3.29 |
| Botswana | 23.8 | 1.01 | 26.2 | 1.08 |

As was the case with reading, less than a quarter of the Standard 6 pupils in Botswana reported that they had someone at home who asked them to do mathematical calculations most of the time. Slightly over a quarter pointed out that there was someone at home who asked them questions on school mathematics work most of the time.

Policy suggestion 3.3: The Department of Primary Education should embark on a massive campaign where it encourages parents, perhaps through Parent Teacher Associations, to get more involved in their children's homework. They should explore the possibility of employing those effective methods used in some private schools (e.g. reading cards and signatures made at the end of each completed homework).

Policy suggestion 3.4: The Ministry of Education's Research Unit must conduct a similar study on the characteristics of Standard 6 pupils, the circumstances of the homes they came from, and their interaction with their parents or guardians in order to monitor changes that might take place over time.

Conclusion

This chapter provided the reader with some baseline data relating to Standard 6 pupils' characteristics, the circumstances of the homes they came from, and their interaction with their parents or guardians. All data revealed the picture as it was in 2000. When similar data have been collected at another point in the future, it should facilitate the process of monitoring changes, if any, that may have taken place over time. Such information is of great value to the planner in Botswana's Ministry of Education.

The data revealed that Botswana's Standard 6 pupils were about 18 months older than expected. Female pupils constituted slightly more than half of the total, and this was consistent with the pattern in the general population. About three quarters of the pupils spoke English sometimes in their homes, and their attendance levels were good, the main factor accounting for their absence being illness. About a third of the pupils had repeated a standard at least once, and this raises some concern.

During term time, more than four fifths of Standard 6 pupils stayed with their parents or guardians, and 13 percent lived with relatives or friends. Only 2.3 percent of them were in boarding schools. The average Standard 6 pupil came from a home with 25 books, 5 out of 14 selected possessions, and generally had regular meals. Most pupils used candles or oil amp, but 3.8 of the pupils came from homes where there was no lighting. Most homes pupils came from were good quality homes with cement floors, stone or brick walls, and metal or asbestos roofs. A quarter of them reported that the roofs were not

sealed, and this probably referred to grass thatched houses. In most pupils' homes there were large numbers (over ten) of cattle, goats and chickens.

Less than half of the pupils had someone to ensure that they had done their homework, and only a third helped them do homework and looked at what work they had done. Fewer pupils than expected received assistance at home with their school work in reading and mathematics.

In short, the data presented in this chapter revealed that, on the whole, Botswana's education system has several positive characteristics that should be protected, among them the provision of a school meal that has led to pupils' very high rates of attendance and the removal of fees and the need for children to work which have acted as barriers to participation. The Ministry should also be commended for the gender parity it has by and large achieved in pupils' school participation. However, there is also need for the Ministry to attend to the serious problem of repetition and parents' low participation in their children's schoolwork.

From what has been highlighted in Chapter 1, Botswana has made tremendous strides in the provision of quality education. However, the conditions of schooling in the rural areas in general, and in West and Central North regions in particular, need to be improved if the objective of *Quality Education for All* is to be achieved.

Chapter 4

Teachers' Characteristics and their Viewpoints on Teaching, Classroom Resources, Professional Support, and Job Satisfaction

Introduction

In this chapter some of the characteristics and experiences of standard 6 teachers have been presented and discussed. the purpose is to present the context variables that will allow for a more accurate interpretation of achievement data and to see how such inputs to standard 6 classes change over time. it is important to improve the quality of teachers, among other things, in order to improve the quality of education as a whole. it was therefore important to examine different characteristics of teachers and their views about teaching, classroom resources, professional support, and other aspects.

in the year 2000 teachers in government primary schools were classroom teachers and taught all subjects to the pupils in the class. the two aspects of pupil achievement that were measured in this study were reading comprehension and mathematics and these were taught by the same teacher except in some private schools where they had specialist teachers for mathematics and reading. a random sub-sample of three standard 6 teachers was taken from each school and their responses to the questions asked have been discussed in the tables below.

the major questions that have been posed for this chapter are:

- 1) what were the personal characteristics of standard 6 teachers (for example, age, gender, socio-economic status), and what was the condition of their housing?

- 2) what were the professional characteristics of standard 6 teachers (in terms of academic, professional, and in-service training), and did they consider in-service training to be effective in improving their teaching?
- 3) what were the standard 6 teachers' viewpoints on (a) pupil activities within the classroom (for example, making learning enjoyable, word attack skills, etc.) (b) teaching approaches/strategies (for example, questioning, whole class teaching, etc.), (c) assessment procedures, and (d) meeting and communicating with parents?
- 4) what was the availability of classroom furniture (for example, sitting/writing places, teacher table, teacher chair, and bookshelves) and classroom equipment (for example, chalkboard, dictionary, maps, book corner, and teacher guides) in standard 6 classrooms?
- 5) what professional support (in terms of education resources centres, inspections, advisory visits, and school head inputs) was given to standard 6 teachers?
- 6) what factors had most impact upon teacher job satisfaction?

What were the personal characteristics of standard 6 teachers and what was the condition of their housing?

In this section several teacher characteristics including their age, gender, academic and professional qualifications, years of teaching experience and socio economic status have been examined.

Table 4.1(a). Means, percentages, and sampling errors for age, gender, and socio-economic background of classroom teachers (SACMEQ II)

| Region | Age (years) | | Gender (female) | | Possession at home (index) | |
|-----------------|-------------|------|-----------------|------|----------------------------|------|
| | Mean | SE | % | SE | Mean | SE |
| Central North | 34.9 | 0.80 | 71.5 | 7.45 | 7.2 | 0.41 |
| Central South | 34.6 | 1.14 | 69.1 | 5.54 | 6.7 | 0.40 |
| Gaborone | 36.7 | 0.94 | 83.6 | 5.11 | 8.9 | 0.82 |
| North | 35.5 | 1.20 | 59.1 | 9.20 | 7.5 | 0.56 |
| South Central | 36.1 | 1.31 | 69.0 | 6.41 | 7.6 | 0.36 |
| South | 34.7 | 1.25 | 68.7 | 7.17 | 7.4 | 0.48 |
| West | 30.8 | 1.11 | 37.0 | 7.74 | 6.5 | 0.46 |
| Botswana | 34.9 | 0.46 | 66.7 | 2.68 | 7.3 | 0.18 |

Age of teachers

In 2000 the youngest teachers in Botswana were in the West region as can be seen from Table 4.1. The average age of both mathematics and reading teachers in the country was thirty five. As expected, the average age of teachers in Gaborone was the highest (37 years). This was not surprising since the younger graduates are usually sent to the furthest, areas and the more mature teachers prefer to stay in the more developed eastern part of the country especially the towns and cities and the capital, Gaborone. The movement of teachers or workers in general is usually dictated by several things among them being better medical, educational and other facilities and movement to join spouses. Coupled with these are problems brought about by the HIV/AIDS pandemic. The Ministry of Education has to deal with an even higher number of applications from employees wishing to move to urban areas, mostly to the capital, where they can have both access to better medical facilities and bring dependents with them. Hence the high mean in Gaborone and the South Central region.

Gender of teachers

The majority of Standard 6 pupils in Botswana were taught by female teachers. This was true for all the regions except the West where the majority of pupils were taught by male teachers. The percentage of female teachers in Gaborone (83.6%) was higher than that for Botswana as a whole (66.7%), and much higher than that for West region (37.0%). As discussed earlier, most teachers prefer to move to the capital where there are better social services, and the most frequent cases are those of the more mature female teachers who move to Gaborone to join their spouses. This explains the high percentage of female teachers in Gaborone region.

Traditionally, primary school teaching and nursing in Botswana were occupations preferred more by females than by males. Primary school teaching used to be a 'last resort' for those who could not make it into higher education and training. Men usually found their way into the forces namely, the police, army, prison cadre etc. Men actually had more choices than women since they dominated the vocational education institutes such as brigades. This trend has been reduced over the years but for the older generation the majority of the teachers are still female.

In Table 4.1 (b) the trends in the percentage of female primary school teachers have been shown over the six years preceding 2000 nationally.

Table 4.1(b). Primary School Teachers, 1995-2000

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|----------|-------|-------|-------|-------|-------|-------|
| Male | 1925 | 2892 | 2113 | 2115 | 2243 | 2359 |
| Female | 8867 | 9890 | 9341 | 9539 | 9707 | 9776 |
| % Female | 82.2 | 77.4 | 81.6 | 81.9 | 81.2 | 80.6 |
| Total | 10792 | 12782 | 11454 | 11654 | 11950 | 12135 |

Source: Botswana Education Statistics Report- 2000

It can be seen that females continued to dominate their male counterparts in the primary school teaching profession over the years. This situation is not unique to Botswana.

Policy suggestion 4.1: The Ministry of Education should closely monitor trends in the gender composition of its workforce to make sure that it reflects the desired gender balance. In particular, it should ensure that there are no factors that discourage male participation in the teaching profession.

Possessions at home

Teachers were asked the same question that was asked the Standard 6 pupils concerning what items were found in their homes. These included a daily newspaper, a weekly or monthly magazine, radio, television set, video cassette recorder (VCR), cassette player, telephone, refrigerator, car, motor cycle, bicycle, piped water, electricity and table to write on. For each available item a teacher got a score of 1 and zero if it was not available in the home. These scores were then summed to form an 'Index of possessions'. This was used to reflect the material wealth of the households. Teachers' homes that had all the items received a score of 14 while those that had none received a score of zero. In Botswana, a teachers' home, with a possessions index of 7.1 was generally wealthier than a pupil's home (where the index, presented in Chapter 3, was 5.5). The wealthiest teachers were in Gaborone (8.9) followed by those in South Central region (7.6). The poorest teachers were in the West (6.5) and Central North regions (6.7). The eastern part of Botswana was generally wealthier than the rest of the country. It is not surprising that teachers in the South Central region and Gaborone were the wealthiest. Opportunities for acquiring such items as TVs, VCRs, and a magazine are better in urban centres than in the rural areas.

Another measure of wealth in the teacher's home is the number of livestock they have. The types of livestock used in making an assessment of such wealth were cattle, sheep, goats, horses or donkeys, pigs and chickens. The means for each of the types of livestock and the standard errors associated with them have been presented in Table 4.2 (a).

Table 4.2(a). Means and sampling errors for the type and amount of livestock at teachers' homes (SACMEQ II)

| Region | Type of livestock | | | | | | | | | | | |
|-----------------|-------------------|------|-------|------|-------|------|--------------------|------|------|------|----------|------|
| | Cattle | | Sheep | | Goats | | Horses/ Donkeys | | Pigs | | Chickens | |
| | Mean | SE | Mean | SE | Mean | SE | Mean | SE | Mean | SE | Mean | SE |
| Central North | 11.0 | 2.62 | 1.4 | 0.95 | 7.0 | 1.59 | 1.1 | 0.37 | 0.0 | 0.00 | 4.7 | 0.88 |
| Central South | 12.6 | 3.16 | 0.6 | 0.32 | 10.2 | 3.02 | 1.5 | 0.75 | 0.0 | 0.00 | 6.5 | 1.21 |
| Gaborone | 12.4 | 4.73 | 1.1 | 0.54 | 6.2 | 1.32 | 0.3 | 0.17 | 0.0 | 0.00 | 4.5 | 1.49 |
| North | 13.4 | 4.51 | 1.8 | 0.91 | 12.1 | 2.78 | 1.2 | 0.54 | 0.0 | 0.00 | 10.5 | 2.35 |
| South Central | 10.9 | 3.87 | 1.0 | 0.54 | 5.0 | 1.32 | 0.6 | 0.26 | 0.0 | 0.02 | 7.4 | 1.68 |
| South | 7.2 | 2.04 | 0.8 | 0.60 | 5.5 | 1.22 | 1.4 | 1.09 | 0.1 | 0.08 | 7.6 | 2.08 |
| West | 6.3 | 1.81 | 0.7 | 0.38 | 7.0 | 3.53 | 1.4 | 0.56 | 0.0 | 0.00 | 6.2 | 2.29 |
| Botswana | 10.6 | 1.31 | 1.0 | 0.24 | 7.4 | 0.87 | 1.1 | 0.26 | 0.0 | 0.01 | 6.7 | 0.65 |

The 2000 Standard 6 pupils in Botswana were taught by teachers who owned, on average, 11 cattle, one sheep, seven goats, one horse or donkey, seven chickens and no pigs. Pigs were generally not common, and the mean across all regions was zero or, in the case of West region, very close to zero. Botswana are traditionally a farming nation. The older generation had three homes: one in the village, a second at the lands, (this is a place mainly for crop production) and a third at the cattle post. On average, every Botswana kept some animals. Nevertheless, this culture is becoming difficult to maintain because lifestyles have changed. By 2000 teachers had demanding jobs in a village or town, not necessarily their own, and the ideal of owning livestock became a venture that was very expensive to start or maintain.

Teachers were asked to rate their living conditions as either generally poor or generally good.

Table 4.2 (b). Percentages and sampling errors for classroom teacher housing in acceptable conditions (SACMEQ II)

| Region | Teacher housing in acceptable conditions | |
|-----------------|---|-------------|
| | % | SE |
| Central North | 37.4 | 6.87 |
| Central South | 52.6 | 7.29 |
| Gaborone | 73.8 | 7.86 |
| North | 45.1 | 8.35 |
| South Central | 30.5 | 6.69 |
| South | 47.7 | 8.34 |
| West | 61.5 | 7.50 |
| Botswana | 47.0 | 2.95 |

Less than half of the pupils in Botswana (47%) had teachers who described their living conditions as generally good or only needing minor repairs. It is worrying that the majority of the Standard 6 teachers in 2000 did not appear to be happy with the conditions of their houses. The best rated houses were in Gaborone (over 70%) followed by 60 percent in the West region.

The reason for the better housing in Gaborone is that the city council provides good houses for its employees. As already mentioned in Chapter 1, the Ministry of Local Government, Lands and Housing provides teachers' housing. Some teachers occupy houses allocated through their spouses who may or may not be teachers.

In Gaborone, as in the other urban areas, there are several options for acquiring houses; one way is through the Botswana Housing Corporation (BHC) which allocates houses to all for rental or purchasing; some BHC houses are passed on to Government to house its employees; the Department of Lands and Housing sells plots to those interested; banks and employers including government, have housing schemes that allow employees to purchase houses or get funds to build their own. On the other hand, these services may not be available in some rural areas. Teachers in the rural areas are housed by the local

Authority and the Village Development Committees (VDCs) which in most cases have built sub-standard houses. In the case of the West region, because of the low enrolments the teachers find themselves with enough Council built houses. This is also eased by the fact that many teachers who come from the locality usually opt to live in their own residences instead.

Table 4.2 (c). Percentages and sampling errors for the type of lighting in classroom teacher' homes (SACMEQ II)

| Region | Type of lighting | | | | | | | |
|-----------------|------------------|------|-----------------|-------|----------|------|-------------------|-------|
| | No light | | Candle/Oil Lamp | | Gas lamp | | Electric lighting | |
| | % | SE | % | SE | % | SE | % | SE |
| Central North | 0.0 | 0.00 | 59.9 | 8.07 | 2.0 | 1.97 | 38.1 | 8.37 |
| Central South | 0.0 | 0.00 | 54.7 | 7.40 | 1.6 | 1.56 | 43.8 | 7.51 |
| Gaborone | 0.0 | 0.00 | 4.2 | 2.60 | 2.4 | 2.45 | 93.4 | 3.46 |
| North | 0.0 | 0.00 | 49.4 | 10.61 | 2.0 | 2.01 | 48.6 | 10.17 |
| South Central | 0.0 | 0.00 | 41.3 | 7.53 | 0.0 | 0.00 | 58.7 | 7.53 |
| South | 0.0 | 0.00 | 41.3 | 8.55 | 1.9 | 1.87 | 56.9 | 8.23 |
| West | 0.0 | 0.00 | 49.1 | 9.85 | 0.0 | 0.00 | 50.9 | 9.85 |
| Botswana | 0.0 | 0.00 | 45.0 | 3.15 | 1.3 | 0.60 | 53.6 | 3.16 |

Teachers sometimes take pupils' work and preparation books to their homes and they depend on the availability of lighting to do so. In Table 4.2 (c) teachers were asked about whether they had some form of lighting or not. It is commendable that all Standard 6 teachers had some form of lighting in their homes. The majority of pupils were taught by teachers who used electric lighting. This was followed by those that used candle or paraffin lamps. The majority of pupils in Gaborone (93.4 %) were taught by teachers who used electricity for lighting. More than fifty percent of pupils in the two Central regions and the North region were taught by teachers who either used candle, paraffin or gas. Paraffin and Candle are the most common types of lighting in Botswana especially in the rural areas where electricity is either not available or is a luxury for the economically advantaged. Gas is commonly used for cooking and not lighting.

Policy suggestion 4.2: Ministry of Education and the Ministry of Local Government, Lands and Housing must work closely in the provision of acceptable housing conditions for teachers so that they can devote more attention to teaching rather than to their poor living conditions.

What were the professional characteristics of Standard 6 teachers and did they consider in-service training to be effective in improving their teaching?

What was the academic education of Standard 6 teachers?

As discussed in Chapter 1, at independence Botswana inherited very little in terms of trained human resources. The minimum requirement for primary teacher training was a Primary School Leavers' Certificate. Over the years this changed to Junior Certificate. Even though by 2000 teacher training institutions could only accept senior secondary school leavers with good grades, the system still had a large number of teachers with primary and junior secondary qualifications. It is not clear whether this practice by teacher training institutions reflects Ministry's current policy on the minimum academic qualifications required for all teachers.

The teacher's role in the twenty first century has become challenging. Some pupils are not only technologically advanced but have access to a lot of reading material and therefore the teachers' educational preparation should be solid enough to accommodate this changing world. Teachers were asked about the highest level of academic education they had acquired, and the levels ranged from primary to tertiary education. The academic qualifications of teachers in the year 2000 have been summarised in Table 4.3.

Table 4.3. Academic education of classroom teachers (SACMEQ II)

| Region | Primary | | Junior secondary | | Senior secondary | | A-level | | Tertiary | |
|-----------------|---------|------|------------------|-------|------------------|------|---------|------|----------|------|
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 6.3 | 2.92 | 55.6 | 7.13 | 18.6 | 5.41 | 10.8 | 4.26 | 8.7 | 3.35 |
| Central South | 10.7 | 3.32 | 50.0 | 6.38 | 26.0 | 5.21 | 12.6 | 4.12 | 0.8 | 0.78 |
| Gaborone | 5.4 | 5.38 | 46.1 | 9.55 | 24.4 | 7.61 | 9.9 | 4.69 | 14.2 | 5.23 |
| North | 1.5 | 1.54 | 45.7 | 10.06 | 39.6 | 8.59 | 7.3 | 3.39 | 5.9 | 3.33 |
| South Central | 16.4 | 5.32 | 40.3 | 7.54 | 31.7 | 6.17 | 2.1 | 2.14 | 9.4 | 4.23 |
| South | 4.5 | 3.17 | 60.9 | 7.34 | 28.2 | 7.08 | 2.8 | 2.76 | 3.7 | 3.71 |
| West | 3.6 | 2.50 | 23.3 | 6.69 | 54.9 | 9.16 | 18.2 | 6.49 | 0.0 | 0.00 |
| Botswana | 8.2 | 1.56 | 47.4 | 2.97 | 30.1 | 2.57 | 8.4 | 1.48 | 5.8 | 1.30 |

As can be seen in Table 4.3, close to 50 percent of pupils were taught by teachers who were Junior Certificate holders. This was the case in all the regions except the West where the majority of teachers (54.9 %) had acquired senior secondary education. The South Central region had the highest number of teachers with primary education only (16.4 %) higher than the country as a whole (8.2 %). The North region had less than two percent pupils who were taught by teachers with a primary education qualification only. The West, as can be expected, had the best teachers in terms of academic education. Over 50 percent of pupils in this region had teachers with a senior secondary qualification.

The percentages for reading and mathematics teachers' academic education levels were the same because in 2000 teachers in government schools taught both mathematics and reading. Any differences between the reading and mathematics figures were negligible, and were a result of the presence of a tiny number of private schools in the sample where there could have been separate mathematics and reading teachers.

Policy suggestion 4.3: The Ministry of Education must provide clear policy guidelines on the minimum academic qualifications for teachers who join the teaching service. Thereafter, it must offer all underqualified teachers the opportunity to upgrade their academic qualifications over time.

Policy suggestion 4.4: Since there is a disparity in the distribution of teachers across the country in terms of age, sex and qualifications the Department of Teaching Service Management should use its information database to examine this disparity further and take the appropriate action to correct any regional bias.

What was the teaching training and experience of the Standard 6 teachers?

Teachers with better training tend, in general, to be more effective than those who are less well trained. A question was therefore asked about the length of teacher training the teachers had received. The minimum requirement for becoming a primary school teacher was completion of a Diploma in Primary Education. The three-year diploma programme was an improvement over previous two-year qualifications. These were Primary Lower (PL), Primary Higher (PH) and Primary Teachers' Certificate (PTC). The first two, PL and PH were offered concurrently. The former attracting Primary School certificate holders while the latter attracted Junior Certificate holders. Subsequent to that the PTC was introduced to replace the two and the minimum qualification was Junior Certificate. The three year diploma programme aims at upgrading the qualifications of serving teachers. It offers full time and part time programmes. It also attracts Senior Secondary leavers as the minimum entry level for non-practising entrants.

