



BOTSWANA
EXAMINATIONS
COUNCIL

**PROGRESS IN INTERNATIONAL READING LITERACY STUDY
(PIRLS) 2011 - STANDARD 6**

PROGRESS IN READING LITERACY STUDY 2011

October 2014



**BOTSWANA
EXAMINATIONS
COUNCIL**

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FOREWORD

Reading is conceivably the most important skill that a child can develop. It is important to cultivate the skill among students at an early stage in their learning career. Reading is crucial for success in school and students need good reading comprehension to understand and learn materials being covered because it is the foundation for learning across all subjects. The Revised National Policy on Education of 1994 advocates the cultivation of a reading culture in our learners.


The Progress in International Reading Literacy Study (PIRLS) 2011 was the first study for PIRLS in which Botswana participated. The purpose was to provide baseline data on how Botswana was performing internationally in Reading. PIRLS is an international assessment of reading at Standard 4 and has been conducted every five years by the International Association for the Evaluation of Educational Achievement (IEA) since 2001. The PIRLS 2011 cycle coincided with the Trends in International Mathematics and Science Studies (TIMSS) 2011. This allowed the assessment of the same students in Mathematics, Science and Reading, thereby providing an opportunity for exploring the relationship between Reading ability and achievement in Mathematics and Science.

The fourth year of schooling is taken as a transition whereby students have learned how to read and are now reading to learn. However, there are countries where most students are still developing fundamental reading skills due to various contextual factors. Recognising these challenges, IEA was flexible in that it offered PIRLS at grade levels beyond Standard 4 and provided pre-PIRLS, which is a prerequisite for success on PIRLS, to Standard 4 students. Botswana participated for the first time in PIRLS 2011 at Standard 6 and prePIRLS at Standard 4. Education policy makers, planners and teachers require the use of research evidence as a basis for decision making in the quest for quality education. National and international surveys, school-based assessments, and national examinations are all different sources of information for monitoring and evaluating the quality of educational outcomes. PIRLS and prePIRLS are international comparability studies that generate information on curriculum implementation, contexts of learning, and successful pedagogical practice across all participating countries. Botswana's participation in international studies was motivated by the national aspiration for a standard of education that is internationally competitive.

The PIRLS and prePIRLS 2011 Reports present a wealth of information on Reading curriculum coverage, the contexts of learning, and the country's global competitiveness in Reading achievement. The reports present sound research data that informs education strategy, curriculum and assessment, curriculum delivery, teacher development, supervision and educational management at school level, stakeholder involvement (i.e. parental involvement in the learning experiences of their children), and a rich variety of comparative data from other education systems.

The only way to change the outcomes of our education system is to change what and how we educate. Planners, policy makers, teachers, parents, learners all need to effect changes that will improve the experiences of all learners and provide them with an opportunity to

develop their potential and to contribute meaningfully to their own development and that of their country. I therefore invite you to read this report with an action oriented focus.

A handwritten signature in black ink, appearing to read 'B. Mokopakgosi', enclosed in a thin black rectangular border.

Prof Brian Mokopakgosi
Executive Secretary
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Our gratitude for the successful completion of the PIRLS 2011 Study goes mainly to the Botswana Examinations Council for supporting, and financing, the National Research Coordinator and some members of the project team in all National Research Coordinators (NRCs) meetings and training workshops hosted in various countries that participated in the study. Various offices of the International Association for the Evaluation of Educational Achievement (IEA), such as The International Study Centre in Boston, Statistics Canada, the Secretariat in Amsterdam and the Data Processing and Research Centre in Hamburg tirelessly assisted us to handle procedural issues as they arose.

A lot of resources were required within the country to collect data from students, teachers and school heads in the main and pilot surveys. The high level of cooperation from schools and the Ministry of Education and Skills Development is greatly appreciated as staff and teachers were readily availed, even at very short notice. A great deal of acknowledgement also goes to all the staff of the Botswana Examinations Council for the various roles each person played in the project.

Practising as well as retired teachers participated in the administration of the instruments. A number of them also did the coding of the pilot as well as the main survey responses. At school level, there was a School Coordinator for each school, who handled all matters connected with the project.

We are also grateful to Mr J. Makakaba, Mr. P. Mpho, Mr G. A. Bagwasi, Dr. K. Hulela, Mrs G. Phirinyane and Mr B.J. Moteti, who served as National Quality Control Monitors, and to Mr Mogasha and Mr D. Khame, who served as the External Quality Control Monitors during the final data collection. The production of this report would not have been possible without the sleepless nights spent by data capturers who successfully performed their tasks within a reasonable period of time. In particular, our appreciation goes to the following Research Assistants: Tebogo Maposa, Sethunya Ruda, Thato Gaboitsiwe, Lechani Mabutho, One Moreo, Bonang Keagakwa, Bonang Bome, Boipuso Mosalakgotla. Masego Sethibe, and Tuelo Rasenai. We would also like to thank Thato Gaboitsiwe and Maureen Kemoabe for tirelessly type-setting this report.