It is also generally accepted that teachers' teaching skills improve as they acquire more teaching experience, with the result that the more experienced teachers tend to be better teachers than those with less experience. Teachers were asked to indicate the number of years of teaching experience they had had.

The means and sampling errors for classroom teachers' training and experience have been presented in Table 4.5(a).

Table 4.5 (a). Means and sampling errors for training and experience of classroom teachers (SACMEQ II)

| Region | Experience (years) | | Training (years) | |
|-----------------|-----------------------|------|---------------------|------|
| | Mean | SE | Mean | SE |
| Central North | 11.1 | 0.87 | 2.3 | 0.08 |
| Central South | 10.2 | 1.06 | 2.2 | 0.08 |
| Gaborone | 12.3 | 0.76 | 2.5 | 0.16 |
| North | 11.2 | 1.09 | 2.1 | 0.09 |
| South Central | 12.2 | 0.97 | 2.1 | 0.12 |
| South | 11.1 | 1.06 | 2.0 | 0.14 |
| West | 6.6 | 1.38 | 2.0 | 0.21 |
| Botswana | 10.8 | 0.40 | 2.2 | 0.05 |

In 2000 the average pupil in the country was taught by a teacher with 2.2 years of training. The reason for this was the presence of teachers with varying lengths of time plus those with no teaching experience at all. Gaborone had the best teachers in terms of length of training (2.5 years). The system still had some untrained temporary teachers who came in to relieve those going on long leave (e.g. maternity, sick, or compassionate leave).

The trend in the percentage of untrained teachers at primary school level, nationally, has been shown in Table 4.5(b) over the six-year period preceding 2000.

Table 4.5(b). Untrained teachers at primary school level, 1995-2000

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|-------------|------|-------|------|------|------|-------|
| Male | 158 | 1007 | 189 | 274 | 327 | 394 |
| Female | 600 | 1366 | 579 | 679 | 839 | 922 |
| Total | 758 | 2373 | 768 | 952 | 1166 | 1316 |
| % Untrained | 7.02 | 18.57 | 6.71 | 8.17 | 9.75 | 10.84 |

Source: Botswana Education Statistics Report, 2000

In Table 4.5(a) it can also be seen that the average pupil in Botswana had a teacher who had nearly eleven years of teaching experience. The average years of teaching

experience was lowest in the West (6.6%) and highest in the South Central Region and Gaborone (12 %). This was consistent with the age of teachers as discussed in connection with Table 4.1. The oldest teachers were in the South Central and Gaborone while the youngest were in the West region. New graduates were easier to send to remote areas while the more mature teachers moved towards the eastern part of the country, especially the capital, to join their working spouses.

How much in-service training had the Standard 6 teachers completed?

Teachers were asked to indicate the number of in-service courses related to the teaching of reading and mathematics that they had attended in the last three years, and the total number of days taken up by these courses. The results have been presented in Table 4.6.

Table 4.6. Means and sampling errors for classroom teacher in-service courses and days attended in the last three years (SACMEQ II)

| Region | In-services courses | | Days | |
|-----------------|---------------------|------|------|-------|
| | Mean | SE | Mean | SE |
| Central North | 2.2 | 0.36 | 20.2 | 12.15 |
| Central South | 2.5 | 0.33 | 14.5 | 3.66 |
| Gaborone | 2.8 | 0.63 | 14.7 | 3.83 |
| North | 3.1 | 0.66 | 17.4 | 5.13 |
| South Central | 3.0 | 0.42 | 19.4 | 6.68 |
| South | 2.8 | 0.38 | 18.6 | 3.71 |
| West | 2.7 | 0.55 | 11.0 | 2.45 |
| Botswana | 2.7 | 0.17 | 17.0 | 2.57 |

From Table 4.6 it can be seen that on the average pupil in 2000 were taught by a teacher who had attended 2.7 in-service courses over a period of three years. It can also be seen that the teachers in South Central and the North region had attended at least three courses each. The lowest number of courses was reported by teachers in the Central North region. Even though the number of courses was low (2-3 days), the mean number of days for courses attended for the whole country was 17. The West region had the lowest number of days while the Central North region with the lowest number of in-service

courses (2.2) had the highest number of days (20.2). Unless clear standards on the number of days and their duration are developed it is difficult to tell what number of in-service courses is too little, good enough or excessive.

Did teachers consider that in-service training improved their teaching?

The number of in-service courses attended might not be as important as the content covered. Furthermore, the worth of the content can be judged by the value it adds to teachers' instructional capacity. Consequently, in addition to counting the number of in-service courses and their length, a question was asked to solicit the teachers' opinion on whether or not they thought that the courses they had attended had improved their teaching. The results have been presented in Table 4.7.

Table 4.7: Percentages and sampling errors for the teachers' perception of effectiveness of reading and mathematics in-service courses (SACMEQ II)

| Region | Effectiveness of the in-service courses | | | |
|-----------------|---|-------|--------------------------------|------|
| | Reading in-service courses | | Mathematics in-service courses | |
| | % | SE | % | SE |
| Central North | 79.3 | 8.70 | 79.6 | 8.58 |
| Central South | 87.2 | 4.85 | 87.2 | 4.86 |
| Gaborone | 71.9 | 9.47 | 73.9 | 8.93 |
| North | 71.7 | 10.08 | 73.6 | 9.87 |
| South Central | 68.2 | 9.02 | 71.6 | 8.52 |
| South | 70.1 | 6.49 | 73.1 | 6.34 |
| West | 85.4 | 4.93 | 82.0 | 6.23 |
| Botswana | 76.3 | 3.02 | 77.6 | 2.94 |

From Table 4.7 it can be seen that 76.3 percent of teachers in Botswana perceived reading in-service courses to be effective. On the other hand 77.6 percent of the teachers perceived mathematics in-service courses to be very effective. This implied that, nationally, teachers in 2000 said the in-service courses they attended improved their teaching; the percentage that did not find them effective was very low. This was a positive sign since the primary purpose for providing in-service training for teachers is to

upgrade their teaching capacity. However there was need also to address the needs of the small percentage of teachers that found the in-service training ineffective.

Policy suggestion 4.5: The departments of Primary Education and Teacher Training and Development should carry out a needs analysis on a regular basis to establish the different competencies and skills required by the teachers in order to ensure that in-service training programmes continue to address relevant needs. They should also develop benchmarks for in-service training in order to guide in-service educators on what constitutes quality training.

What were the Standard 6 teachers' views about (a) teaching goals (b) teaching approaches/strategies (for example, questioning, whole class teaching, etc.), (c) assessment procedures, and (d) meeting and communicating with parents?

The most important teaching goals in reading and mathematics

Teaching activities are often guided by what teachers consider to be the most important goals in reading and mathematics therefore teachers' views were solicited regarding teaching goals that they considered most important in the learning/teaching process. The results for reading have been reported in Table 4.8(a) and those for mathematics have been presented in Table 4.8(b).

Table 4.8(a). Percentages and sampling errors for the goals of teaching reading (SACMEQ II)

| Goal | Goal rated as 'most important' | |
|---------------------------------|--------------------------------|------|
| | % | SE |
| Making reading enjoyable | 8.8 | 1.63 |
| Extending vocabulary | 19.0 | 2.27 |
| Improving word attack skills | 3.0 | 1.05 |
| Improving reading comprehension | 26.1 | 2.44 |
| Developing a lasting interest | 17.7 | 2.18 |
| Opening up career opportunities | 10.2 | 1.66 |
| Developing of life skills | 15.2 | 1.96 |

‘Improving reading comprehension’ received the highest rating (26.1 %). This was followed by ‘Extending vocabulary’ and ‘Developing a lasting interest in reading’. The least important goal according to the teachers was ‘Improving word attack skills’.

Table 4.8(b). Percentages and sampling errors for the goals of teaching mathematics (SACMEQ II)

| Goal | Goal rated as ‘most important’ | |
|-------------------------------------|--------------------------------|------|
| | % | SE |
| Basic numeracy skills | 3.8 | 1.02 |
| Problem solving | 44.8 | 2.89 |
| Different ways of thinking | 16.2 | 2.14 |
| Confidence in solving problems | 8.1 | 1.48 |
| Satisfaction from doing Mathematics | 2.1 | 0.88 |
| Opening up career opportunities | 10.2 | 1.66 |
| Developing of life skills | 14.9 | 1.97 |

‘Problem solving’ in mathematics was viewed by Standard 6 teachers as the most important goal. The least important goal was ‘Satisfaction from doing mathematics’. The reason why developing ‘Basic numeracy skills’ was rated so low could be because the teachers assumed that by the time pupils reached Standard 6 they should have developed these anyway. They would therefore have been rated as a priority in lower standards in the system.

The most important activities in teaching reading and mathematics

Teaching reading and mathematics may take many forms, but there are some activities that are more common in reading and mathematics classes. Teachers make deliberate choices of such activities on the basis of their perceptions about the importance of these activities in promoting literacy and numeracy skills. Teachers were therefore asked to indicate the importance they attached to each of a set of common activities listed, and the responses have been presented in Table 4.9(a) and 4.9(b).

Table 4.9(a). Percentages and sampling errors for the activities of teaching reading (SACMEQ II)

| <u>Activity</u> | Activity rated as 'most important' | |
|---------------------------|------------------------------------|------|
| | % | SE |
| Listening to reading | 3.2 | 0.89 |
| Silent reading | 1.1 | 0.53 |
| Learning new vocabulary | 25.3 | 2.83 |
| Sounding words | 8.0 | 1.58 |
| Reading for comprehension | 50.2 | 3.01 |
| Taking books home to read | 6.2 | 1.32 |
| Reading materials in home | 3.3 | 0.91 |
| Reading aloud in class | 2.5 | 0.93 |

'Reading for comprehension' was viewed by Standard 6 teachers as the most important activity. The least important activity was 'Silent reading'. Teachers rated 'Reading aloud in class' low probably because the teachers felt that Standard 6 pupils were too old to read aloud in class, same reason will apply even for the low rating for 'listening to reading'. They are therefore more likely to have been rated as a priority in lower standards in the system.

Table 4.9(b). Percentages and sampling errors for the activities of teaching mathematics (SACMEQ II)

| <u>Activity</u> | Activity rated as 'most important' | |
|---|------------------------------------|------|
| | % | SE |
| Working in pairs or groups | 33.5 | 2.70 |
| Working alone | 9.5 | 1.80 |
| Preparing projects to be shown to the class | 5.3 | 1.40 |
| Using practical equipment | 20.6 | 2.40 |
| Homework assignments | 4.6 | 1.19 |
| Studying and interpreting graphs | 3.8 | 1.20 |
| Reciting tables, formulae, etc. | 3.0 | 0.88 |
| Quizzes, tests, examinations, etc.. | 19.7 | 2.41 |

‘Working in pairs’ was viewed by Standard 6 teachers as the most important activity in the teaching of mathematics. The least important activity was ‘reciting tables, formulae etc.’ The reason why the latter was rated so low could again be because the teachers assumed that by the time pupils reached Standard 6 they should have known these anyway.

Policy suggestion 4.6: The Ministry of Education’s Inspectorate Unit should consider sensitising teachers to the need to place greater emphasis on those activities that promote basic skills that Standard 6 pupils might have failed to fully grasp in the lower standards.

Teaching approaches or strategies used most frequently by reading and mathematics teachers

Good teachers take into account the fact that there are certain teaching approaches or strategies that have greater effectiveness than others, and should therefore be used more frequently. In this study, teachers were asked to indicate the strategies or approaches that they ‘often used’ and the results have been presented in Tables 4.10(a) and 4.10(b).

Table 4.10(a). Percentages and sampling errors for the approaches and strategies of teaching reading (SACMEQ II)

| <u>Approach</u> | Percentage indicating ‘often used’ | |
|--|------------------------------------|------|
| | % | SE |
| Introducing passage before reading | 41.4 | 2.85 |
| Asking questions to test comprehension | 92.1 | 1.50 |
| Asking questions to deepen understanding | 89.9 | 1.75 |
| Using materials made by teacher | 32.1 | 2.51 |
| Reading aloud to the class | 57.8 | 2.97 |
| Giving positive feedback | 88.7 | 1.86 |

‘Asking questions to test comprehension’ was viewed by Standard 6 teachers as the most important strategy of teaching reading (92.1%). The other most important strategies perceived by the Standard 6 teachers were ‘Asking questions to deepen understanding’ (89.9%) and ‘Giving positive feedback’ (88.7%). The least important strategy was ‘Using

materials made by teacher' (32.1%). 'Introducing passage before reading' also received a low rating of 41.4 percent. The former and the latter were most probably rated as a priority in the lower standards.

Table 4.10(b). Percentages and sampling errors for the approaches and strategies of teaching mathematics (SACMEQ II)

| <u>Approach</u> | Percentage indicating 'often used' | |
|--|------------------------------------|------|
| | % | SE |
| Using everyday problems | 75.7 | 2.37 |
| Teaching the whole class as a group | 68.2 | 2.63 |
| Teaching in a small group | 32.4 | 2.72 |
| Teaching individually | 18.9 | 2.41 |
| Teaching through question and answer technique | 74.4 | 2.65 |
| Giving positive feedback | 90.5 | 1.62 |
| Relating to everyday life situations | 67.2 | 2.81 |
| Basic skills training | 57.9 | 2.72 |
| Explaining mathematical processes | 83.1 | 2.17 |
| Using available local materials | 76.8 | 2.31 |

Since the same teachers taught both mathematics and reading there was a consistency in the responses, especially on giving positive feedback to pupils which was rated highest in mathematics. Teachers also rated highly the use of everyday problems as well as available local materials, and teaching through question and answer method, and explaining mathematical processes. Teaching in small groups or individually were not common methods employed by the 2000 teachers.

Policy suggestion 4.7: The Ministry of Education's Inspectorate Unit should closely monitor the strategies or approaches that teachers in Standard 6 and in the lower standards use in teaching and encourage those that best promote reading and mathematics skills. They can do this during their visits to the schools.

How often did teachers give tests in reading and mathematics?

In order to find out how much pupils were learning and what problems they had it is important to discover what teachers did. One type of assessment that was used formatively was testing. The importance of testing frequently was so that problems could be diagnosed early in order to deal with them in time. The teachers were asked to state how often they gave tests in mathematics and reading. The responses they gave were classified into 'once or more per week', 'two or three times per month', or 'less frequently'. The results have been presented in Tables 4.11(a) and 4.11(b).

Table 4.11(a). Percentages and sampling errors for the frequency of reading tests (SACMEQ II)

| Region | Frequency of reading tests | | | | | |
|-----------------|----------------------------|------|---------------|------|--------------|------|
| | Less often | | 2/3 per month | | 1 + per week | |
| | % | SE | % | SE | % | SE |
| Central North | 11.9 | 4.86 | 33.9 | 7.23 | 54.2 | 7.35 |
| Central South | 7.8 | 3.03 | 30.6 | 7.22 | 61.7 | 7.07 |
| Gaborone | 15.6 | 7.44 | 24.8 | 7.75 | 59.7 | 9.19 |
| North | 19.3 | 7.20 | 15.6 | 6.89 | 65.1 | 8.68 |
| South Central | 8.7 | 3.86 | 19.8 | 5.20 | 71.5 | 5.79 |
| South | 10.9 | 4.69 | 23.3 | 7.47 | 65.7 | 8.61 |
| West | 15.1 | 5.98 | 28.5 | 8.65 | 56.4 | 9.25 |
| Botswana | 11.5 | 1.82 | 25.6 | 2.75 | 62.8 | 2.96 |

The majority of teachers in Botswana gave reading tests at least once a week. The teachers in the South Central region were particularly active in this area. Less than ten percent of pupils in this region had teachers who gave them tests less often. Less than 55 percent of pupils in the Central North were in classes in which teachers gave tests at least once a week.

Table 4.11(b). Percentages and sampling errors for frequency of mathematics tests (SACMEQ II)

| Region | Frequency of mathematics tests | | | | | |
|-----------------|--------------------------------|------|---------------|------|--------------|------|
| | Less often | | 2/3 per month | | 1 + per week | |
| | % | SE | % | SE | % | SE |
| Central North | 16.3 | 5.20 | 61.1 | 7.20 | 22.6 | 6.93 |
| Central South | 17.8 | 4.28 | 44.3 | 5.99 | 38.0 | 6.51 |
| Gaborone | 23.6 | 6.27 | 50.3 | 7.18 | 26.1 | 8.31 |
| North | 34.4 | 9.28 | 35.8 | 8.81 | 29.8 | 6.97 |
| South Central | 21.4 | 5.80 | 54.6 | 6.84 | 24.0 | 5.73 |
| South | 24.6 | 7.45 | 46.7 | 8.52 | 28.8 | 7.84 |
| West | 12.8 | 6.31 | 56.4 | 9.22 | 30.8 | 8.47 |
| Botswana | 21.0 | 2.36 | 50.2 | 2.87 | 28.8 | 2.72 |

The same question that was asked about reading tests was repeated about mathematics (see Table 4.11(b)). It is disappointing to note that the mathematics teachers, since they were the same teachers who taught reading, were not so active in testing when it came to mathematics assessment. About one third of learners had teachers who gave mathematics tests at least once a week. For all regions except the North, the majority of pupils were given mathematics tests two to three times a month. Sixty-four percent of pupils had teachers who gave tests less than two to three times per month.

Policy suggestion 4.8: The Department of Primary Education should carry out training to raise teachers' appreciation of the importance of, and enhance their knowledge and skills of assessment. They should also develop continuous assessment procedures to guide teachers.

Was there a specific section in pupil school reports for reading and mathematics?

In order to provide feedback to a parent concerning their child's strengths and weaknesses in the various subjects, reports were sent home at the end of each term. These captured both formative assessment for the term and summative assessment at the end of term. The intention is to provide diagnostic information to both the pupils and

their parent and to provide a room for reinforcement and/or remediation where necessary. Teachers were asked whether these reports have specific sections for comment on reading and mathematics. The results of the responses have been summarised in Table 4.12.

Table 4.12. Percentages and sampling errors for the frequency of a specific section in pupil school report for reading and mathematics (SACMEQ II)

| Region | English section | | Mathematics section | |
|-----------------|-----------------|------|---------------------|------|
| | % | SE | % | SE |
| Central North | 84.2 | 5.15 | 79.7 | 5.51 |
| Central South | 91.9 | 3.09 | 90.8 | 3.77 |
| Gaborone | 82.4 | 8.03 | 86.5 | 8.08 |
| North | 84.7 | 6.18 | 84.7 | 6.18 |
| South Central | 90.1 | 3.45 | 87.6 | 3.72 |
| South | 75.1 | 6.75 | 76.4 | 7.46 |
| West | 86.8 | 5.02 | 83.7 | 5.15 |
| Botswana | 85.7 | 1.94 | 84.6 | 2.09 |

The majority of pupils in Botswana had teachers whose school reports had a specific section for making comments regarding reading and mathematics. This could partly be explained by the fact that the Ministry of Education has a standard form in all schools that was used for reporting pupil's termly results, which presumably most schools used. This form had a section for comments on each subject and another for general comments.

How often did teachers meet with parents each year?

Parental involvement is critical in learning. In Botswana parents were invited to their child's school at the end of each term to discuss and collect reports. These meetings created an opportunity for parents and teachers to evaluate the pupil's work and draw conclusions based on their performance. Outside these scheduled meetings both parents and teachers were at liberty to request for special meetings to discuss any issues they considered critical. In this section teachers were asked how often they (teachers) met with the pupils' parents or guardians. The responses to this question were, 'never', 'once

a year', 'once a term', 'once a month or more'. Those that answered 'once a term' and 'once a month or more' were put into one category. The results have been summarized in Table 4.13.

Table 4.13. Percentages and sampling errors for the frequency of teacher meetings with parents (SACMEQ II)

| Region | Percentages of teacher meetings with parents frequently | |
|-----------------|--|------|
| | % | SE |
| Central North | 71.5 | 8.21 |
| Central South | 79.5 | 6.55 |
| Gaborone | 97.2 | 2.83 |
| North | 76.8 | 8.31 |
| South Central | 80.7 | 6.47 |
| South | 77.7 | 6.83 |
| West | 78.5 | 7.54 |
| Botswana | 79.5 | 2.74 |

The frequency of meetings was generally high, especially in Gaborone (97.2%). The Central North region lagged behind all other regions in Botswana. The education officers for this region need to urge their teachers to make room for more parent-teacher meetings.

What percentage of parents met with teachers each year?

In addition to asking about the frequency of parent-teacher meetings, the next question that was asked concerned the percentage of parents who actually met with teachers each year. The results of this were summarised in Table 4.14 below.

Table 4.14. Percentages and sampling errors of parents meeting teachers each year (SACMEQ II)

| Region | Parents meet classroom teacher | |
|-----------------|---------------------------------------|-----------|
| | % | SE |
| Central North | 34.4 | 5.09 |
| Central South | 38.5 | 3.33 |
| Gaborone | 54.6 | 5.49 |
| North | 43.4 | 5.13 |
| South Central | 43.6 | 3.82 |
| South | 36.1 | 4.31 |
| West | 33.5 | 5.83 |
| Botswana | 40.0 | 1.70 |

The results were very discouraging. Except for Gaborone, less than half of the parents met with their child's teacher in a year. Gaborone was the best, with only 54.6 percent. Families in urban areas usually found it easier to meet teachers concerning the education of their children. This was mainly because the most educated were found in these areas. Lifestyles were also different since people mostly lived and worked in the same locality whilst in the rural areas most people had three homes, one in the village, a second at the lands and a third at the cattle posts. Children in the rural areas had parents who spent part of the year away from the village depending on the season or time or the year. Distances between the home and the school might also have contributed to the low school visits in the predominantly rural districts.

Did teachers ask parents to sign homework assignments?

Teachers usually give homework to their pupils as an integral part of the teaching learning process. Since there wasn't enough time to do all of the homework at school, pupils usually took their school work home to complete in the evening. This was dependent on several things, among them availability of time after the completion of any household chores that the pupils might be expected to carry out, the home environment

that had to be conducive to learning (i.e. lighting, a table to write on, a chair to sit on, support from another person), and others. In order to secure the commitment of parents or guardians in assisting the children in their school work, some schools required the parents to sign the homework books after completion of work. The 2000 Standard 6 teachers were therefore asked whether they asked parents to sign the pupils' homework. The following table shows a summary of their responses.

Table 4.15. Percentages and sampling errors of teachers asking parents to sign homework (SACMEQ II)

| Region | Sign reading homework | | Sign mathematics homework | |
|-----------------|------------------------------|-------------|----------------------------------|-------------|
| | % | SE | % | SE |
| Central North | 29.2 | 6.27 | 26.7 | 6.21 |
| Central South | 30.0 | 6.64 | 27.4 | 6.74 |
| Gaborone | 56.3 | 9.80 | 60.7 | 9.91 |
| North | 33.8 | 8.42 | 35.2 | 8.72 |
| South Central | 22.1 | 5.99 | 17.0 | 5.20 |
| South | 19.9 | 7.04 | 23.8 | 7.70 |
| West | 9.5 | 4.53 | 6.4 | 3.08 |
| Botswana | 27.5 | 2.65 | 26.4 | 2.62 |

Less than one third of the parents in Botswana signed pupils' homework assignments. This was very disappointing. More than half of the parents in Gaborone and less than ten percent in the West region signed pupils' homework assignments. As discussed earlier, people who lived in the West region were predominantly the San people. Most of them were illiterate and may not have seen the value of education and those that did probably could not read and write. One other reason for not signing could be that even if they were literate the homework might be too advanced for them. Policy suggestion 3.3 in Chapter 3 should be noted.

What was the availability of classroom furniture (for example, sitting/writing places, teacher table, teacher chair, and bookshelves) and classroom equipment (for example, chalkboard, dictionary, maps, book corner, and teacher guides) in Standard 6 classrooms?

What percentages of pupils were in classrooms with adequate sitting and writing places for the teacher?

In order to provide the right environment for teaching and learning to take place well, several things should be available for both the teacher and the pupils. Examples of these are; a sitting place, a writing place, a chalkboard, a dictionary etc. Teachers were therefore asked about the availability of both classroom furniture and equipment in their classrooms. The results have been summarised in Table 4.16.

Table 4.16: Percentages and sampling errors for pupils having sitting and writing places (SACMEQ II)

| Region | % having sitting place | | % having writing place | |
|-----------------|------------------------|------|------------------------|------|
| | % | SE | % | SE |
| Central North | 100.0 | 0.00 | 100.0 | 0.00 |
| Central South | 100.0 | 0.00 | 100.0 | 0.00 |
| Gaborone | 100.0 | 0.00 | 100.0 | 0.00 |
| North | 100.0 | 0.00 | 100.0 | 0.00 |
| South Central | 100.0 | 0.00 | 100.0 | 0.00 |
| South | 100.0 | 0.00 | 100.0 | 0.00 |
| West | 100.0 | 0.00 | 100.0 | 0.00 |
| Botswana | 100.0 | 0.00 | 100.0 | 0.00 |

From the table it can be seen that there were adequate sitting and writing places for all the teachers in the country. The Ministry of Education and the Ministry of Local Government, Housing and Lands need to be commended for the good work. It is important to maintain this good standard by ensuring proper maintenance of the available resources and the replacement of those that were lost or were no more usable.

What percentages of pupils were in classrooms with adequate classroom furniture and equipment (for example, a teacher table, teacher chair, bookshelves, and chalkboard)?

An environment that supports the teaching and learning process is one that has basic equipment as determined from country to country or by the different education sectors. In this section teachers were asked about the availability of resources in their classrooms. In Table 4.17 a summary of these resources has been presented.

Table 4.17. Percentages and sampling errors for availability of classroom resources for the teachers (SACMEQ II)

| Resource | Availability of classroom resources | |
|------------------------------------|-------------------------------------|------|
| | % | SE |
| A usable writing board | 94.2 | 1.54 |
| Chalk | 93.9 | 1.56 |
| A wall chart of any kind | 72.5 | 2.71 |
| A cupboard | 54.9 | 2.91 |
| One or more bookshelves | 69.4 | 2.97 |
| A classroom library or book corner | 81.2 | 2.50 |
| A teacher table | 88.9 | 2.12 |
| A teacher chair | 87.8 | 2.27 |

Over 90 percent of the pupils in Botswana's schools were in a classroom that had adequate chalk and usable writing boards. But, there were some six percent of pupils in classrooms without these facilities. This is something that requires immediate attention and Regional Directors of education must know where this occurs. Over 80 percent of pupils were in a classroom with at least one teacher's chair and teacher's table. It is unfortunate that some 11.1 percent and 12.2 percent of the teachers still had to do without a teacher's table and chair respectively. The teachers probably had to improvise by using a pupil's desk or table. The percentages of pupils in a classroom that had no classroom library or book corners (18.8%) or wall chart (27.55) were slightly higher, and this might require some attention as it means that some pupils were disadvantaged. Since the

percentages of pupils who were in a classroom without a bookshelf or cupboard were higher than those without a classroom library or book corner, it implies that some teachers did not have secure storage facilities for the library books.

In Table 4.18 a summary picture of classroom resources has been presented as an index derived from all the items. Classrooms got a score of 1 for each of the eight resources whilst those that had none of the resources got zero.

Table 4.18. Means and sampling errors for the classroom resources index (SACMEQ II)

| Region | Classroom resources index | |
|-----------------|----------------------------------|------|
| | Mean | SE |
| Central North | 6.1 | 0.33 |
| Central South | 6.8 | 0.23 |
| Gaborone | 6.4 | 0.59 |
| North | 6.5 | 0.38 |
| South Central | 6.4 | 0.25 |
| South | 6.6 | 0.30 |
| West | 5.9 | 0.32 |
| Botswana | 6.4 | 0.12 |

According to Table 4.18, the country mean index for classroom resources was 6.4. There was not much disparity across the country except for the West region which had the lowest index. The wealthiest region was the Central South. These indices can form the basis for corrective action regarding the disparities within and among the regions.

How many books did teachers have in their classroom library or book corner?

From previous research (Elley, 1994¹) it is known that classroom libraries are very important in helping children to learn to read. They are even more important than school libraries. It is important that children just have a lot of books that they can read. In Table 4.17 it was seen that less than a third of pupils were in classrooms with no library or book corner. In this section teachers in classrooms with a library or book corner were further asked how many books they had in total. This was used to calculate the number books each pupil had, and the information has been summarised in Table 4.19.

Table 4.19. Means and sampling errors of class library books per pupil (SACMEQ II)

| Region | Class library books per pupil | |
|-----------------|--------------------------------------|------|
| | Mean | SE |
| Central North | 1.8 | 0.29 |
| Central South | 3.4 | 0.53 |
| Gaborone | 1.8 | 0.40 |
| North | 2.8 | 0.58 |
| South Central | 2.1 | 0.38 |
| South | 3.2 | 0.66 |
| West | 1.6 | 0.41 |
| Botswana | 2.5 | 0.19 |

The Central South region had most books, with an average of 3.4 books per pupil while the West with an average of 1.6 books per pupil had the lowest number of books. It can be seen from the table that Botswana schools were poorly resourced in terms of class library books. With fewer than three books per pupil little variety can be expected. This is a poor condition for learning to read. Not only did a third of Standard 6 pupils have no classroom library but even those who did had very few books in them. In places where

¹ Elley W B (1994) *The IEA Study of Reading Literacy: achievement and instruction in thirty-two school systems*. Oxford: Pergamon

there were no public libraries and homes that did not have plenty of reading material the situation was even worse.

Policy suggestion 4.9: The Department of Primary Education should encourage the setting up of library corners in classrooms by either availing more library material or encouraging PTAs to assist. This is necessary in order to realise the goal of being an educated and informed nation by the year 2016.

Did teachers have teaching aids (for example, a map, a dictionary, geometrical instruments, and teachers' guides)?

Modern day teaching emphasises practical teaching methods as much as possible. Teaching aids enhance the teaching/learning process. The question that was asked at this point was whether teachers had aids such as a map, dictionary and others. The responses have been summarised in Table 4.20.

Table 4.20. Percentages and sampling errors of reading teachers with teaching aids in the school (SACMEQ II)

| Region | Teaching aids | | | | | | | | | |
|-----------------|----------------------|------|--------------------|------|-----------------|------|--------------------------|------|-----------------|------|
| | For teaching reading | | | | | | For teaching mathematics | | | |
| | Map | | English dictionary | | Teacher's guide | | Geometrical instruments | | Teacher's guide | |
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 85.0 | 5.48 | 82.3 | 6.00 | 92.2 | 4.06 | 81.3 | 6.36 | 66.5 | 7.16 |
| Central South | 83.3 | 5.31 | 90.4 | 4.59 | 77.7 | 6.20 | 82.1 | 5.73 | 62.0 | 7.15 |
| Gaborone | 78.2 | 8.34 | 75.3 | 8.06 | 77.7 | 9.17 | 72.7 | 7.75 | 60.4 | 9.64 |
| North | 77.2 | 7.70 | 87.3 | 5.95 | 85.0 | 6.05 | 80.2 | 8.30 | 61.1 | 8.49 |
| South Central | 79.0 | 5.64 | 85.0 | 4.80 | 81.4 | 4.69 | 69.0 | 6.66 | 71.3 | 6.32 |
| South | 66.4 | 7.81 | 82.4 | 5.76 | 87.5 | 5.26 | 78.9 | 6.88 | 65.5 | 7.86 |
| West | 62.0 | 7.90 | 76.9 | 7.33 | 86.3 | 5.03 | 73.0 | 6.92 | 53.9 | 8.40 |
| Botswana | 77.1 | 2.53 | 83.9 | 2.20 | 83.7 | 2.23 | 76.9 | 2.62 | 64.2 | 2.94 |

Three quarters of pupils were in a classroom with a map and geometrical instruments. Eighty-four percent were in a classroom that had a dictionary and a reading teacher's guide. There is a lot of disparity across the country and within the regions in terms of what aids teachers have.

Policy suggestion 4.10: The Division of Primary Education Inspectorate need to take a thorough audit of what schools have and what they don't have in order to better distribute resources within regions.

What professional support (in terms of education resource centres, inspections, advisory visits, and school head inputs) was given to Standard 6 teachers?

Teachers like all professionals need pre-service and in-service training. They also need different types of support in order to keep abreast with innovations in their field of operation. Teachers were asked to state the type of professional support they received in terms of education resource centre use, visits by education officers and teacher advisors, and school head inputs.

Did teachers use education resource centres?

In 2000 the Ministry of Education had 12 strategically built education centres spread across the country. These centres were meant to support the professional development of teachers by bringing in-service education activities closer to where the teachers were. The centres have the capacity to provide residential courses. Each centre is staffed with in-service Education Officers whose responsibility is to provide teachers with the necessary professional support for effective implementation of the school curriculum.

As can be expected, the location of education centres was mostly in the eastern part of the country. This is evident in the data in Table 4.21 where more than twenty percent of pupils in the Central North region were taught by teachers who claimed that there were no centres in their area of operation. More than half of teachers in this area were aware

that there was a centre but they had never visited it. It should be noted that the Central District was geographically the largest which explains why it was divided into two regions; Central North and Central South. The Central South region had two centres (Mahalapye and Serowe) while the Central North had one centre (Selibe Phikwe) which, distance-wise, was in the Southern part of the district. A teacher in Maitengwe would have to travel more than 200 km to get to the centre in Selibe Phikwe.

Table 4.21. Percentages and sampling errors for the availability and use of education resource centres for teachers (SACMEQ II)

| Region | None available | | Have not visited | | Have used | |
|-----------------|----------------|------|------------------|------|-----------|------|
| | % | SE | % | SE | % | SE |
| Central North | 20.6 | 6.10 | 50.9 | 8.19 | 28.4 | 6.67 |
| Central South | 6.1 | 2.63 | 30.5 | 5.84 | 63.4 | 5.76 |
| Gaborone | 10.5 | 8.01 | 24.7 | 7.86 | 64.7 | 9.28 |
| North | 10.2 | 4.19 | 34.0 | 9.86 | 55.8 | 9.60 |
| South Central | 6.1 | 3.07 | 23.2 | 6.70 | 70.8 | 6.88 |
| South | 12.8 | 5.51 | 23.9 | 7.79 | 63.3 | 8.05 |
| West | 6.7 | 3.30 | 23.5 | 8.18 | 69.8 | 9.18 |
| Botswana | 10.2 | 1.75 | 30.2 | 2.90 | 59.6 | 2.90 |

More than ten percent of pupils in the North region were in classrooms in which teachers were not aware that they had resource centres available. This figure was even higher in the regions of Central North, South and in Gaborone. In the Central North more than half of the pupils were taught by teachers who had never visited a resource centre, and in Botswana this was over thirty percent. The Kanye Education Centre was well utilised with over sixty percent of teachers having used it. It is disappointing that Gaborone did not use the Tlokweng Education Centre as much as it should have. Even though there were too many schools sharing one centre, it cannot be said that there was a problem of the centre being too far from the schools since Tlokweng is on the outskirts of the city.

How did teachers use education resource centres?

In addition to the availability of centres, teachers were asked how they used these centres.

The results have been presented in Table 4.22.

Table 4.22. Percentages and sampling errors of teacher's purposes for using the resource centre (SACMEQ II)

| Region | Don't use | | Borrow material | | Make material | | Training | | Speak with teachers/staff | |
|-----------------|-------------|-------------|-----------------|-------------|---------------|-------------|-------------|-------------|---------------------------|-------------|
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 64.2 | 8.44 | 7.1 | 3.41 | 5.7 | 3.22 | 20.6 | 6.62 | 15.8 | 5.46 |
| Central South | 32.4 | 6.06 | 16.3 | 4.38 | 22.5 | 5.13 | 57.4 | 5.32 | 48.7 | 6.93 |
| Gaborone | 27.7 | 8.40 | 23.6 | 6.02 | 34.6 | 7.52 | 49.5 | 9.33 | 52.3 | 9.70 |
| North | 37.9 | 10.68 | 26.1 | 7.59 | 22.3 | 7.38 | 38.1 | 8.88 | 39.0 | 8.05 |
| South | | | | | | | | | | |
| Central | 24.7 | 7.06 | 27.0 | 6.46 | 30.4 | 6.28 | 57.2 | 7.10 | 56.6 | 7.28 |
| South | 27.4 | 8.62 | 10.4 | 4.05 | 26.0 | 7.04 | 54.3 | 8.25 | 46.3 | 8.62 |
| West | 25.2 | 8.94 | 25.1 | 6.89 | 28.4 | 8.08 | 62.2 | 9.23 | 61.4 | 9.64 |
| Botswana | 33.6 | 3.10 | 18.5 | 2.12 | 23.8 | 2.39 | 49.2 | 2.90 | 45.5 | 3.03 |

In Botswana the most common use of resource centres was training and sharing ideas with other teachers and staff of the centre. The West region, with two centres, was the best in using them for training and consultation. Gaborone teachers mainly used the centre for making teaching aids and consultation. It is not surprising that more than half of the pupils in the Central North region were taught by teachers who had never used a resource centre. This region was the most unfortunate with only one centre which was not at a central location, and that had more than five districts to service. It is further disappointing to note that regions which had more than two centres did not utilise them to the maximum. On average, more than a third of the pupils in Botswana were taught by teachers who had never used a centre. This under-utilisation of education centres makes it difficult for one to recommend the provision of more centres. Before these can be planned for there is need for the Department of Teacher Training and Development to re-

examine its activities and have in-service officers prepare rigorous annual plans that would take into account the in-service needs of their clientele.

Policy suggestion 4.11: The Departments of Teacher Training and Development and Primary Education should consider joining efforts to ensure a proper utilisation of resource centres in order to provide the required professional support to teachers.

What support did Advisors or Inspectors give to teachers in terms of administrative, professional, and pedagogical matters?

The Ministry of Education provided professional support to its teachers through two departments: the Department of Primary Education and the Department of Teacher Training and Development. The former have the Inspectorate and the latter have in-service officers who are expected to carry out an advisory role. The role of inspectors has changed over time from fault-finding fearsome officers who used to come unannounced to criticize and discipline teachers to the now more professional colleagues who are partners in education. In this section, teachers responses about the support they received from the two officers have been summarised and presented.

Table 4.23. Teachers' descriptions of the actions of the inspector and advisor (SACMEQ II)

| Description of the actions | Percentage of teachers agreeing | | | |
|---|---------------------------------|------|---------|------|
| | Inspector | | Advisor | |
| | % | SE | % | SE |
| <i>Pedagogical role</i> | | | | |
| Bring new ideas | 80.6 | 2.52 | 60.4 | 3.11 |
| Clarify educational objectives | 71.7 | 2.73 | 53.9 | 3.12 |
| Recommend new teaching materials | 63.5 | 2.83 | 54.5 | 3.14 |
| Contribution to my classroom teaching | 27.9 | 2.82 | 25.7 | 2.55 |
| Explain curriculum content | 63.8 | 2.82 | 48.9 | 3.13 |
| Suggest improving teaching methods | 78.3 | 2.71 | 58.7 | 3.06 |
| <i>Critical versus advisory role</i> | | | | |
| Comes to advise | 84.5 | 2.41 | 61.4 | 3.05 |
| Comes to criticize | 10.6 | 1.95 | 7.9 | 1.51 |
| Finds faults and report them to the employer | 12.7 | 1.90 | 10.4 | 1.72 |
| <i>Professional development role</i> | | | | |
| Provides information for teacher self-development | 68.6 | 2.86 | 53.6 | 3.11 |
| Encourage professional contacts with other teachers | 72.8 | 2.77 | 52.7 | 3.09 |
| Provides in-service training to teachers | 55.5 | 2.94 | 48.7 | 3.09 |

The majority of pupils were in classes in which the teachers perceived their inspectors very positively. The teachers actually rated inspectors higher than the in-service officers. Teachers described the role of the inspector as advisory. The inspector mostly comes to the school to bring new ideas, clarify objectives, recommend new teaching methods and suggest improvements. As mentioned earlier, the inspector is seen as an advisor and less than fifteen percent of pupils who were taught by teachers who viewed inspectors as people who came to criticize and find fault in them. Inspectors also encouraged teachers to make professional contact with others and nurtured their self-development.

Did school heads advise teachers on their teaching?

In some ways, it can be argued that school heads spend more time with the teachers, and are better suited to offer advice on a more frequent basis than inspectors and teacher advisors who obviously work with a larger proportion of teachers. These visiting officials may be treated as outsiders who only come a few times a year and may not have ample time to sit down with each and every teacher. School heads on the other hand may be available on a daily basis and may be treated more like a colleague. Teachers were asked about the frequency of advice they received from their school heads and the results have been summarised in Table 4.24.

Table 4.24. Percentages and sampling errors for the frequency of advice received by teachers from school heads (SACMEQ II)

| Region | Percentage of teachers receiving advice 'sometimes' or 'often' | |
|-----------------|---|-----------|
| | % | SE |
| Central North | 99.2 | 0.78 |
| Central South | 91.1 | 4.02 |
| Gaborone | 96.0 | 4.01 |
| North | 93.9 | 4.73 |
| South Central | 97.7 | 1.68 |
| South | 87.9 | 4.83 |
| West | 92.1 | 5.59 |
| Botswana | 94.0 | 1.42 |

The majority of Standard 6 pupils were taught by teachers who received advice from their school heads at least sometimes or often. The highest of these was observed in the Central North region (99.2 %) where almost all the teachers received advice from their school heads sometimes or often. Lagging behind all other regions was the South region (87.9%). The Departments of Primary Education and Teacher Training and Development need to be commended for initiating School Management training aimed at enhancing the management skills of the school heads.

What factors had most impact upon teacher job satisfaction?

A teacher who is happy on the job is most likely to spend time thinking about the teaching and not worrying about poor work conditions. Teachers were therefore asked to rate sources of job satisfaction from important to very important. Their responses have been given in Table 4.25.

Table 4.25. Percentages and sampling errors of teachers' sources of teacher job satisfaction (SACMEQ II)

| Source of satisfaction | Percentage of teachers indicating reason as 'very important' | |
|---|--|------|
| | % | SE |
| Living conditions | | |
| Travel distance to school | 74.9 | 2.81 |
| Availability of teacher Housing | 94.5 | 1.34 |
| Quality of teacher housing | 88.3 | 1.82 |
| School facilities/equipment | | |
| Quality of school buildings | 86.6 | 1.98 |
| Quality of classroom furniture | 81.5 | 2.19 |
| Relationships with others | | |
| Quality of school manpower and administration | 93.4 | 1.54 |
| Amicable relations with staff | 92.5 | 1.64 |
| Good relation with community | 82.5 | 2.38 |
| Career advancement | | |
| Expanded opportunities for promotion | 85.7 | 1.91 |
| Opportunities for professional development | 95.7 | 1.19 |
| Level of teacher salary | 86.5 | 1.96 |
| Educational outcomes of pupils | | |
| Seeing pupils learn | 96.6 | 1.06 |

It is encouraging that one of the most important sources of job satisfaction according to the teachers was seeing pupils learn. Also high on the list were opportunities for professional development and the availability of teacher housing. The availability of housing was ranked higher than quality of housing reflecting the prepotency of housing over its condition. Travel distance to school was not a problem for the teachers in Botswana, and this explains why it received a relatively low rating. This was also aided by the availability of public and private transport to and from school. All in all, teachers in Botswana were largely motivated by higher order needs!

Policy suggestion 4.12: The Ministry of Education's Research Unit must conduct a similar study on the personal and professional characteristics of Standard 6 teachers, their living and working conditions, teaching goals, strategies and activities as well as their interaction with their parents or guardians in order to monitor changes that might take place over time.

Conclusion

The average Grade 6 teacher in Botswana was middle-aged (about 35 years old), and two thirds of the pupils (66.7%) were taught by a female teacher. Although the mean age of the teachers was roughly the same for all regions, the gender distribution of teachers varied widely across the regions, with female teachers in West region constituting 37 percent of the total while in Gaborone they were 83.6 percent of the total. Teachers generally came from modest socio-economic backgrounds, with their possessions index higher than that for pupils' homes and showing that they had half of the listed possessions. Teachers also had considerable amounts of livestock, especially cattle, goats and chickens. Regional disparities in measures of wealth were wide. The conditions of teacher housing were not deemed to be acceptable by over half of the teachers (53%), and there were markedly wide regional disparities. Lighting in the houses was generally good.

A little less than half of the Botswana's Grade 6 pupils had teachers who had Junior Secondary education as their highest academic qualification, and nearly a third had teachers who held a senior secondary certificate. There should be concern over the nearly one-tenth of pupils who had teachers who held a primary school certificate. The

distribution of teachers by qualification across the seven regions varied markedly, indicating the need for measures to ensure a better balance. The mean duration of time spent in training was 2.2 years and, apart from Gaborone where the mean was 2.5 years, there was a good balance across the regions. The same could be said about teacher experience where the average was 10.8 years; only West region had a mean of 6.6 years that fell well below the average of 10.8 years. On the whole, in-service courses were evenly distributed across all seven regions, the mean for each teacher being about one in-service training session per year over the last three years. More than three-quarters of the teachers felt that the in-service training was effective.

The goal teachers rated most highly in the teaching of reading were 'improving reading comprehension' and 'extending vocabulary' while 'problem solving' was the major goal in mathematics. It follows that reading for comprehension through questioning was considered an important activity in reading while working in pairs or groups and using practical equipment were emphasised together with the provision of feedback and explanations that were considered key in mathematics. Testing was more frequent in reading than in mathematics.

Although parent-teacher meetings were held quite frequently, relatively few teachers actually met the parents of the children they taught in the classroom setting. Furthermore, only about a quarter of the teachers asked parents to sign their children's reading and mathematics homework.

The provision of sitting and writing places for pupils in Botswana was very impressive, with each pupil having a chair and desk or table. Other classroom provisions such as chalk and chalkboard were also good (although some six percent of pupils were in classroom without these two resources), but there was an under-provision of library books. Teacher resource centres were provided in every region, and were frequently used by teachers in all regions except the North region. The most common use of resource centres was for training and sharing ideas with other teachers and staff of the centre, as well as for general consultation.

Inspectors were positively viewed, and were largely seen by teachers as having an advisory role; they also brought new ideas and suggested alternative teaching methods. Rarely were they seen as coming to find fault or to criticise. The vast majority of teachers also enjoyed the support of their school heads. On the whole, Botswana teachers were motivated by higher order needs that include the desire to see pupils learn and to realise their own professional growth.

Chapter 5

School Heads' Characteristics and their Views on Educational Infrastructure, Organization and Operation of Schools, and Problems with Pupils and Staff

Introduction

In this chapter, the focus has been on providing a description of the school heads and the schools which the Standard 6 pupils attended. Several characteristics of school heads and the schools which they managed were examined. It is commonly accepted that school heads' academic and professional preparation plays a significant role in the way they carry out their day-to-day duties. The school heads, just like the teachers, also need to have professional and administrative support in order to keep abreast with the demands of a constantly changing world. The school heads' age, gender, academic and professional qualifications, training and experience, among other characteristics have been examined.

The major questions to be answered in this chapter are:

1. What were the personal characteristics of school heads (for example, age, gender)?
2. What were the professional characteristics of school heads (in terms of academic and professional preparation, experience and specialised training)?
3. What were the school heads' viewpoints on general school infrastructure (for example, electrical and other equipment, water, and basic sanitation) and the condition of school buildings?
4. What were the school heads' viewpoints on (a) daily activities (for example, teaching, school-community relations, and monitoring pupil progress), (b) organisational policies (for example school magazine, open days, and formal debates), (c) inspections, (d) community input, (e) problems with pupils and staff (for example, pupil lateness, teacher absenteeism, and lost days of schools)?

What were the personal characteristics of school heads (for example, age, gender)?

Some people argue that a school is as good as its school head. As the instructional leader, the school head plays a critical role in the improvement of instruction. It is the school head who secures and manages the human, financial and material resources needed to facilitate teaching and learning. Furthermore, he or she creates the social and psychological environment that stimulates and supports learning. A good school head, therefore, is the one who is able to acquit himself or herself well as instructional leader, manager and motivator, among other roles. Therefore, a good school head with support from a good staff is more likely to steer the school in a better direction than a poor school head. This section looks at the characteristics of school heads and the different inputs that influence teaching and learning in their schools. The data will be used later to link the achievement levels of pupils to the different conditions under which they learn.

Characteristics of School Heads

Table 5.1. Means, percentages, and sampling errors for school head age and gender (SACMEQ II)

| Region | Age (years) | | Gender (female) | |
|-----------------|------------------------|------|----------------------------|-------|
| | Mean | SE | % | SE |
| Central North | 51.2 | 1.13 | 52.1 | 10.49 |
| Central South | 50.0 | 1.17 | 31.6 | 8.94 |
| Gaborone | 49.9 | 1.33 | 85.2 | 8.15 |
| North | 50.4 | 1.14 | 50.5 | 11.76 |
| South Central | 51.0 | 1.03 | 60.9 | 9.35 |
| South | 49.5 | 1.23 | 53.5 | 10.46 |
| West | 45.0 | 1.38 | 60.3 | 11.95 |
| Botswana | 49.9 | 0.46 | 53.4 | 3.89 |

Age of School Heads

The 2000 Standard 6 pupils had school heads who were, on average, 50 years old. As was expected, the West region had on average the youngest school heads (45 years). There was not much disparity among the regions. The school heads' data was similar to the teacher data as discussed in Chapter 4, where teachers in West region also tended to be younger than those in other regions. The reasons for this are the same as for teachers, namely, that in most cases young graduates are easier to send to the far and rural West region while the more mature teachers prefer to move towards the more urbanised eastern part of the country.

Gender of School Heads

In all the regions except the Central South, the majority of school heads were female. In Gaborone the proportion of males to females highly favoured females as there were only 15 percent male school heads. Unlike the teacher data where the highest proportion of males was in the West, the highest proportion of male school heads was in the Central South region.

Since the majority of teachers in Botswana are female, it is expected that the majority of school heads would be female. In addition, this also shows that females are sufficiently represented at senior managerial levels or positions of influence.

What were the professional characteristics of school heads (in terms of academic and professional preparation, experience, and specialised training)?

School heads' professional preparation determines their capacity to support their staff in all teaching endeavours.

School heads' academic education

Table 5.2. Level of academic education of school heads (SACMEQ II)

| Region | Level of academic education | | | | | | | | | |
|-----------------|-----------------------------|-------|------------------|-------|------------------|-------|---------|------|----------|------|
| | Primary | | Junior secondary | | Senior secondary | | A-level | | Tertiary | |
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 31.6 | 9.37 | 52.6 | 10.42 | 15.7 | 7.58 | 0.0 | 0.00 | 0.0 | 0.00 |
| Central South | 29.3 | 8.84 | 57.2 | 9.42 | 10.4 | 5.78 | 3.1 | 3.15 | 0.0 | 0.00 |
| Gaborone | 24.1 | 9.98 | 33.2 | 10.98 | 18.7 | 10.11 | 4.4 | 4.45 | 19.6 | 9.19 |
| North | 17.5 | 9.38 | 32.7 | 10.74 | 37.4 | 11.62 | 7.9 | 5.62 | 4.5 | 4.52 |
| South Central | 33.1 | 8.85 | 35.2 | 9.12 | 24.1 | 8.14 | 3.8 | 3.78 | 3.7 | 3.75 |
| South | 38.2 | 10.29 | 46.6 | 10.41 | 11.5 | 6.42 | 0.0 | 0.00 | 3.7 | 3.71 |
| West | 5.1 | 5.10 | 82.6 | 8.77 | 5.8 | 4.18 | 0.0 | 0.00 | 6.5 | 6.53 |
| Botswana | 28.0 | 3.63 | 48.2 | 3.91 | 17.0 | 2.97 | 2.6 | 1.21 | 4.1 | 1.46 |

The majority of 2000 school heads in Botswana were Junior Certificate holders. A large proportion had only gone up to Standard 7. Only 17 percent had senior secondary education and less than ten percent had gone beyond that. The West region had the lowest percentage of school heads who had primary schooling only. The highest was in the South region (38.2 %) followed by the South Central region (33.1 %). About twenty percent of school heads in Gaborone said they had tertiary education. There is a possibility that school heads confused professional education (Diploma in Primary Education, Bachelor of Education or Master Education) with academic education. The North region had the highest (37.4 %) number of school heads with senior secondary education.

School heads' professional training, experience and specialized training, school heads teaching experience

As is the case with teachers, school heads who are professionally trained (as teachers), and who have had long experience both as teacher and school head, are more likely to manage their schools more effectively than those who have not been professionally trained and those with little or no experience. Furthermore, in some countries school heads are provided with specialised training that enhances their competence in the various managerial tasks. School heads were therefore asked to indicate the number of years they had spent teaching as well as the length of training (in years) that they had received as teachers. School heads were also asked whether they had received specialized training in school management and to state the total number of weeks they had spent in such training. Data relating to school heads' experience, training as teachers and specialised training for school heads have been presented in Table 5.3.

Table 5.3. Means and sampling errors for the teaching experience and training of the school heads (SACMEQ II)

| Region | Experience (years) | | Teacher training (years) | | Specialised training (weeks) | |
|-----------------|-----------------------|------|-----------------------------|------|------------------------------------|------|
| | Mean | SE | Mean | SE | Mean | SE |
| Central North | 26.1 | 1.07 | 2.3 | 0.09 | 10.2 | 4.60 |
| Central South | 25.4 | 0.85 | 2.4 | 0.12 | 3.1 | 0.65 |
| Gaborone | 28.8 | 1.40 | 3.0 | 0.22 | 16.0 | 5.56 |
| North | 27.5 | 1.13 | 2.5 | 0.16 | 3.2 | 0.65 |
| South Central | 27.1 | 1.33 | 2.5 | 0.14 | 4.9 | 2.49 |
| South | 25.9 | 1.26 | 2.4 | 0.14 | 7.5 | 3.19 |
| West | 21.1 | 0.98 | 2.1 | 0.05 | 2.0 | 0.33 |
| Botswana | 26.0 | 0.45 | 2.4 | 0.05 | 6.4 | 1.15 |

The 2000 school heads had an average of 26 years teaching experience. The youngest school heads (45 years) in the West region had the least teaching experience (21.1 years). The most experienced school heads were in Gaborone (28.8 years), and this pattern was

consistent with that pertaining to teachers. Apart from the West region, there was not much variation among the regions with regard to teaching experience.

The professional training of the school heads was almost identical to that of teachers. The minimum period of teacher training in Botswana is two years and the maximum is four. The national average of teacher training for the school heads was 2.4. The lowest was 2.1 years for school heads in the West region and the highest was 3 years for those in Gaborone. All school heads had a minimum of two years of teacher training. Since the position of a school head is a promotional post that is acquired on merit, it is not surprising that all school heads had the minimum period of professional preparation of two years.

School heads in Gaborone had received 16 weeks of specialized training, while those in the Central North had 10.2 weeks and yet it was only two weeks in the West region. In terms of administration it is surprising that the South Central region (4.9 weeks) as a whole did so badly with regard to such training as compared to Gaborone and yet the two regions were supervised from the same office. It is possible that the school heads were not clear of what training they had received. They may have misunderstood the question or were not quite sure of what they were trained on.

Policy suggestion 5.1: The Department of Primary and Teacher Training and Development should develop benchmarks for all in-service training including training for school heads. The in-service officers for each region should be encouraged to design training packages tailor made for groups of school heads needing support in the particular areas.

School heads' experience as a school head

School heads were further requested to state the number of years they had spent as school heads in their current schools as well as the accumulated experience that had had in the position of school head in the current school as well as other schools. The results have been presented in Table 5.4.

Table 5.4. Means and sampling errors of school heads' years of experience as a school head (SACMEQ II)

| Region | This school | | Altogether | |
|-----------------|-------------|------|------------|------|
| | Mean | SE | Mean | SE |
| Central North | 5.5 | 0.71 | 11.7 | 1.73 |
| Central South | 4.3 | 0.53 | 10.4 | 1.38 |
| Gaborone | 3.2 | 0.50 | 8.1 | 1.39 |
| North | 4.3 | 0.72 | 14.4 | 2.23 |
| South Central | 4.7 | 0.53 | 13.1 | 1.85 |
| South | 5.6 | 1.16 | 12.5 | 1.66 |
| West | 3.0 | 0.51 | 8.1 | 1.76 |
| Botswana | 4.6 | 0.28 | 11.4 | 0.67 |

In Table 5.4 it can be seen that most school heads in 2000 had been at the same school for an average of four to five years except for those in West region (3 years) and Gaborone region (3.2 years). The overall average experience of a school head in the country was 11.4 years. The longest serving school heads were in the North region (14.4 years) while the shortest were in Gaborone and the West region (8.1 years). Naturally, it is those who have had considerable teaching experience, and who are therefore generally older, who would be considered for promotion to the position of school head., Consequently, it is not surprising that school heads in Gaborone had the shortest overall experience since people usually prefer to move away from urban areas and work closer to their home towns when they approach retirement. Most people who work in the West region, as observed earlier, are from other parts of the country and as they mature they prefer to move to the more developed eastern part of the country.

What were the school heads' views on general school infrastructure (for example, electrical and other equipment, water, and basic sanitation) and the condition of school buildings?

Teachers need an environment that is supportive of their teaching. Even though all systems have benchmarks on what inputs should be in schools, different financial obligations and different administrative practises may at times result in disparities. School heads were asked to indicate what infrastructure in terms of buildings, grounds, general services and equipment they had in their schools, and the results have been summarised in Table 5.5.

Table 5.5. Percentages and sampling errors for schools with general facilities (SACMEQ II)

| Facility | Percentage with facility | |
|--------------------------------|--------------------------|------|
| | % | SE |
| School buildings | | |
| School library | 30.0 | 3.62 |
| School hall | 26.9 | 3.57 |
| Staff room | 74.8 | 3.43 |
| School head's office | 72.6 | 3.55 |
| Store room | 71.9 | 3.41 |
| Cafeteria | 5.2 | 1.63 |
| School grounds | | |
| Sports area/ playground | 77.8 | 3.32 |
| School garden | 83.8 | 2.96 |
| General services | | |
| Piped water/ well or bore-hole | 96.3 | 1.53 |
| Electricity | 52.0 | 3.87 |
| Telephone | 75.6 | 3.15 |
| Equipment | | |
| First-aid kit | 65.7 | 3.59 |
| Fax machine | 3.3 | 1.36 |
| Typewriter | 7.8 | 2.06 |
| Duplicator | 30.9 | 3.66 |
| Radio | 94.9 | 1.68 |
| Tape recorder | 52.7 | 4.00 |
| Overhead projector | 3.3 | 1.37 |
| Television set | 9.6 | 2.19 |
| Video-cassette recorder | 9.2 | 2.19 |
| Photocopier | 25.1 | 3.20 |
| Computer | 11.7 | 2.54 |

More than 70 percent of the pupils were in schools that had at least a staff room, a school head's office and a store room. Only five percent of pupils were in schools that had a cafeteria. According to the Ministry's benchmarks, a cafeteria was not provided in primary schools. Schools that had cafeterias had raised their own funds through local Parent Teacher Associations (PTAs) in order to build them. Only 30 percent of pupils were in a school that had a school library, and this is disappointing. Even more disappointing is the observation that more than 20 percent of Standard 6 pupils were in a classroom without a class library or had no access to a library box. Pupils need a variety of books in order to develop and enhance their vocabulary. The fact that not all pupils came from homes that had adequate reading materials meant that the school was the only source of reading material for its learners. In addition to this, some schools were in villages without a public library.

Although only a small proportion of schools (16.2%) did not have a school garden, this is worrying since the Ministry's policy is that each school should have a school garden in order to teach practical skills in agriculture. Agriculture was taught both at primary and secondary school levels. At the junior secondary level it was even a core subject taken by all pupils. The foundation for this was therefore laid at the primary level. The availability of a school garden also means that the school could grow some basic commodities for consumption or for sale.

The vast majority of schools in Botswana (96.3%) had piped water, and this is commendable. The Ministry of Local Government does not supply schools with equipment such as overhead projectors, television sets, video cassette recorders, photocopiers, computers and others. Schools that own any of these items had to raise funds through their PTAs. The disparities observed with regard to ownership of these items of equipment were largely a reflection of the disparities in the wealth of the different PTAs and the priorities they set for themselves. The Ministry might want to consider helping those schools located in poorer communities and that therefore lack basic equipment.

Condition of school buildings and provision of toilets

School heads were asked to assess the condition of their school buildings by indicating if, in their view, their school buildings needed to be completely rebuilt, needed major repairs, needed a lot of minor repairs, only a few minor repairs, or if the building was in a good condition. The percentages of pupils in schools in the first two categories (that is, those needing a complete rebuilding and major repairs) were calculated and presented as “need repair” in Table 5.6.

School heads were also asked to indicate the number of toilets available in the school, and these were divided by the total enrolment of the school in order to obtain the number of pupils per toilet. In cases where there were double shift practices, the number of pupils used was the one for the biggest session. The results for both the school’s repair status and the provision of toilets have been presented in Table 5.6.

Table 5.6. General condition of buildings and toilet facilities (SACMEQ II)

| Region | Need repair | | Toilet provision | |
|-----------------|-------------|-------|------------------|------|
| | % | SE | Mean | SE |
| Central North | 24.9 | 8.61 | 40.6 | 4.56 |
| Central South | 47.0 | 9.48 | 47.4 | 5.38 |
| Gaborone | 43.0 | 11.66 | 21.5 | 1.30 |
| North | 42.3 | 11.75 | 43.4 | 3.78 |
| South Central | 30.8 | 8.75 | 42.1 | 5.65 |
| South | 41.3 | 10.34 | 47.1 | 5.24 |
| West | 48.4 | 12.02 | 68.3 | 8.46 |
| Botswana | 38.7 | 3.90 | 44.4 | 2.15 |

The picture reflected in the results presented in Table 5.6 about the repair status of school buildings was not good. More than a third of the pupils were in schools that needed repairs or re-building. Although the situation was worse in West and Central South, the picture was the same for all regions except the South Central and Central North where the

percentage of schools needing major repairs or re-building was only 30.8 percent and 24.9 percent respectively.

Policy suggestion 5.2: The Ministry of Education should work closely with Ministry of Local Government, Lands and Housing in order to prepare a programme for the repair of school buildings and the re-building of those that are beyond repair. This could be done in a phased manner in view of the large amounts of resources required.

The West region has the highest proportion of pupils per toilet with 68 pupils per toilet. This is due to the fact that most schools in the western region use pit latrines which, due to the nature of their construction, cannot be provided in very large numbers. Gaborone region recorded the lowest pupil toilet ratio of 21.5. The reason for this is that, unlike pit latrines, water-system toilets for schools can be provided in large numbers. According to the Botswana Education Statistics Report 2000, there were only 4 pit latrines found in primary schools in Gaborone, which implies that virtually all the schools had water system toilets.

The policy on the provision of toilet is clear, and states that there should be provision of “adequate” toilets in every school. However, it remains unclear whether there are any existing, explicitly stated norms with regards the provision of toilets (e.g. in the form of maximum number of pupils per toilet), but it could well be that these norms are implicitly understood. The national mean of 44 pupils per toilet appears to reflect an adequate level of provision, but the variation from one region to another (e.g. 21.5 for Gaborone and 68.3 for West region) suggests the need for insisting on some norm. In this way, it is easier to tell whether a school meets the requirements or not.

Policy suggestion 5.3: The Ministry of Education must widely distribute to all schools the norms every school must meet in the provision of toilet facilities.

In order for pupils to learn effectively, they must be provided with adequate accommodation in the form of classrooms. This will ensure that teaching and learning activities are not disrupted by the vagaries of nature such as the hot sun, rain and wind. In many developing countries, the provision of classrooms is often problematic, and pupils

are forced to learn under crowded conditions because of the shortage of classrooms. School heads were therefore asked to state the total classroom area for their schools, and this was then divided by the total number of pupils enrolled in order to obtain classroom space per pupil. The results have been presented in Table 5.7.

Table 5.7. Means and sampling errors of classroom space for pupils (SACMEQ II)

| Region | Classroom space | |
|-----------------|-----------------|------|
| | Mean | SE |
| Central North | 1.8 | 0.13 |
| Central South | 3.8 | 1.14 |
| Gaborone | 1.9 | 0.19 |
| North | 3.0 | 0.89 |
| South Central | 2.5 | 1.00 |
| South | 2.2 | 0.18 |
| West | 1.4 | 0.22 |
| Botswana | 2.5 | 0.33 |

The national average of classroom space per pupil was 2.5 square metres which, by any standards, is quite adequate. Many countries have 1.5 square metres per pupil and if this norm is applied then only the West region would be considered to have the problem of classroom shortage. The Ministry's policy is that there should be an adequate provision of classrooms up to a maximum of 22 per school. This policy will, of course, ensure that schools do not become too large. However, it is equally important to state clearly the minimum classroom space every school must provide for every pupil, and thereby ensure their comfort. In the absence of such a norm, some schools might under provide space while others over provide it.

Policy suggestion 5.4: The Ministry of Education must establish and distribute norms regarding the minimum amount of space every pupil should have, and ensure that every school meets this norm.

It is often argued that the school head is, first and foremost, a teacher. Certainly, one of the school head's key role is that of an instructional leader. This implies that the school head must be a good teacher himself or herself, and therefore promote good teaching not

only through supervision, but through demonstration and the provision of informed guidance to the teacher. In order to accomplish this, the school head must from time to time take part in actual classroom teaching. School heads were therefore asked to state the amount of time that they actually spent teaching each week, and the results have been presented in the Table 5.8 below.

Table 5.8. Means and sampling errors for amount of time of school head teaching per week (SACMEQ II)

| Region | School head teaching minutes per week | |
|-----------------|---------------------------------------|--------|
| | Mean | SE |
| Central North | 193.6 | 29.97 |
| Central South | 266.5 | 101.18 |
| Gaborone | 109.0 | 28.01 |
| North | 175.0 | 37.62 |
| South Central | 143.8 | 29.59 |
| South | 104.9 | 26.03 |
| West | 195.6 | 82.97 |
| Botswana | 175.7 | 24.65 |

It can be observed from Table 5.8 that, on average, a school head in Botswana spent nearly three hours (175.7 minutes) teaching every week in 2000. This figure reflects a high level of school head participation in classroom teaching, and should be maintained.

What was the incidence of school activities such as a school magazine, public speaking day, open days, etc.?

Effective schools frequently offer pupils the opportunity to participate in a variety of activities that not only encourage learning, but also consolidate what has been learned by promoting the application of the skills they have learned. Some of such key activities are school magazine to which pupils contribute, public speaking, open days and debates. School heads were asked to indicate whether they had each of these activities in their school, and their responses have been summarised in Table 5.9.

Table 5.9. Percentages and sampling errors for the school activities (SACMEQ II)

| <u>Activity</u> | Percentage of school activities | |
|-------------------------------------|--|------|
| | % | SE |
| School Magazine | 27.2 | 3.54 |
| Public Speaking Day | 24.4 | 3.44 |
| Open-Door Policy | 94.8 | 1.84 |
| Formal Debates or Debating Contests | 39.7 | 3.76 |

The open door policy was the most common among schools in Botswana, with 94.8 of them implementing open door policies of one form or another. Schools, however, exhibited much lower participation in the other three activities listed in the table, and this is not very encouraging.

Policy suggestion 5.5: Ministry of Education's Primary Education division should encourage all schools to offer their pupils the opportunity to take an active part in a variety of activities that can further extend and deepen the skills they have learned in class.

Education systems the world over prescribe for schools a calendar that should be followed. This is done to ensure that pupils have sufficient time to cover all aspects of the planned curriculum. It often happens, however, that some days on this official calendar are, due to a variety of reasons, lost. This in a way represents wastage, and therefore school heads were requested to indicate the number of official school days that were lost to non-school activities during the preceding school year (1999). The results have been presented in Table 5.10.

Table 5.10. Means and sampling errors for number of official school days lost (SACMEQ II)

| Region | Average of official school days lost | |
|-----------------|--------------------------------------|------|
| | Mean | SE |
| Central North | 1.3 | 0.39 |
| Central South | 1.7 | 0.45 |
| Gaborone | 2.4 | 0.79 |
| North | 2.1 | 0.73 |
| South Central | 1.5 | 0.46 |
| South | 0.9 | 0.30 |
| West | 5.1 | 1.66 |
| Botswana | 1.9 | 0.24 |

It can be seen that very few official school days were lost by schools in 1999, the average being about two days. It is rather disturbing to note, however, that in West region the number of days lost was 5, which is unacceptably high. One of the reasons that could be given by the head teachers are that the region is far from education facilities such as the education centres/offices, roads are bad, and transport is sometimes a problem. In some cases it is possible that some school days were used for travelling.

Policy suggestion 5.6: The Ministry must investigate the reasons why so many official school days were lost in the West region and undertake measures to address the causes. Thereafter, it should monitor the situation and ensure that schools do not continue to lose valuable learning time.

What were the purposes and frequency of school inspections?

School heads, teachers and pupils all need to have their work monitored, supervised and supported by others from outside the school. The normal practice is that there are structures set up for the supervision of schools, and these ensure that schools are visited at regular intervals. In Table 5.11(a) the frequency of these visits, by region, has been presented.

Table 5.11(a). Means and sampling errors of the frequency of school inspection over 3 years (SACMEQ II)

| Region | Numbers of inspections over 3 years | |
|-----------------|--|------|
| | Mean | SE |
| Central north | 5.4 | 0.73 |
| Central south | 4.3 | 0.46 |
| Gaborone | 4.6 | 0.70 |
| North | 5.0 | 0.57 |
| South Central | 4.3 | 0.50 |
| South | 5.6 | 0.62 |
| West | 5.7 | 0.90 |
| Botswana | 4.9 | 0.23 |

From Table 5.11(a) it can be seen that, on average, each school in Botswana has been visited about five times over the three years preceding 2000 (that is, about once every year). The frequency of these visits is generally balanced across the seven regions, and these ranged from 4.3 visits per year in Central South and South Central to 5.7 and 5.6 in West and South regions respectively. In the absence of known norms, it is difficult to say whether the frequency of these visits is adequate.

If they are to achieve their intended purpose, school visits should have specific objectives or purposes. One of the most common purposes of school visits is to inspect school heads and teachers for various reasons or purposes. In Table 5.11(b) these inspection visits have been presented by purpose.

Table 5.11(b). Percentages and sampling errors for school inspections (SACMEQ II)

| Purpose of inspection | Inspection took place in past 3 years | |
|---|--|------|
| | % | SE |
| Full inspection | 63.7 | 3.76 |
| Routine inspection | 34.6 | 3.66 |
| Inspect teachers – <u>not</u> for promotion | 20.4 | 3.17 |
| Inspect teachers – <u>for</u> promotion | 8.5 | 2.30 |
| Assist teachers | 48.6 | 3.98 |
| Advise the school head | 61.0 | 3.94 |
| Address crisis/problem | 34.8 | 3.77 |
| Courtesy call | 71.8 | 3.61 |

Data presented in Table 5.11(b) shows that the most common purpose for inspection visits is to make a courtesy call (71.8%). Other purposes that were highly ranked were full inspections (63.7%) and to advise the school head (61.0%). Considering that teachers constitute the majority of the school staff, and that they are the ones responsible for executing the key function of the school (i.e. teaching) it would be expected that they are the focus of most visits, but this was not the case. Although the figure of 34.8 percent is not in itself high, the fact that such an inordinately high number of visits is made for the sole purpose of addressing problems or crises might be a cause of concern. This should be viewed against the background of the fact that the most frequent visits are made for no purpose other than just a courtesy call.

Policy suggestion 5.7: Ministry of Education’s Inspectorate should develop norms and guidelines on the frequency and purpose of school visits so as to ensure that there is the correct balance of such visits, by purpose, across schools and regions.

What was the contribution of the school community (in terms of time and resources for maintaining the school and for providing supplementary funding)?

Although the provision of education is first and foremost the responsibility of the state, there are many other players with an interest in schools, and who provide it with various forms of support. The schools immediate or local community is, perhaps, one of the most important stakeholders who promote their (schools') development. It is important to know what forms of support communities render to schools as some forms of such support, or a mix of various forms of support, may make a larger difference than others. School heads were therefore asked to indicate the nature of support they had received from the local community, and the results have been presented in Table 5.12.

Table 5.12. Parent/community contributions to the school (SACMEQ II)

| Type of contribution | Pupils in school with community contributing to | |
|---|--|-----------|
| | % | SE |
| Building of school facilities | 22.5 | 3.20 |
| Maintenance of school facilities | 14.1 | 2.76 |
| Construction/maintenance and repair of furniture/equipment | 5.8 | 1.75 |
| The purchase of textbooks | 3.2 | 1.39 |
| The purchase of stationery | 6.4 | 1.89 |
| The purchase of other school supplies | 17.7 | 2.89 |
| Payment of examination fees | 1.0 | 0.74 |
| Payment of the salaries of additional teachers | 2.3 | 1.24 |
| Payment of an additional amount of the salary of teachers | 0.5 | 0.45 |
| Payment of the salaries of non-teaching staff | 73.7 | 3.37 |
| Payment of an additional amount of the salary of non-teaching staff | 29.5 | 3.54 |
| Extra-curricular activities | 92.1 | 2.15 |
| Assisting teachers in teaching without pay | 15.8 | 2.81 |
| Provision of school meals | 30.0 | 3.67 |

The most common forms of support, as expressed by school heads, was contribution towards extra-curricular activities (92.1%), followed by payment of salaries for non-teaching staff (73.7%). All the other forms of contribution were mentioned less frequently, but those that deserve mention are ‘provision of meals’ (30.0%), ‘payment of an additional amount of the salary of non-teaching staff’ (29.5%) and ‘building of school facilities’ (22.5%). This pattern is understandable in view of the fact that, in Botswana, primary education is free, and so parents’ role is complementary. This explains why the bulk of parents’ contributions go towards the support of extra-curricular activities and towards the provision of school meals. It is also most probable that the “non-teaching staff” who are paid are those who prepare meals.

What were the main behavioural problems of pupils?

Many factors influence pupils’ behaviour, and these may be school-based or home-based. Schools generally get concerned with pupil behaviour since they regard and view character moulding as part of their responsibility. Furthermore, undesirable behaviour may have a disruptive effect on children’s learning. School heads were asked to state the frequency with which a selected set of common behavioral problems occurred in their school, and the percentage of pupils whose school heads reported that each of the listed behavioral problems **never** occurred has been presented in Table 5.13(a). It is important to note that, the higher the percentage, the less the behavioural problem was experienced.

Table 5.13(a). Pupil behavioural problems (SACMEQ II)

| Frequency of pupil behavioural problem | Indicating 'never' occurs | |
|--|---------------------------|------|
| | % | SE |
| Absenteeism | 6.0 | 1.90 |
| Arriving late at school | 0.0 | 0.00 |
| Skipping classes | 79.4 | 3.08 |
| Dropping out of school | 7.6 | 1.95 |
| Classroom disturbance | 45.0 | 3.99 |
| Cheating | 20.9 | 3.22 |
| Use of abusive language | 7.9 | 2.03 |
| Vandalism | 41.8 | 3.95 |
| Theft | 12.2 | 2.60 |
| Intimidation of pupils | 10.4 | 2.38 |
| Intimidation of teachers/staff | 73.1 | 3.51 |
| Physical injury to staff | 96.8 | 1.22 |
| Sexual harassment of pupils | 85.3 | 2.83 |
| Sexual harassment of teachers | 100.0 | 0.00 |
| Drug abuse | 78.9 | 3.10 |
| Alcohol abuse | 80.6 | 3.02 |
| Fights | 2.9 | 1.31 |
| Health problems | 3.3 | 1.54 |

From Table 5.13(a), it can be seen that the most common pupil behavioural problems were arriving late for school, fights, health, absenteeism, dropping out of school and use of abusive language. The fact that 90 percent of pupils were in schools where these occurred, these issues require some attention. Theft and cheating were reported as occurring quite frequently, and certainly are undesirable behaviours that will also need some attention. The less frequently mentioned problems of drug and alcohol abuse, sexual harassment of other pupils, vandalism and intimidation of teachers should actually be of concern because of their effect on the well-being of individuals and groups of

individuals. A child-friendly environment that nurtures the development of every pupil to his or her fullest potential must be completely free of any of these.

Policy suggestion 5.8: Ministry of Education’s Research Unit must conduct a more focussed study to establish the seriousness, prevalence and patterns or trends of the various pupil behavioural problems as well as their causes, and suggest ways in which these could be addressed.

What were the main behavioural problems of teachers?

The behavioural problems of teachers are a key concern for supervisors, school heads and even parents. Teachers are expected to execute their duties in a manner that reflects professionally acceptable behaviour. Over and above this, they are also expected to display role modelling behaviour to pupils and fellow teachers. School heads were asked to indicate the behavioural problems teachers displayed, and the results have been presented in Table 5.14. It should be noted that the higher the percentage, the less serious the behavioural problem in question.

Table 5.13(b). Teacher behavioural problems (SACMEQ II)

| Frequency of teacher behavioural problem | Indicating ‘never’ occurs | |
|--|---------------------------|------|
| | % | SE |
| Arriving late at school | 14.1 | 2.75 |
| Absenteeism | 38.1 | 3.82 |
| Skipping classes | 73.7 | 3.45 |
| Intimidation or bullying of pupils | 66.3 | 3.74 |
| Sexual harassment of teachers | 99.6 | 0.42 |
| Sexual harassment of pupils | 99.0 | 0.74 |
| Use of abusive language | 67.4 | 3.77 |
| Drug abuse | 96.9 | 1.40 |
| Alcohol abuse | 82.0 | 3.13 |
| Health problems | 7.9 | 2.19 |

The most common teacher behavioural problem was health (7.9%), followed by arriving late at school (14.1%) and absenteeism (38.1%). Skipping classes, use of abusive language and intimidation or bullying of pupils were mentioned less frequently, but in view of the seriousness of their impact they should be reason for concern. Problems of health fall outside individuals' power to avert, and should therefore be another issue that merits serious attention. On the whole the most serious behavioural problems such as sexual harassment of pupils, drug abuse and harassment of teachers attracted low responses. The situation might get better, but equally could get worse, and therefore needs to be monitored.

Policy suggestion 5.9: Ministry of Education's Research Unit must conduct a more focussed study to establish the seriousness, prevalence and patterns or trends as well as causes of the various behavioural problems exhibited by teachers, and then suggest ways in which these can be addressed.

Conclusion

In this chapter, it has been seen that Grade 6 pupils in Botswana are in schools with school heads whose average age was about 50 years, with slightly half of them being female. About three quarters of them had primary school education or junior secondary school education as their highest qualification, with an average of 2.4 years' professional training and six weeks of specialized training in management. Their average experience as teachers was long (26 years) and their experience as school heads was fairly long too (11.4 years). It is important to ensure that school heads are provided with professional, administrative and management skills in order to keep up with the modern world, and in this regard the Ministry needs to put in place benchmarks for school heads' specialized in-service training. On average, a school head spent about three hours teaching.

On the whole, over 70 percent of the schools were provided with infrastructure such as halls, staff rooms, store rooms, sports grounds and gardens. Nevertheless, the few schools that do not have these facilities need the attention of the Ministry. In particular, the Ministry should ensure that schools have staff rooms because this is a place where teachers can meet, discuss and share ideas in a relaxed and comfortable atmosphere. It

should also ensure that all primary schools have school gardens. Children from schools without gardens are disadvantaged, because it will be too late for them when they are introduced to Agriculture at junior secondary school. Agriculture is a core subject at junior secondary school. The Primary Education Inspectorate should ensure that primary school heads take this very seriously and stern action should be taken against those school heads who do not comply. More worrying, however, is the fact that only 30 percent of the schools had a school library. The Department of Primary Education should ensure that all schools have libraries (especially classroom libraries) so as to improve children performance in general.

Although over 95 percent of the schools had piped water, it is important to have all primary schools with piped water. In this era of modern technology, it is also important to have all primary schools electrified so that they can also benefit from Ministry of Education programmes such as “Talk Back”, which is a live television programme designed for teachers and students to open up on general life and health issues. Without electricity or provision for it these pupils will never see and feel what other children are experiencing. Primary Education should also ensure that schools have teachers with basic computer skills. Furthermore, few schools offered opportunities for pupils’ participation in activities such as the school magazine, public speaking and debating contests. Schools should be encouraged to offer these.

School inspection visits are important for monitoring the quality of teaching and learning, and the results presented show that on average, each school received just over one inspection visit per year, in the majority of cases to make a courtesy call. However, inspection visits to make full school inspections and to advise the school head were also very common. Relatively fewer visits were targeted at teachers, and there is need for a better balance of visits by purpose.

Parents made a variety of contributions to schools, chief among them being payment of salaries for non-teaching staff and support to extra-curricular activities. Other forms of support included building school facilities, purchasing school supplies and providing

school meals. Despite these contributions, nearly 40 percent of pupils were in school buildings that needed major repairs or rebuilding. Although there were no clear norms on the provision of toilets, overall provision was satisfactory, although it reflected wide disparities among regions.

The most common pupil behavioural problems that needed attention were theft, cheating, drug and alcohol abuse, sexual harassment of other pupils, vandalism and intimidation of teachers. The other less serious but frequent behavioural problems requiring attention were arriving late for school, fights, health, absenteeism, dropping out of school, and use of abusive language. The most common teacher behavioural problems were health, arriving late at school, and absenteeism. Skipping classes, the use of abusive language and intimidation or bullying of pupils were less frequently, but may require attention in view of their seriousness. There might be need for a study that establishes the nature, seriousness and patterns of these behavioural problems.

Chapter 6

Equity in the Allocation of Human and Material Resources among Regions and among Schools within Regions

Introduction

Every education system strives to ensure not only that all children, wherever they may be, have access to school and stay in school, but also that they have the opportunity to realize meaningful learning outcomes. In order to learn effectively, pupils need key resources such as school heads and teachers who are sufficiently educated, well-trained and with good experience, teaching and learning materials and equipment in the form of textbooks, exercise books, library books, charts and other audio-visual aids; and infrastructure and services such as classrooms, libraries, toilets, playgrounds, water and electricity, to name some. For this reason, education systems frequently develop and implement policies that facilitate the equitable distribution of resources across the regions. Equitable allocation of resources contributes to redressing the differences in achievement among regions and among schools within regions. This chapter focuses on the distribution of human and material resources among regions and among schools within regions with a view to establishing the degree of equity in the distribution of these.

Some key policies on equity

Botswana has taken several steps to ensure that there is as much equity as possible in the distribution of key resources to education. Two of the key issues that Botswana has identified are access and equity. The 1991 population census revealed that 17 percent of the 7-13 children were not enrolled in formal education, contrary to the projected figure of only 10 percent. The results of the 1991 population census also revealed that whilst the national average primary school enrolment for the 7-13 was 83 percent there were considerable variations between the districts. For example, Orapa had an average of 95 percent Ngamiland had 66 percent while Kweneng West had 65 percent The results also

revealed that there were imbalances in resource allocation, for example, shortage of trained primary school teachers varied from 5.4 percent in Gaborone to 41.9 percent in North West District against a national average of 25.4 percent. These implied that North West District had more untrained teachers at primary schools than any other District. The 1991 census results also revealed that children with disabilities did not have equal access to the education system (Revised National Policy on Education -1994).

A commission was appointed to look into the education system and identify areas of concern and give advice on what could be done to address these problems so as to achieve universal primary education for all. The commission found out that the levels of educational achievement in primary school were indeed declining. Some of the reasons identified for this low level of achievement were, inadequate physical facilities, low quality of the teachers, lack of effective supervision, inadequate co-ordination of the administrative functions shared between the Ministry of Local Government, Lands and Housing and the Ministry of Education, inefficient distribution of instructional materials and the retention of educational policies such as large class sizes, double shifts and automatic promotion without ensuring that mechanisms which mitigate the negative effects of these policies are in place.

To address the problem of access, the government has focused in increasing inputs such as classrooms and teachers' housing. The ultimate target is that each teacher should be provided with residential accommodation. Particular attention is given to areas where access to primary education was less than the national average in order to achieve equity.

The Government has worked very hard in ensuring the provision of adequate physical facilities. The minimum that a standard primary school should have in terms of physical facilities as recommended by the commission is as follows:

- adequate number of classrooms up to a maximum of 22
- administration block with office space for school head, deputy school head, typist, staff room and 2 store rooms for storage of books and food

- library
- resource centre
- fully equipped Science room/Science Equipment
- room for health activities
- a sports field
- a tool shed for storage of agricultural and other tools
- teachers quarters with a minimum of 2 bedrooms
- adequate toilet facilities (including provision for disabled)
- sufficient land for agricultural purposes and future development
- electrification of school buildings including teachers quarters

To address the issue of textbook development, a textbook development committee has been established to evaluate materials for publishing and approve textbooks to be used in primary schools.

The Government has also intensified efforts to increase access to education for children with disabilities by expanding support for non governmental organisations which have considerable experience and expertise in this field to enable them to provide free education to these children.

To address the issue of lack of trained teachers, the Government has put in place measures that are aimed at raising the status and morale of the teachers so that they could perform their tasks more effectively. These are, improved pre-service training and in-service training, a package of incentives and improvements in the conditions of their service.

To increase access and achieve equity in primary schools, the government is also providing packages and allowances for the needy children to cover their costs for school attendance.

The SACMEQ study allowed the opportunity of checking on the equitable distribution of certain key material and human resources in the country.

Two approaches to the measurement of equity

In an ideal situation, it should not matter which school a pupil goes to because every school should offer the same conditions for the pupil. Furthermore, it should not matter in which region a school is situated because all regions would have the same level of human and material resources, and should therefore offer equal opportunities to pupils. In most instances, however, the situation on the ground is different, and the degree of departure from the ideal is greater in some cases than in others. It is important, therefore, to measure the extent to which the distribution of resources is equitable.

For equity measurement, the study has employed two approaches namely:

- a) Variation among regions
- b) Variation among schools within regions

Variation among regions

A statistic called the coefficient of intra-class correlation (ρ) may be used to divide the variation in resource inputs into two components, namely: (a) among regions and (b) among schools within regions. ρ can range from around zero (0.0) to 1.0. When used in this way ρ is a ratio that can measure the percentage of total variation among schools that can be attributed to variation among regions. The residual figure measures the average variation among schools within the region.

To appreciate the meaning of rho, it is useful to consider two hypothetical school systems: system A and B. In system A, resources are allocated equally or nearly equally, to all schools and therefore when one calculates average resource levels for regions in the system one finds that these are more or less the same – except perhaps for some minor chance deviations. For such a school system, the value of rho would be close to zero because the variation among regions is associated with chance differences. That is, most of the variation among schools is due to variation among schools within regions.

On the other hand, consider system B where, because of administrative decision's historical factors, or geographical dispersion of social class groups, there are large variations among regions. Most of the variation among schools in this case would be due to variation among regions and there would be little variation among schools within regions. For such a school system the value of rho would be high (perhaps approaching unity) because most of the variation among schools could be accounted for by variation among regions.

The examples given describe two extremes that serve to illustrate the interpretation of rho. When using rho in policy discussions it is common practice to multiply the value by 100 in order to present a more readable discussion about 'percentage of variance'. For example, a rho of 0.20 means that 80 percent of the differences are among schools within regions and 20 percent among regions. In contrast, a rho of 0.80 would indicate that 80 percent of the differences among schools were associated with variation among regions and 20 percent among schools within regions.

Variation among schools within zone

It is also possible to quantify the differences among schools within a particular region by making a comparison with the variation among schools at the national level. This can be achieved by using the formula below:

$$\frac{\text{Standard deviation for schools in a region}}{\text{Standard deviation for schools at national level}} \times 100$$

Standard deviation for schools in the nation

The standard deviation of an indicator for a particular zone measures the amount of variation among schools within that region, whereas the standard deviation for the whole country measures the amount of variation among schools for the nation. The ratio of the standard deviation of an indicator for a region to the standard deviation for the nation, expressed as a percentage, provides a measure of the degree of equity within a region compared with the national picture.

To illustrate the interpretation of these ratio values, it is helpful to consider two hypothetical zones: Region A and Region B. Assume that the levels of a resource are measured by an indicator that has a ratio value of 50 percent for Region A and 150 percent for Region B. That is, the variation in resource levels among schools in Region A is 50 percent less than the variation in resource levels among schools for the whole nation; and the variation in Region B is 50 percent higher than for the nation. From these values it can be said that, compared with the national picture, there has been an equitable allocation among schools within Region A. In contrast, the Ministry should be concerned about Region B because there is clear evidence of major inequities among schools in this zone when compared with differences among schools for the whole country.

Were qualified and experienced Standard 6 teachers and school heads distributed equitably among regions and among schools within regions?

Human resources are a critical factor in the provision of quality education. In many countries human resources in the form of teachers, school heads, inspectors/supervisors/advisors represent a major investment that takes the form of extended pre- and in-service preparation as well as accumulated on-the-job experience. Human resources also take up a large proportion of the nation's recurrent budget. It is therefore important that such a resource be distributed as equitably as possible.

The reader should note that in Botswana 93.6 percent of Standard 6 teachers taught both reading and mathematics, and therefore the results presented in Table 6.1 and 6.2, which were based on reading teachers, more less equally applied to mathematics teachers.

In Table 6.1 the variations of human resource inputs among schools and region by their different characteristics have been reported in columns 1-8. In column 1-7 the equity measurement of human resource input (a) among schools within Region and (b) among regions in column 8 have been reflected.

In the first seven columns the variations among schools in the region have been reported as the standard deviations of the human resources among schools in each zone expressed as a percentage of standard deviation among schools for the human resources at the national level. That is to say, if the percentage is below 100 the variations of resource level in schools in the region is less than the variations of resource level in schools for the whole nation and vice versa.

Table 6.1. Equity of human resource allocation as assessed by (a) variation among schools within regions, and (b) variation among regions (SACMEQ II)

| Human resources | Variation among schools within regions | | | | | | | Variation among regions (rho x 100) |
|--|--|-------|-------|-------|-------|-------|-------|-------------------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Classroom teacher prof. qualifications | 67.6 | 68.6 | 117.9 | 64.7 | 117.5 | 118.0 | 121.7 | 1.7 |
| Classroom teacher experience | 82.4 | 111.2 | 67.9 | 79.7 | 106.7 | 102.3 | 98.1 | 9.5 |
| School head prof. qualifications | 65.1 | 96.5 | 134.2 | 97.5 | 103.9 | 107.1 | 31.8 | 9.0 |
| School head experience | 85.1 | 78.2 | 105.7 | 84.2 | 113.6 | 107.7 | 77.9 | 11.4 |
| Inspectors/advisors visits | 112.7 | 83.0 | 91.1 | 112.6 | 90.3 | 81.5 | 137.5 | 0.0 |
| Pupil/teacher ratio | 77.7 | 75.9 | 142.2 | 99.0 | 84.2 | 121.4 | 83.2 | 4.0 |

Note: 1= Central North; 2=Central South; 3=Gaborone; 4=North; 5=South Central; 6=South; 7=West.

On the whole, the information in Table 6.1 is good news for Botswana. The values in the last column were low, with five of the six falling below ten percent of the variance being among regions. This shows that there is a good measure of equity in the distribution of human resources among the seven regions. The only rho value that exceeded ten percent associated with the distribution of experienced school heads. It is this element that Ministry should monitor closely in order to ensure that greater equity is achieved.

An examination of the variation in the allocation of human resources among schools within regions shows a picture that is equally encouraging. If a rho value of 120 is taken as the cut-off point, it was only in one region (West region) that classroom teacher professional qualification was an equity concern, the rho value here being 121.7 percent. School head professional qualification was an equity issue only in Gaborone (rho value was 134.2%). Inspectors/advisors' visits to schools within West region (137.5%) and teacher/pupil ratios in Gaborone and South region (142.2% and 121.4% respectively) could be more balanced.

Policy suggestion 6.1: Ministry of Education's regional authorities for Gaborone and West should closely monitor patterns in the distribution professionally qualified school heads and teacher/pupil ratios for Gaborone as well as the distribution of classroom teacher professional qualifications and inspector/advisor visits in West region in order to ensure that greater equity is achieved.

Were (a) general school infrastructure, (b) classroom equipment, and (c) classroom teaching materials distributed equitably among regions and among schools within regions?

The measurement of equity in the allocation of material resources focused on six key elements namely: classroom furniture, toilets, classroom library, classroom space, quality of teacher housing, and school (teaching/learning) resources. Equity of material resource allocation among schools within regions, and among regions was assessed and the results have been presented in Table 6.2.

Table 6.2. Equity of material resource allocation as assessed by (a) variation among schools within regions, and (b) variation among regions (SACMEQ II)

| Material resources | Variation among schools within regions | | | | | | | Variation among regions (rho x 100) |
|---------------------------|--|-------|-------|-------|-------|-------|-------|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Classroom furniture index | 114.1 | 83.4 | 105.6 | 102.0 | 86.4 | 113.8 | 92.0 | 1.3 |
| Toilets per pupil | 82.9 | 110.9 | 21.8 | 61.7 | 117.5 | 91.3 | 111.2 | 13.4 |
| Classroom library | 95.0 | 50.2 | 118.7 | 71.2 | 95.8 | 111.8 | 126.7 | 7.4 |

| | | | | | | | | |
|---------------------------|-------|-------|-------|-------|-------|-------|------|------|
| Classroom space per pupil | 16.0 | 180.7 | 24.2 | 120.8 | 104.9 | 29.3 | 28.9 | 2.3 |
| Teacher housing quality | 87.4 | 102.0 | 80.0 | 99.8 | 94.6 | 105.8 | 96.5 | 9.1 |
| School resources index | 109.0 | 61.9 | 132.8 | 74.7 | 101.6 | 105.7 | 58.5 | 11.2 |

Note: 1= Central North; 2=Central South; 3=Gaborone; 4=North; 5=South Central; 6=South; 7=West.

The variations among schools within the regions have been reported in the first seven columns as the standard deviations of the resources among schools in each zone expressed as a percentage of standard deviation among schools for the material resources at the national level. The variations among regions in material resources have been reported in the extreme right column as rho expressed as percentage of variance.

As can be observed in Table 6.2, only two elements of material resources (pupils' toilets and school resources index) reflected variations among regions which exceeded the threshold value of 10 percent of the variance. Therefore there was need for the Department of Primary Education to ensure greater equity in the distribution of these two resources through appropriate interventions.

Generally, the allocation of material resources among schools within regions was equitable, with rho values exceeding 120 percent in only four instances, and with one of the four exceeding 150 percent. Regional Offices must, therefore, be commended for achieving such a high level of equity in the allocation of material resources.

Equity in the allocation of libraries and in the allocation of school resources were, nevertheless, an issue in West region (where rho value for classroom libraries was 126.7%) and in Gaborone (the rho value for school resources was 132.8%). Variation in the allocation of classroom space among schools within Central South region (180.7%) however, constituted a major challenge for Botswana. This problem was also seen in North region (120.8), although its magnitude is less.

Policy suggestion 6.2: The District Education Officers for Central South region, Gaborone, North region and West region must, with the support of Ministry's Research Unit, conduct an audit of targeted material resource allocations and take corrective measures that enhance the level of material provisions in schools where under-provision and/or overprovision is observed.

Policy suggestion 6.3: The Ministry of Education, in consultation with the Ministry of Local Government, Lands and Housing must conduct a survey of the provision of toilet facilities among regions with a view to ensuring the provision of additional toilet facilities in those regions where the number of pupils per toilet appear to be too high in comparison with those of other regions.

Conclusion

The overall picture regarding the allocation of human and material resources among schools within regions and among regions is a very encouraging one, with only a few cases causing some concern. The Ministry must be commended for implementing policies that have ensured the achievement of such a high level of equity. Since the situation may change over time, it is important for the Ministry's Head Office and the Regional Offices to monitor the situation to ensure that it does not deteriorate, and to take corrective action where equity has been highlighted as an issue.

Chapter 7

The Reading and Mathematics Achievement Levels of Pupils And their Teachers

Introduction

In this chapter, the results of the mathematics and reading achievement levels for Standard 6 pupils and their teachers have been presented. Two of the most important goals of primary education the world over are to develop literacy and numeracy among learners, and it is for this reason that SACMEQ decided to focus on reading and mathematics. Achievement levels, expressed in different forms are a principal means for determining the extent to which basic literacy and numeracy levels of Standard 6 pupils in each of the 15 SACMEQ countries have been achieved.

A note on the reading and mathematics tests

The pupil tests were constructed by the SACMEQ team in consultation with the curriculum experts and teachers in respective countries. The tests included anchor items from the International Association for the Evaluation of Educational Achievement (IEA) literacy study and the Trends in Mathematics and Science Study (TIMSS) tests. Tests were developed around the common curriculum areas that were identified across the countries and the objective of the tests was to find out whether the areas had been covered adequately in the schools. The pupil reading test comprised 83 items whilst the pupil mathematics test had 63 items. The teacher reading tests had 49 items and the teacher mathematics test had 41 items. Some of the test items were common in both teacher and pupil tests but since some of the items in pupils' tests were too simple for the teacher, it was considered imprudent to give teachers and pupils exactly the same reading and mathematics test. Therefore, the teacher tests contained more items that required more complex skills. However, the fact that there were common items in both pupil and teacher tests facilitated the measurement of pupils' and teachers' levels of competence along a single dimension.

In this chapter the following major questions have been asked:

- 1) What were the levels and variations (among schools and regions) in the achievement levels of Standard 6 pupils and their teachers in reading and mathematics for Botswana and for all other SACMEQ countries?
- 2) What were the reading and mathematics achievement levels of important sub-groups of Standard 6 learners?

The presentation of test scores

The performance results of Standard 6 pupils have been presented in three different ways:

a) Use of means (traditional)

One of the most common approaches used to present scores is, the use of the mean score as an aggregate measure of performance. In this study, the mean scores for Botswana overall and the mean scores for each of the six regions have been presented. While this approach is the most frequently used form of presenting scores, its major flaw is that it does not provide a clear description of the exact meaning of a particular level of performance.

(b) Comparison with expert judgments

In SACMEQ I each of the Ministries of Education established expert national committees that included inspectors, teacher leaders, and teachers. The committees were asked to identify the reading performances that they would expect from a pupil who (a) would *barely survive* during the next year of schooling (the “Minimum” level), and (b) was *guaranteed to succeed* during the next year of schooling (the “Desirable” level). The average cut-off levels established in SACMEQ I were also used in SACMEQ II. This was only for reading because this was the only subject matter tested in the SACMEQ I Project. It was thought that this would be one further indicator of importance for policy-makers.

c) Competence levels

The last approach used is based on a scaling technique known as the Rasch model. This approach enables the ability levels of pupils and teachers to be aligned with the difficulty levels of test items to a probabilistic linkage between person ability and item difficulty. This makes it possible to place the test items along a 'difficulty' dimension and then group them into 'clusters' that are linked to common groups of skills. The clusters of test items can then be examined and described in terms of the specific skills that are required for pupils to provide correct responses. This enables the pupil and teacher performances to be aligned to one of the eight 'levels of competency' in literacy and numeracy.

Levels and variations in the achievement levels of Standard 6 pupils and their teachers in reading and mathematics

In Table 7.1 the pupils' overall performance on the reading and mathematics tests has been examined. The performance has been presented in the form of mean scores for Botswana overall and for each of the six regions, together with the standard errors associated with the scores. It is important for the reader to note that the pooled SACMEQ II reading and mathematics test scores were transformed to a mean of 500 for all SACMEQ countries, and a standard deviation of 100.

Table 7.1. Means and sampling errors for the reading and mathematics test scores of pupils with all items (SACMEQ II)

| Pupil performance on all items | | | | |
|---------------------------------------|----------------|-------|--------------------|-------|
| Region | Reading | | Mathematics | |
| | Mean | SE | Mean | SE |
| Central North | 506.1 | 6.56 | 506.2 | 5.57 |
| Central South | 498.7 | 6.17 | 497.2 | 6.99 |
| Gaborone | 577.2 | 14.77 | 542.9 | 14.44 |
| North | 530.0 | 8.86 | 512.3 | 6.01 |
| South Central | 531.9 | 9.46 | 526.1 | 8.03 |
| South | 523.4 | 9.89 | 509.8 | 8.30 |
| West | 504.9 | 6.79 | 506.4 | 6.84 |
| Botswana | 521.1 | 3.47 | 512.9 | 3.15 |

The mean score for reading in Botswana was 521, which was one fifth of a standard deviation above the SACMEQ mean. Gaborone had the highest mean reading score of 577.2 followed by the score for South Central and North regions. Even though Gaborone's score was associated with a large standard error of 14.77, it can be observed that Gaborone pupils performed significantly higher than pupils from any other region. The West and the Central North regions performed below the national mean in reading while the Central South had a reading mean below both the national mean of 521 and the SACMEQ mean of 500. The pupils' performance in mathematics was similar to their performance in reading.

The mean score for mathematics for the nation was 512.9. Once again, Gaborone had the highest mean of 542.9, this score again being significantly higher than South Central region's score. Once again, the Central North region's mean score fell below the SACMEQ mean of 500 and, of course, Botswana's national mean of 512.9. It is not surprising that the performance of pupils in Gaborone schools was the best in the country since the capital city had the best resources, both human and material. However, it is surprising that pupils in the Central North performed better than those in the Central

South when, from the discussions in the previous chapters, it was seen that the Central South region is better resourced than the Central North region. Overall, Botswana's Standard 6 pupils were doing well when compared with other SACMEQ pupils, even though this does not tell us much about their performance in absolute terms.

It is also important to examine the performance of the different subgroups, and in Table 7.2 the performance of pupils has been presented according to gender, socio economic status and school location (rural/urban). The intention here is to examine the extent to which performance patterns are influenced by gender, location or socio economic status.

Table 7.2. Means and sampling errors for the reading and mathematics test scores of pupils by sub-groups (SACMEQ II)

| Sub-groups | Pupil performance on all items | | | |
|-----------------------------|--------------------------------|------|-------------|------|
| | Reading | | Mathematics | |
| | Mean | SE | Mean | SE |
| <i>Gender</i> | | | | |
| Boys | 507.2 | 3.93 | 508.2 | 3.30 |
| Girls | 534.4 | 3.60 | 517.4 | 3.51 |
| <i>Socio-economic level</i> | | | | |
| Low SES | 502.5 | 2.73 | 498.9 | 2.83 |
| High SES | 543.6 | 5.84 | 529.8 | 5.09 |
| <i>School location</i> | | | | |
| Isolated/Rural | 502.4 | 3.48 | 500.5 | 3.77 |
| Small town | 525.5 | 7.91 | 517.4 | 6.23 |
| Large city | 549.6 | 8.26 | 530.6 | 7.32 |
| Botswana | 521.1 | 3.47 | 512.9 | 3.15 |

It can be seen from Table 7.2 that girls out-performed boys in both reading and mathematics, and the difference in the reading scores for boys and girls was significant. The reason for this could be the fact that boys are generally late developers when compared to their male counterparts. That girls outperformed boys in reading is generally consistent with global trends, although it has been observed that boys, even at this level, have frequently outperformed girls in mathematics.

As expected, pupils from well-off homes performed better than those from low income homes in both mathematics and reading. This is due to the fact that pupils from better homes tend to have home environments that offer more opportunities for learning, with materials, parents or guardians who are more supportive of their learning. Pupils from large cities do better than those from small towns who, in turn, do better than those in isolated and rural locations in both reading and mathematics. The differences associated with location could, in a way, be linked to socio-economic status. It is known that the wealthier families and homes tend to be located in urban and semi-urban areas while the poorer families and homes tend to be located in rural areas.

Teachers who have problems understanding certain concepts are also more likely to have problems imparting the limited knowledge to others. On the other hand, some of the misconceptions pupils have could be attributed to gaps in teachers' knowledge, and could be corrected more easily. The scores reflecting teachers' performance in reading and mathematics have been presented in Table 7.3.

Table 7.3. Means and sampling errors for the reading and mathematics test scores of teachers (SACMEQ II)¹

| Teacher performance on all items | | | | |
|---|----------------|-------------|--------------------|-------------|
| Region | Reading | | Mathematics | |
| | Mean | SE | Mean | SE |
| Central North | 760.7 | 6.18 | 761.1 | 8.48 |
| Central South | 739.8 | 5.72 | 740.9 | 10.70 |
| Gaborone | 763.6 | 11.87 | 752.2 | 13.93 |
| North | 765.7 | 12.66 | 750.6 | 9.38 |
| South Central | 760.5 | 9.88 | 757.2 | 15.57 |
| South | 759.1 | 12.96 | 758.1 | 14.85 |
| West | 771.6 | 8.01 | 756.0 | 11.98 |
| Botswana | 757.7 | 3.69 | 753.3 | 5.11 |

The teachers' scores in both reading and mathematics were, as expected, much higher than those of their pupils, with national means for reading and mathematics being 757.7 and 753.3 respectively. However, the pattern with regard to teachers' regional mean scores was different from pupils' regional means. The best reading teachers were in the West region followed by the North. The lowest teacher scores were recorded in Central South region, and it is here where the lowest pupils' mean scores were also recorded. The mean for the Central North region was also low, and fell below the national mean. In mathematics the best teachers were in the Central North region while the worst were in the Central South.

An examination of the percentage of pupils which reached the minimum and desirable levels indicate the extent to which pupils and teachers in Botswana met the expectations of curriculum specialists, teachers and other decision makers in seven SACMEQ education systems. In the set of tables that follow, the percentage of pupils and teachers

¹ Because the scores had been 're-scaled' with 14 countries, the mean scores can not be compared with the tables of MINEDAF paper.

reaching each of the levels for both reading and mathematics have been presented. Table 7.4 summarises the results for each region and for Botswana as a whole.

Table 7.4. Percentages and sampling errors of pupils reaching minimum and desirable reading levels of mastery (SACMEQ II)

| Region | Pupils reaching minimum level of mastery | | Pupils reaching desirable level of mastery | |
|-----------------|--|------|--|------|
| | % | SE | % | SE |
| Central North | 49.8 | 3.61 | 10.1 | 2.09 |
| Central South | 46.7 | 3.61 | 10.9 | 1.64 |
| Gaborone | 75.4 | 3.66 | 39.4 | 6.10 |
| North | 60.3 | 4.53 | 19.2 | 2.57 |
| South Central | 62.2 | 3.31 | 16.2 | 3.32 |
| South | 55.2 | 3.35 | 14.6 | 3.89 |
| West | 49.4 | 4.18 | 9.5 | 1.58 |
| Botswana | 55.8 | 1.45 | 15.7 | 1.22 |

From the results presented in Table 7.4, it can be seen that only about half of the pupils in Botswana reached the minimum level of mastery in reading while just over 15 percent reached the desirable level of mastery. These percentages are generally low, and the message is that, while Standard 6 pupils in Botswana were a little above the SACMEQ mean, more than two-fifths of them still failed to reach what the SACMEQ experts deemed to be the minimum standards and more than four-fifths failed to reach the desirable standards set by the experts. It should also be a matter of concern to the Ministry that such large proportions of pupils in Central North, Central South and West regions failed to reach minimum and desirable levels of mastery.

Policy suggestion 7.1: The Ministry's Curriculum Unit must re-examine the school curriculum in terms of the standards of mastery expected against the actual implementation of this curriculum in schools and identify any implementation deficits that have led to the failure by such a large proportion of pupils to reach expected standards.

One of the functions of the school is to ensure that every pupil, regardless of their socio-economic class, their gender or their geographical location receives enough instruction to

be able to progress to the next grade. Unfortunately, this may not always be the case, and so it is important to find out whether pupils from the different subgroups reach expected levels of mastery. The results of the analysis have been presented in Table 7.5.

Table 7.5. Percentages and sampling errors of pupils reaching minimum and desirable reading levels of mastery by sub-groups (SACMEQ II)

| Sub-groups | Pupils reaching minimum level of mastery | | Pupils reaching desirable level of mastery | |
|-----------------------------|--|------|--|------|
| | % | SE | % | SE |
| <i>Gender</i> | | | | |
| Boys | 48.4 | 1.78 | 13.4 | 1.36 |
| Girls | 62.9 | 1.55 | 17.8 | 1.39 |
| <i>Socio-economic level</i> | | | | |
| Low SES | 49.6 | 1.73 | 9.1 | 0.87 |
| High SES | 63.4 | 1.79 | 23.6 | 2.20 |
| <i>School location</i> | | | | |
| Isolated/Rural | 49.1 | 2.13 | 9.2 | 1.16 |
| Small town | 56.9 | 3.07 | 17.2 | 2.83 |
| Large city | 66.4 | 2.43 | 25.6 | 3.01 |
| Botswana | 55.8 | 1.45 | 15.7 | 1.22 |

The results presented in Table 7.5 show a pattern that is similar to that observed in Table 7.2. The proportion of girls who reached minimum and desirable levels was higher than that for boys. The difference between girls and boys who reached the minimum level was significantly large, while the one for the desirable level was relatively small. Again, as expected, larger proportions of pupils from high socio-economic status reached minimum and desirable levels than those from low socio-economic status. The differences at the desirable level was particularly wide (23.6% and 9.1% for the high SES and low SES respectively.) Likewise, larger proportions of pupils from large cities reached minimum and desirable levels than those from small towns, and larger proportions of the latter, in

turn, reached these two levels than those from isolated/rural areas. Once again, the difference was more pronounced at the desirable level.

Policy suggestion 7.2: The Ministry should develop and implement strategies that will gradually narrow down the difference between the performance of girls and boys, pupils from rich and poor families, and pupils from different geographical locations (large cities, small towns and isolated rural areas).

The proportion of teachers reaching minimum and desirable levels of mastery in reading has also been presented in Table 7.6.

Table 7.6. Percentages and sampling errors of teachers reaching minimum and desirable reading levels of mastery (SACMEQ II)

| Region | Teachers reaching minimum level of mastery | | Teachers reaching desirable level of mastery | |
|-----------------|--|------|--|------|
| | % | SE | % | SE |
| Central North | 100.0 | 0.00 | 100.0 | 0.00 |
| Central South | 100.0 | 0.00 | 98.8 | 1.20 |
| Gaborone | 100.0 | 0.00 | 100.0 | 0.00 |
| North | 100.0 | 0.00 | 100.0 | 0.00 |
| South Central | 100.0 | 0.00 | 100.0 | 0.00 |
| South | 100.0 | 0.00 | 100.0 | 0.00 |
| West | 100.0 | 0.00 | 100.0 | 0.00 |
| Botswana | 100.0 | 0.00 | 99.7 | 0.26 |

The results presented in Table 7.6 show that virtually all teachers reached the minimum and desirable levels in reading, with a tiny minority of teachers in Central South region failing to reach the desirable level. This situation is a very positive one, and shows that teachers in Botswana are sufficiently equipped with the reading ability needed for effective teaching.

As has already been mentioned, the third approach for presenting achievement levels was examining the proportion of pupils who reached each of the eight competence levels in

reading. Details of the skills associated with each of the competence levels have been presented in Chapter 2. The results of the analysis have been presented in Table 7.7(a).

Table 7.7 (a). Percentages and sampling errors for literacy levels of pupils (SACMEQ II)

| Region | Percentage of pupils reaching the reading competence level | | | | | | | | | | | | | | | |
|-------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 2.6 | 0.64 | 9.6 | 1.42 | 18.6 | 1.94 | 24.6 | 1.72 | 23.8 | 2.19 | 12.6 | 2.01 | 7.1 | 1.53 | 1.2 | 0.55 |
| Central South | 5.3 | 0.82 | 10.0 | 1.57 | 21.6 | 2.00 | 20.7 | 2.00 | 22.4 | 1.61 | 12.6 | 2.25 | 5.7 | 1.04 | 1.6 | 0.50 |
| Gaborone | 1.3 | 0.52 | 4.6 | 1.30 | 5.9 | 1.22 | 17.6 | 2.54 | 19.5 | 2.58 | 15.5 | 2.22 | 25.1 | 3.88 | 10.5 | 3.91 |
| North South | 2.4 | 0.95 | 8.5 | 1.70 | 10.6 | 1.99 | 22.0 | 1.60 | 23.1 | 2.53 | 18.4 | 2.19 | 13.4 | 2.30 | 1.6 | 0.64 |
| Central South | 2.5 | 0.69 | 5.9 | 1.18 | 11.9 | 1.55 | 23.5 | 2.11 | 26.6 | 2.42 | 16.6 | 1.99 | 9.5 | 1.45 | 3.5 | 2.44 |
| South West | 1.3 | 0.49 | 5.8 | 1.24 | 16.4 | 2.39 | 25.6 | 3.20 | 27.0 | 2.14 | 11.2 | 1.63 | 8.2 | 1.76 | 4.6 | 2.53 |
| West | 2.8 | 0.93 | 8.5 | 2.01 | 19.4 | 3.71 | 26.5 | 1.98 | 23.5 | 3.11 | 13.1 | 2.34 | 5.4 | 1.26 | 0.9 | 0.51 |
| Botswana a | 2.8 | 0.29 | 7.7 | 0.57 | 15.7 | 0.83 | 23.0 | 0.89 | 24.1 | 0.88 | 14.0 | 0.83 | 9.5 | 0.70 | 3.2 | 0.75 |

One of the important things for the policy makers is to know what proportion of learners are actually literate. From the competence levels presented, it could be argued that all of those pupils who fell below Level 3 (that is, basic literacy) had not reached literacy. In this regard, it is important to note that, overall, 10.5 percent of Botswana pupils failed to reach Level 3. The proportions of pupils who failed to reach this level was highest in Central South (15.3%) and Central North (12.2%). These percentages are much higher than those for Gaborone and South regions, for instance, where the corresponding percentages were 5.9 percent and 7.1 percent respectively. It can also be observed that the majority of pupils fell into Levels 4 and 5 (47.5%) while just over a quarter of them (26.7%) fell in the three highest levels (Levels 6, 7 and 8). Regional differences in the percentage of pupils who fell into the top three levels were also large, with 51.1 percent of pupils in Gaborone falling into these three levels as compared to only 19.9 percent and 20.3 percent for Central South and Central North respectively.

The percentages of pupils falling into each of the eight numeracy levels have been presented in Table 7.7(b).

Table 7.7(b). Percentages and sampling errors for numeracy levels of pupils (SACMEQ II)

| Region | Percentage of pupils reaching the mathematics competence level | | | | | | | | | | | | | | | |
|-----------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 4.3 | 0.76 | 27.7 | 3.36 | 36.0 | 2.47 | 19.1 | 1.87 | 10.0 | 1.75 | 2.0 | 0.58 | 1.0 | 0.48 | 0.0 | 0.00 |
| Central South | 4.9 | 1.58 | 33.0 | 2.80 | 33.7 | 2.21 | 17.3 | 2.14 | 7.2 | 1.45 | 2.7 | 0.70 | 1.3 | 0.55 | 0.0 | 0.00 |
| Gaborone North | 2.1 | 0.78 | 18.2 | 3.60 | 31.3 | 3.83 | 20.4 | 2.67 | 16.1 | 3.41 | 7.2 | 1.82 | 3.9 | 2.18 | 0.9 | 0.89 |
| Gaborone South | 2.7 | 0.95 | 24.9 | 2.35 | 36.8 | 2.12 | 20.9 | 2.41 | 11.1 | 1.91 | 3.6 | 0.99 | 0.0 | 0.00 | 0.0 | 0.00 |
| Central South | 2.0 | 0.78 | 20.1 | 1.94 | 35.9 | 1.93 | 21.9 | 1.66 | 13.9 | 1.46 | 4.1 | 1.21 | 1.7 | 1.32 | 0.4 | 0.37 |
| Central West | 2.5 | 1.02 | 26.6 | 2.63 | 39.5 | 2.40 | 18.1 | 1.92 | 7.5 | 1.23 | 5.2 | 2.08 | 0.2 | 0.20 | 0.4 | 0.39 |
| West | 4.3 | 1.20 | 26.1 | 3.72 | 37.6 | 1.86 | 21.4 | 3.22 | 6.7 | 1.46 | 3.0 | 1.06 | 0.9 | 0.62 | 0.0 | 0.00 |
| Botswana | 3.3 | 0.45 | 25.8 | 1.10 | 35.8 | 0.92 | 19.6 | 0.83 | 10.2 | 0.67 | 3.8 | 0.49 | 1.2 | 0.37 | 0.2 | 0.13 |

It can be observed in Table 7.7(b) that the majority of pupils were clustered in the lower levels of competence, particularly in Level 3 (35.8%). Overall, 29.1 percent – twice the corresponding figure for reading – were in the lowest two levels of competence. The figure ranged from a low of 20.3 percent for Gaborone to a high figure of 37.9 for Central North region. As a matter of fact, only 35.0 percent of Botswana's pupils were in the top four levels of competence in numeracy while the rest were in the bottom four. The percentage of pupils in the top four levels ranged from 13.0 percent for Central North to 28.1 percent for Gaborone. In identifying solutions to this problem, the Ministry might examine a broad range of factors at the pupil, teacher, school and community levels, and then systematically address those that influence performance patterns.

Policy suggestion 7.3: The Ministry must conduct a study to establish the reasons why such a large proportion of pupils are failing to master basic numeracy skills whereas a substantially large proportion manages to master basic literacy skills.

The exercise was repeated for teachers. The results have been given in Table 7.8 (a).

Table 7.8(a). Percentages and sampling errors for literacy levels of teachers (SACMEQ II)

| Region | Percentage of teachers reaching the reading competence level | | | | | | | | | | | | | | | |
|-----------------|--|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 14.5 | 4.62 | 85.5 | 4.62 |
| Central South | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 1.2 | 1.20 | 0.0 | 0.00 | 24.2 | 5.46 | 74.6 | 5.41 |
| Gaborone North | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 23.6 | 6.48 | 76.4 | 6.48 |
| South Central | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 13.8 | 4.23 | 86.2 | 4.23 |
| South | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 17.8 | 5.41 | 82.2 | 5.41 |
| West | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 2.3 | 2.30 | 5.3 | 3.22 | 92.4 | 3.62 |
| Botswana | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.3 | 0.26 | 0.2 | 0.21 | 17.5 | 2.03 | 82.0 | 2.02 |

From Table 7.8(a) it can be observed that the majority of teachers managed to master complex literacy skills, with 99.5 percent of them being in the top two levels. This is good news for the Ministry which, from the results presented, should boast of a highly literate teaching force.

The percentages of teachers falling in each of the eight levels of numeracy have been presented in Table 7.8(b).

Table 7.8(b). Percentages and sampling errors for numeracy levels of teachers (SACMEQ II)

| <i>Region</i> | Percentage of teachers reaching the mathematics competence level | | | | | | | | | | | | | | | |
|-----------------|--|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| Central North | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 2.7 | 1.85 | 23.7 | 5.30 | 55.3 | 7.34 | 18.3 | 5.89 |
| Central South | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 3.7 | 2.04 | 6.4 | 2.85 | 32.3 | 6.64 | 39.1 | 5.78 | 18.5 | 4.84 |
| Gaborone North | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 1.9 | 1.93 | 3.1 | 3.08 | 31.3 | 7.88 | 48.5 | 6.71 | 15.2 | 6.22 |
| South Central | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 5.4 | 3.84 | 6.1 | 3.19 | 24.5 | 5.93 | 37.1 | 7.85 | 26.9 | 6.76 |
| South West | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 2.4 | 1.70 | 25.9 | 7.24 | 60.7 | 8.32 | 10.9 | 5.83 |
| Botswana | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 2.3 | 0.94 | 5.1 | 1.15 | 26.4 | 2.58 | 47.9 | 2.93 | 18.4 | 2.34 |

From Table 7.8(b) it can be seen that none of the teachers in Botswana failed to reach the basic numeracy level (Level 3). However, the percentages of teachers who reached the top two levels was much lower than those for literacy (66.3% for numeracy and 99.5 percent for literacy). This is a matter that should raise some concern, especially when we take into account that similarly lower percentages of pupils reached basic numeracy. The question to be asked was whether teachers' comparatively low numeracy skills were not impacting negatively on pupil performance in mathematics.

It is also important to establish the percentages of pupils in the different sub-groups who acquired the different competencies or skills in literacy and numeracy. In order to do so, the percentages of pupils falling in each of the eight levels of literacy and numeracy have been presented in Tables 10.9(a) and 10.9(b).

Table 7.9(a). Percentages and sampling errors for literacy levels of pupils by sub-groups (SACMEQ II)

| Sub-groups | Percentage of pupils reaching the reading competence level | | | | | | | | | | | | | | | |
|-----------------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| <i>Gender</i> | | | | | | | | | | | | | | | | |
| Boys | 4.5 | 0.53 | 10.6 | 0.90 | 19.0 | 1.12 | 22.5 | 1.19 | 20.4 | 1.17 | 11.7 | 1.04 | 8.1 | 0.81 | 3.1 | 0.76 |
| Girls | 1.2 | 0.30 | 4.9 | 0.58 | 12.5 | 1.01 | 23.4 | 1.22 | 27.6 | 1.08 | 16.3 | 0.99 | 10.9 | 0.88 | 3.2 | 0.83 |
| <i>Socio-economic level</i> | | | | | | | | | | | | | | | | |
| Low SES | 3.6 | 0.45 | 9.9 | 0.79 | 17.4 | 1.03 | 24.9 | 1.16 | 25.1 | 1.19 | 12.4 | 0.91 | 6.2 | 0.68 | 0.5 | 0.17 |
| High SES | 1.9 | 0.35 | 5.0 | 0.66 | 13.6 | 1.06 | 20.7 | 1.24 | 22.9 | 1.27 | 16.0 | 1.20 | 13.5 | 1.19 | 6.4 | 1.58 |
| <i>School location</i> | | | | | | | | | | | | | | | | |
| Isolated /Rural | 3.4 | 0.45 | 9.7 | 0.89 | 17.9 | 1.25 | 25.4 | 1.21 | 24.7 | 1.28 | 12.4 | 1.29 | 5.8 | 0.76 | 0.7 | 0.21 |
| Small town | 3.1 | 0.74 | 5.3 | 1.08 | 18.0 | 1.92 | 20.8 | 1.83 | 24.4 | 2.09 | 14.6 | 1.52 | 9.1 | 1.48 | 4.7 | 1.82 |
| Large city | 1.6 | 0.40 | 6.0 | 0.86 | 10.2 | 1.38 | 20.6 | 1.75 | 22.9 | 1.48 | 16.4 | 1.45 | 16.3 | 1.66 | 6.1 | 2.15 |
| Botswana | 2.8 | 0.29 | 7.7 | 0.57 | 15.7 | 0.83 | 23.0 | 0.89 | 24.1 | 0.88 | 14.0 | 0.83 | 9.5 | 0.70 | 3.2 | 0.75 |

Table 7.9(b). Percentages and sampling errors for numeracy levels of pupils by sub-groups (SACMEQ II)

| Sub-groups | Percentage of pupils reaching the mathematics competence level | | | | | | | | | | | | | | | |
|-----------------------------|--|------|------|------|------|------|------|------|------|------|-----|------|-----|------|-----|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
| | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE | % | SE |
| <i>Gender</i> | | | | | | | | | | | | | | | | |
| Boys | 3.6 | 0.57 | 28.8 | 1.40 | 33.9 | 1.28 | 19.2 | 1.03 | 9.4 | 0.86 | 3.8 | 0.59 | 1.1 | 0.45 | 0.1 | 0.08 |
| Girls | 3.1 | 0.49 | 22.9 | 1.30 | 37.7 | 1.28 | 20.1 | 1.16 | 10.9 | 0.80 | 3.8 | 0.58 | 1.4 | 0.41 | 0.3 | 0.21 |
| <i>Socio-economic level</i> | | | | | | | | | | | | | | | | |
| Low SES | 4.2 | 0.64 | 29.9 | 1.51 | 36.4 | 1.20 | 19.3 | 1.12 | 7.7 | 0.74 | 2.2 | 0.38 | 0.2 | 0.15 | 0.0 | 0.00 |
| High SES | 2.3 | 0.47 | 20.8 | 1.32 | 35.2 | 1.42 | 20.0 | 1.15 | 13.1 | 1.06 | 5.7 | 0.91 | 2.4 | 0.77 | 0.5 | 0.28 |
| <i>School location</i> | | | | | | | | | | | | | | | | |
| Isolated/rural | 4.1 | 0.72 | 29.5 | 1.72 | 36.7 | 1.26 | 18.8 | 1.11 | 7.7 | 0.89 | 2.7 | 0.51 | 0.5 | 0.24 | 0.0 | 0.00 |
| Small town | 3.4 | 1.13 | 24.5 | 2.01 | 34.3 | 2.00 | 21.3 | 1.82 | 10.4 | 1.27 | 4.4 | 1.39 | 1.4 | 0.45 | 0.3 | 0.28 |
| Large city | 1.8 | 0.42 | 20.5 | 1.88 | 35.5 | 1.79 | 19.8 | 1.64 | 14.2 | 1.48 | 5.3 | 1.04 | 2.3 | 1.17 | 0.6 | 0.39 |
| Botswana | 3.3 | 0.45 | 25.8 | 1.10 | 35.8 | 0.92 | 19.6 | 0.83 | 10.2 | 0.67 | 3.8 | 0.49 | 1.2 | 0.37 | 0.2 | 0.13 |

Data presented earlier showed that boys' reading and mathematics mean scores were much lower than those for girls, and that a larger proportion of boys than girls failed to reach the minimum and desirable levels of mastery in both reading and mathematics. The difference between boys and girls was, however, magnified when the information was presented in the form of percentages of boys and girls who failed to reach Level 3 of competence (basic literacy and basic numeracy). In reading, for example, only 6.1 percent of girls failed to reach Level 3 while more than twice the percentage of boys (15.1%) failed to reach this level. In mathematics, the corresponding figures reflected a narrower difference between girls and boys (26.0% and 32.4%).

For reading, this pattern was more or less replicated when pupils from low socio-economic status who were in the first two levels were compared with those from high socio-economic status (6.9% and 13.5% respectively) and when pupils from large cities, small town and isolated rural area were compared (7.6%, 8.4% and 13.1%). For mathematics, the same pattern could be observed, except that the differences between pupils from low socio-economic status and those from high socio-economic status as well as those from large cities, small towns and isolated/rural areas were narrower.

Conclusion

The mean scores for Botswana in both reading (521.1) and mathematics (512.9) were somewhat higher than the SACMEQ mean of 500. There was considerable variation among the regions, with Gaborone's mean significantly higher than the means for other regions, and with Central North region's mean score actually falling below the SACMEQ mean. An examination of mean scores by subgroups also revealed that there were significant differences between girls' and boys' mean scores, and that pupils from high socio-economic status homes performed consistently better in reading and mathematics than pupils from low socio-economic status. In addition, pupils from large cities outperformed those from small towns and isolated/rural areas. As expected, teachers performed much better than pupils, their mean reading performance (757.7) and mathematics performance (753.3) being over two standard deviations above the SACMEQ mean. West and Central North regions had the highest means in reading and

mathematics respectively, while Central South regions had the lowest scores in both subjects.

Overall, slightly more than half of the pupils reached the minimum level of mastery in reading, and just over 15 percent reached the desirable level. Patterns of those who reached minimum and desirable levels for each of the subgroups were very similar to those for mean scores: girls, pupils from higher socio-economic status and those from large cities performed better than boys, pupils from lower socio-economic status, and those from small cities and isolated/rural areas. Virtually all teachers reached minimum and desirable levels of mastery.

On the whole, the majority of pupils fell into literacy levels of competence 4 and 5, with about one tenth of all pupils failing to reach basic literacy. Level 4 was *Reading for meaning* and the skills were ‘Reads on or reads back in order to link and interpret information located in various parts of the text’. Level 5 was *Interpretative reading* and the skills were ‘Reads on and reads back in order to combine and interpret information from various parts of the text in association with external information (based on recalled factual knowledge) that “completes” and contextualizes meaning’. What most had not mastered were the skills embodied in the higher skills such as ‘Reads on and reads back through longer texts (narrative, document or expository) in order to combine information from various parts of the text so as to infer the writer’s purpose’, and ‘Locates information in longer texts (narrative, document or expository) by reading on and reading back in order to combine information from various parts of the text so as to infer the writer’s personal beliefs (value systems, prejudices, and/or biases)’. Regional differences were quite large.

Nearly a third of all pupils failed to reach basic numeracy, and the bulk of them fell in level 3 with 29.1 percent – twice the corresponding figure for reading – falling in the lowest two levels of competence. This figure constitutes the percentage of pupils who failed acquire basic literacy that is associated with the following skills to “Translates verbal information presented in a sentence, simple graph or table using one arithmetic

operation in several repeated steps; translates graphical information into fractions; interprets place value of whole numbers up to thousands; and interprets simple common everyday units of measurement". Percentages of those who reached higher levels such as "Competent Numeracy", "Mathematically Skilled", "Concrete Problem Solving" and "Abstract Problem Solving" were relatively low. Patterns of competence by gender, socio-economic and location sub-groups were similar to those pertaining to mean scores and minimum and desirable levels. Most teachers, however, managed to reach literacy levels 7 and 8 (99.5%), but a relatively smaller percentage of 66.3 percent reached numeracy levels 7 and 8. Although Botswana's pupils were generally performing well in comparison with those from other countries, it is still important for the Ministry of Education to strive to increase the proportion of pupils who reach minimum and desirable levels and to ensure that all pupils reach and, preferably, exceed basic literacy and basic numeracy. There is also need to pay particular attention to boys, to pupils from lower socio-economic backgrounds, and to those pupils from isolated/rural areas and small towns. As was the case with literacy, regional disparities in numeracy were fairly large.

Chapter 8

Conclusion and Agenda for Action

Introduction

The 1990 Jomtien Declaration and the Dakar 2000 Framework of Action, to which the Botswana Government was a signatory, have served as an impetus for a renewed commitment to the provision of education of a high quality to all pupils. Over the years, Botswana has invested heavily in education through the construction of school infrastructure, training of teachers, and the purchase of teaching and learning resources for use by schools. Communities have been mobilised in order to complement the efforts of government, and their response has been very encouraging. All of these efforts have served to speed up the democratisation of access to and participation in education, with the result that comparatively high gross and net enrolment rates have been achieved and sustained. Meanwhile, the education system has also striven to respond to the ever-changing circumstances of Botswana and the rest of the world. This has necessitated the continual revision of education policies, and the spirit of this new thrust is contained in Vision 2016.

In this report some information on the various aspects of Botswana's education system has been presented. From the results presented, it is clear that the Government of Botswana has made impressive strides in ensuring access to education by the majority of its citizens, in redressing disparities in its provision among the various social groups, and ensuring that the education offered is of a high quality. Nevertheless, there are still several challenges that are yet to be addressed, and several issues that require attention and action by players at different levels of the education system have been highlighted. In addressing these issues, it is important to understand that the overall performance of the education system is an outcome of many factors or variables that are related in a complex manner. This chapter provides the reader with an overall perspective of the

research-based policy suggestions from which an agenda for action for improving the functioning of the primary education system in Botswana was developed.

In presenting this agenda for action, it has to be borne in mind that all education systems operate within given resource limits, and that the scarcity of resources can be a major issue that influences decisions. At different times, education systems also have set priorities, and so some policy actions become more urgent than others. Whatever policies the Ministry decides to adopt and implement will very much depend on the Ministry's position with regard to any single or combination of these factors.

Classification of policy suggestions

The policy suggestions that have been made in Chapters 3 to 7 have been based on a careful analysis and interpretation of the data. In all there are 30 altogether. These policy suggestions are meant to facilitate an intensive policy dialogue at different levels of Botswana's education system, and have been presented in a format that should facilitate decisions and action. First, they are clustered on the basis of the nature of the policy action required (consultations, reviews, data collection, policy research or investment in infrastructure or human resources). Secondly, they specify the specific units, departments or sections of the Ministry (and other players) that have to take a lead in the implementation of the required policy actions. Thirdly, they specify the estimated time frame (short, medium or long) for the implementation of each of the policy suggestions. 'Short' here means within 6 months to 1 year, 'medium' means 1 – 2 years, and 'long term' means more than two years. Lastly, they provide an idea of the estimated cost (low, medium or high) associated with the implementation of each policy suggestion. Policies of short term can be carried out within the current budget, medium and long term will require more funds. They will need to be budgeted for. It is hoped that, presented this way, they provide useful guidance to the players at the different levels of implementation.

As has already been indicated, the policy suggestions that emerged from this analysis fall into five main groups as follows:

Group 1: Consultation with staff, community, and experts. This group contained seven suggestions (3.3, 4.6, 4.7, 4.8, 7.1, and 7.2) that required a variety of consultations and discussion with a range of stakeholders. For example, consultation with regional offices concerning female student participation rates, meeting with teacher educators to discuss pre- and in- service courses, discussion with experts and administrators about benchmark standard's etc.

Group 2: Reviews of existing planning and policy procedure. This group contained eight suggestions (4.3, 4.4, 4.11, 5.1, 5.3, 5.4, 5.5 and 5.7, 5.8) and these focussed on the need to revisit and reform existing regulations and practices. For example, reviews of policy on age for school entry, re-examination of homework guidelines, and changes in staffing arrangements to achieve gender balance.

Group 3: Data Collection for planning purposes. This group contained five suggestions (3.4, 4.1, 4.5, 4.10, 4.12, 6.1 and 6.2) and these identified information gaps that could only be addressed with suitable supplementary data collections.

Group 4: Education Policy research projects. This group contained five suggestions (3.1, 5.6, 5.8, 5.9 and 7.3) that identified specific educational policy research projects. For example, special studies of extra tuition and grade repetition, an evaluation of the depth and breadth of the curriculum, and detailed studies of student reading-literacy levels.

Group 5: Investment in human and material resources. This group contained five suggestions (3.2, 4.2, 4.9, 5.2, and 6.3) which dealt with large scale national undertakings addressing educational inputs, process characteristics that would require substantial funding and a great deal of time to implement

Table 8.1. A summary of the policy suggestions in relation to relevant actors and related time frame and cost of implementation

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|--|--|-------------|----------|
| Group 1: Consultation with staff, community, and experts | | | |
| Policy suggestion 3.3: The Department of Primary Education should embark on a massive campaign where it encourages parents, perhaps through Parent Teacher Associations, to get more involved in their children's homework. They should explore the possibility of employing those effective methods used in some private schools (e.g. reading cards and signatures made at the end of each completed homework). | Department of Primary Education | Medium term | Low cost |
| Policy suggestion 4.6: The Ministry of Education's Inspectorate Unit should consider sensitising teachers for the need to place greater emphasis on those activities that promote basic skills that Standard 6 pupils might have failed to fully grasp in the lower standards. | Department of Primary Education (Inspectorate) | Short term | Low cost |
| Policy suggestion 4.7: The Ministry of Education's Inspectorate Unit should closely monitor the strategies or approaches that teachers in Standard 6 and in the lower standards use in teaching and encourage those that best promote reading and mathematics skills. They can do this during their visits to the schools. | Department of Primary Education (Inspectorate) | Short term | Low cost |
| Policy suggestion 4.8: The Department of Primary Education should carry out training to raise teachers' appreciation of the importance of, and enhance their knowledge and skills of assessment. They should also develop continuous assessment procedures to guide | Department of Primary Education (Inspectorate) | Short term | Low cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|--|---|------------|-------------|
| teachers. | | | |
| Policy suggestion 7.1: The Ministry's Curriculum Unit must re-examine the school curriculum in terms of the standards of mastery expected against the actual implementation of this curriculum in schools and identify any implementation deficits that have led to the failure by such a large proportion of pupils to reach expected standards. | Department of Curriculum Development | Long term | High cost |
| Policy suggestion 7.2: The Ministry should develop and implement strategies that will gradually narrow down the difference between the performance of girls and boys, pupils from rich and poor families, and pupils from different geographical locations (large cities, small towns and isolated rural areas). | Department of Education, Inspectorate | Long term | Medium cost |
| Group 2: Reviews of existing planning and policy procedures | | | |
| Policy suggestion 4.3: The Ministry of Education must provide clear policy guidelines on the minimum academic qualifications for teachers who join the teaching service. Thereafter, it must offer all under-qualified teachers the opportunity to upgrade their academic qualifications over time. | Department of Teaching Service Management | Long term | Low cost |
| Policy suggestion 4.4: Since there is a disparity in the distribution of teachers across the country in terms of age, sex and qualifications the Department of Teaching Service Management should use its information database to examine this disparity further and take the appropriate action to correct any regional bias. | Department of Teaching Service Management | Long term | Medium Cost |
| Policy suggestion 4.11. The Departments of Teacher Training and Development and Primary Education | Departments of Teacher Training and Development | Short term | Low cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|--|--|-------------|-------------|
| should consider joining efforts to ensure a proper utilisation of resource centres in order to provide the required professional support to teachers. | & Department of Primary Education | | |
| Policy suggestion 5.1: The Department of Primary and Teacher Training and Development should develop benchmarks for all in-service training including training for school heads. The in-service officers for each region should be encouraged to design training packages tailor made for groups of school heads needing support in the particular areas. | Department of Primary Education and Teacher Training and Development | Short term | Low cost |
| Policy suggestion 5.3: The Ministry of Education must widely distribute to all schools the norms every school must meet in the provision of toilet facilities. | Department of Primary Education | Short term | Low cost |
| Policy suggestion 5.4: The Ministry of Education must establish and distribute norms regarding the minimum amount of space every pupil should have, and ensure that every school meets this norm. | Department of Primary Education | Short term | Low cost |
| Policy suggestion 5.5: Ministry of Education's Primary Education division should encourage all schools to offer their pupils the opportunity to take an active part in a variety of activities that can further extend and deepen the skills they have learned in class. | Department of Primary Education | Medium term | Low cost |
| Policy suggestion 5.7: Ministry of Education's Inspectorate should develop norms and guidelines on the frequency and purpose of school visits so as to ensure that there is the correct balance of such visits, by purpose, across schools and regions. | Ministry of Education's Inspectorate | Short term | Low cost |
| Group 3: Data Collection for planning purposes | | | |
| Policy suggestion 3.4: The Ministry of Education's Research Unit must | Ministry of Education, | Long term | Medium cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|--|--|------------|-------------|
| conduct a similar study on the characteristics of Standard 6 pupils, the circumstances of the homes they came from, and their interaction with their parents or guardians in order to monitor changes that might take place over time. | Education Research Unit | | |
| Policy suggestion 4.1: The Ministry of Education should closely monitor trends in the gender composition of its workforce to make sure that it reflects the desired gender balance. In particular, it should ensure that there are no factors that discourage male participation in the teaching profession. | Ministry of Education, Teaching Service Management | Long term | Medium cost |
| Policy suggestion 4.5: The Departments of Primary Education and Teacher Training and Development should carry out a needs analysis on a regular basis to establish the different competencies and skills required by the teachers in order to ensure that in-service training programmes continue to address relevant needs. They should also develop benchmarks for in-service training in order to guide in-service educators on what constitutes quality training. | Department of Primary Education & teacher Training and Development | Short term | Low cost |
| Policy suggestion 4.10: The Division of Primary Education Inspectorate need to take a thorough audit of what schools have and what they don't have in order to better distribute resources within regions. | Division of Primary Education Inspectorate and Research Unit | Short term | Low cost |
| Policy suggestion 4.12: The Ministry of Education's Research Unit must conduct a similar study on the personal and professional characteristics of Standard 6 teachers, their living and working conditions, teaching goals, strategies and activities as well as their interaction with their parents or guardians in | Ministry of Education, Education Research Unit | Long term | Medium cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|---|---|-------------|-------------|
| order to monitor changes that might take place over time. | | | |
| Policy suggestion 6.1: Ministry of Education's regional authorities for Gaborone and West should closely monitor patterns in the distribution professionally qualified school heads and teacher/pupil ratios for Gaborone as well as the distribution of classroom teacher professional qualifications and inspector/advisors' visits in West region in order to ensure that greater equity is achieved. | Ministry of Education, Education Research Unit | Medium term | Medium cost |
| Policy Suggestion 6.2: The District Education Officers for Central South region, Gaborone, North region and West region must, with the support of Ministry's Research Unit, conduct an audit of targeted material resource allocations and take corrective measures that enhance the level of material provisions in schools where under-provision and/or overprovision is observed. | Ministry of Education, Education Research Unit | Short term | Low cost |
| Group 4: Educational policy research programme | | | |
| Policy suggestion 3.1: Ministry of Education's Research Unit must conduct an investigation into the problem of high rates of repetition in order to establish its causes and recommend appropriate interventions to be implemented. | Ministry of Education, Education Research Unit | Short term | Low cost |
| Policy suggestion 5.6: The Ministry must investigate the reasons why so many official school days were lost in West region and take measures to address the causes. Thereafter, it should monitor the situation and ensure that schools do not continue to lose valuable learning time. | Department of Primary Education | Short term | Low cost |
| Policy suggestion 5.8: Ministry of Education's Research Unit must conduct a more focussed study to establish the seriousness, prevalence | Ministry of Education, Education Research Unit | Short term | Low cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|---|---|------------|-----------|
| and patterns or trends of the various pupil behavioural problems as well as their causes, and suggest ways in which these could be addressed. | | | |
| Policy suggestion 5.9: Ministry of Education's Research Unit must conduct a more focussed study to establish the seriousness, prevalence and patterns or trends as well as causes of the various behavioural problems exhibited by teachers, and then suggest ways in which these can be addressed. | Ministry of Education, Education Research Unit | Short term | Low cost |
| Policy suggestion 7.3: The Ministry must conduct a study to establish the reasons why such a large proportion of pupils are failing to master basic numeracy skills whereas a substantially large proportion manages to master basic literacy skills. | Ministry of Education, Education Research Unit | Short term | Low cost |
| Group 5: Investment in human and material resources | | | |
| Policy suggestion 3.2: In view of the unfavourable circumstances affecting pupils from the marginalized, minority ethnic or social groups (e.g. those in the West and North Central Region), the Ministry of Education should examine the possibility of providing additional boarding facilities for children who need them, but balance this against the provision of more flexible schooling arrangements for the children of those communities that choose to retain their traditional ways of life. | Ministry of Education & Ministry of Local Government | Long term | High cost |
| Policy suggestion 4.2: Ministry of Education and the Ministry of Local Government, Lands and Housing must work closely in the provision of acceptable housing conditions for teachers so that they can devote more attention to teaching rather than to | Ministry of Education & Ministry of Local Government | Long term | High cost |

| POLICY SUGGESTIONS | RESPONSIBLE | TIME | COST |
|---|---|-----------|-------------|
| their poor living conditions. | | | |
| Policy suggestion 4.9: The Department of Primary Education should encourage the setting up of library corners in classrooms by either availing more library material or encouraging PTAs to assist. This is necessary in order to realise the goal of being an educated and informed nation by the year 2016. | Ministry of Education Curriculum Development & Inspectorate | Long term | Medium cost |
| Policy suggestion 5.2: The Ministry of Education should work closely with Ministry of Local Government, Lands and Housing in order to prepare a programme for the repair of school buildings and the re-building of those that are beyond repair. This could be done in a phased manner in view of the large amounts of resources required. | Ministry of Education & Ministry of Local Government | Long term | High cost |
| Policy suggestion 6.3 The Ministry of Education, in consultation with the Ministry of Local Government, Lands and Housing must conduct a survey of the provision of toilet facilities among regions with a view to ensuring the provision of additional toilet facilities in those regions where the number of pupils per toilet appear to be too high in comparison with those of other regions. | Ministry of Education & Ministry of Local Government | Long term | High cost |

Comments on the implementation of policy suggestions

The policy suggestions in the previous section have been presented in a way that facilitates action by the Ministry of Education. Altogether, 32 policy suggestions have been presented, and the challenge of implementing all of them is obviously enormous. It is acknowledged that the Ministry might find it difficult to implement all the policy suggestions simultaneously. It is also possible that some of the policy suggestions might already be part of Ministry's pre-existing action plan. Nevertheless, it will be important

for the Ministry to put together a clear plan for the implementation of the policy suggestions so that maximum benefits can be derived from the investment into this research study.

In order to develop this implementation plan, the Ministry needs to prioritise the policy suggestions using a set of criteria. These criteria should not only consider cost and/or time frame, but should examine a broader range of issues such as the seriousness of certain problems observed or highlighted in this study and consequently the urgency of decisive action, the nature and magnitude of benefits that are likely to accrue from the implementation of suggested actions, the linkage between certain policy suggestions and the education system's fundamental goals, and other factors. All these should be related to Botswana's overall context. Such a plan could be phased over a given period in order to make it manageable.

The Ministry also needs to develop a clear implementation strategy that takes into account the facilitating and constraining factors within Botswana's context, the Ministry's past experiences and lessons regarding the educational reforms that have worked or have not worked, and the linkages that exist between the policy suggestions made and other developments within the education sector and outside it.

The implementation plan and strategy should avoid a situation where suggestions are implemented simply because the costs associated with them are low, or simply because they can be implemented easily over a short time period. The implementation of the suggestions should therefore be part of a sustainable effort at system improvement, with the overall goal being the improvement of the quality of education. As an example, the Ministry might consider, as a priority, focusing on the development of benchmarks for in-service training for teachers and school heads (Policy suggestions 4.5 and 5.1). In doing so, it takes cognisance of the fact that investing in skills is one of the most potent ways of enhancing the teaching and managerial competence of teachers and school heads respectively. The Ministry could, therefore, ensure that every teacher regularly participates in in-service training as required or expected. The advantage of prioritizing

such action is that, on the one hand, determining the minimum number of in-service training sessions is a fairly simple and low cost activity that could be done using existing staff, and would therefore not involve a major cost. On the other hand, there are several immense benefits to be derived from such an exercise, among them the ease with which the Ministry can identify teachers who are due for in-service training and to determine the extent to which set training targets are met. Such low cost, high impact interventions could be prioritized.

There are other policy suggestions that are slightly more costly and would require a little more time to implement, but are similarly high impact. Furthermore, they may require follow-up action by the Ministry. Policy suggestions under Group 4, for example, can have high impact but are all low cost and can be implemented within a short time frame. As an example, with as much as 31.4 percent of pupils having repeated at least once by the time they reach Grade 6, the Ministry might consider conducting an investigation into the problem of high rates of repetition. The Ministry should certainly worry about the system inefficiencies and the consequently high level of wastage associated with such high rates of repetition. It will only take modest resources for the Ministry to conduct a survey, involving fieldwork covering several regions, to establish the reasons for such high repetition rates. Such a study could be done by Ministry's own staff, or could be contracted to a team of experts. The findings of the study and the recommendations emerging from it could form the basis for appropriate interventions to be implemented in order to deal with the problem.

There are, however, some policy suggestions that require relatively huge resource outlays and can only be implemented over a long period. For example, the results presented revealed that the repair status of school buildings should be a matter of serious concern to the Ministry of Education as well as the Ministry of Local Government, Lands and Housing. If the estimates given are anything to go by, then large amounts of financial resources have to be set aside for the repair and re-building exercise. Since this is a programme that is likely to consume large amount of resources over a long period, it could be implemented in a phased manner, taking into account the schools and regions

that are worst affected. Meanwhile, it should also be a matter of concern that school heads and their staff allow school buildings to deteriorate to this level before anything has been done. For smaller amounts of resources, school heads could ensure that the life of school infrastructure is lengthened through regular maintenance, and thus effect savings in the long run. Perhaps “preventive maintenance” could form part of the in-service management training for school heads. This example illustrates not only the importance of prioritizing the implementation of policy suggestions that address serious issues highlighted in this study, even if they but also that of taking additional measures that support the broad objective of the policy suggestion, namely, preventive maintenance.

It is also important for the Ministry to realize that the implementation of some of the policy suggestions will require inputs from a variety of stakeholders. These stakeholders could be other departments within the Ministry itself, other government ministries, other national or international institutions or agencies, the private sector, parents, donors, and others. The inputs from all these will require good co-ordination, and the department or unit responsible for such co-ordination should be identified by the Ministry. Furthermore, there is need to monitor and evaluate progress with regard to the implementation of the plan adopted, and corrective action should be taken where progress falls below expectation.

Conclusion

The policy agenda presented and the additional comments made on the policy suggestions are given in the full knowledge that Botswana’s Ministry of Education and other ministries that support it operates within a context that is best known to the Ministry itself. Such a context comprises the national priorities and the manner in which they are related to other national development plans, goals and targets, the nation’s financial, human and material resources and the regulations or formulae governing their allocation and utilisation, as well as the peculiar socio-cultural values that shape decisions. A good understanding of the complex relationships among the broad range of home- and school-related variables that affect the quality of the education offered is a must if “good” decisions are to be made. It is clear that, at this juncture, Botswana’s

education sector seems to enjoy relatively good health, with key indicators such as provision of infrastructure, textbooks and furniture pointing in the positive direction. Nevertheless, measures of learning outcomes suggest that achievement of the quality ideal will require more effort.

With the HIV and AIDS epidemic becoming a growing threat to the gains made in education, there could be a shift of government focus, with more resources going in this area. Similarly, there could be other emerging issues such as the growing importance of information communication technologies, decentralization and globalization that may attract government attention or necessitate a shift in focus. In order to sustain the gains made by the sector while at the same time addressing the outstanding challenges will require extreme care in the choice of actions, and it is in this regard that the decision makers will find this study useful. The responsibility for such decisions falls squarely on the policy makers in Botswana's education system.

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