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EXECUTIVE SUMMARY

Progress in International Reading and Literacy Study (PIRLS) is an international comparative assessment of reading at the fourth grade and has been conducted every five years by the International Association for the Evaluation of Educational Achievement (IEA) since 2001. In 2011, 49 countries participated in PIRLS and prePIRLS. Botswana participated for the first time in the 2011 cycle of the study. The PIRLS assessment focused on two purposes of reading, namely reading for literary experience, and reading to acquire and use information. The target population tested in most countries was grade four. PIRLS 2011 was flexible in that a new assessment known as prePIRLS was introduced to Standard 4 for learners who performed below the IEA minimum threshold, while PIRLS was allowed to be administered to Standard 6. This gave Botswana the opportunity to participate at the two levels, in order to ascertain its learners' levels of reading. Four countries assessed their students at Standard Six and three countries participated in prePIRLS.

Why Botswana Participated in PIRLS 2011

Botswana has been participating in Trends in International Mathematics and Science Study (TIMSS) since 2003 and students have been performing below the international average. It had also been observed that most of the items which students were supposed to respond to had been returned blank, because of this, it was hypothesised that English had a bearing on students' performance. This led to the country participating in PIRLS 2011 so that Botswana could gauge its reading levels internationally. The other major objectives of PIRLS were: identification of factors that impact on the teaching and learning of reading, detection of trends in learning achievement, and providing a rich source of information to policy makers and other stakeholders. These objectives were in line with BEC's strategic goal of becoming globally competitive and with Botswana's Vision 2016 pillar of becoming an educated and informed nation.

How the Study was conducted

The PIRLS 2011 Assessment Framework was a blueprint for the IEA's 2011 assessment of reading literacy and was a product of a collaborative process involving many individuals and groups, namely the PIRLS Reading Development Group (RDG) and the National Research Coordinators (NRCs) of more than 50 participating countries.

In Botswana, 40 schools were sampled for piloting the instruments, while 149 schools were sampled for the final data collection. A school coordinator was appointed by each sampled school and these coordinators were trained on the procedures PIRLS uses. A class was selected from each of the sampled schools. The names of the students in the sampled classes were obtained and captured into a database.

Reading test booklets and questionnaires for students, teachers, school heads and parents were administered. It is essential for an international study like PIRLS that the procedures are highly standardised. Botswana trained officials in the Ministry of Education and Skills Development and selected teachers for the administration of both the pilot and final data collection instruments. Coders were trained in the procedures used by PIRLS for scoring the work of learners. Botswana coders were mostly teachers from the primary schools.

A great deal of effort was made on data capture, which was manual. The captured data was transmitted to Data Processing and Research Centre (DPC) for verification. After data cleaning, scoring and scaling, countries were then able to carry out their data analysis and write reports. IEA has developed the International Database Analyser, which Botswana used for analysing her country data. The achievement results are reported on a PIRLS scale ranging from 0 - 1 000, with the international average being 500. Most learner performance in literacy ranged from 340-570.

Major Findings

Performance of Botswana Students

Four countries, Honduras, Morocco, Kuwait and Botswana, participated in PIRLS 2011, and they scored 450, 424, 419 and 419, respectively, in reading. The four countries performed below the international average of 500. For Botswana, performance in Purposes of Reading varied, with the students performing better in the Acquiring Information purpose, where they achieved a mean score of 456, whilst performance in the Literary Experience purpose was the lowest, with a mean score of 384. Girls performed better than boys in overall and purposes of reading.

The scores obtained by students were then placed into four categories showing what students were capable of doing at the specified range of scores. The benchmarks were as follows: the low benchmark which represents the minimum competencies the students can do; intermediate, high and advanced benchmarks representing the highest level of competencies displayed by the student. For the countries which participated at Standard 4, Singapore had the most students reaching the advanced international benchmark (24%), followed by the Russian Federation (19%), and then Finland and Hongkong SAR at 18% each. Of the four countries which participated at Standard 6, only one percent of their students reached the advanced international benchmark, except for Kuwait which had two percent. The percentage of students reaching the low benchmarks were Honduras (74%), Morocco (61%), Kuwait (58%) and Botswana (56%). For Botswana, 44% of the Standard 6 students had not reached the low international benchmark.

The factors associated with performance were explored and the results were as follows:

Students' Background Variables

Factors which positively affected students' performance were found to be: speaking English at home, home possessions, and high support for student learning, while age and bullying impacted negatively.

Teachers' Background Variables

Most teachers had 11-30 years' experience and their students performed better than those taught by teachers in other age groups. The majority of students, 80%, were taught by teachers with a Diploma qualification. The higher the teachers' level of education, the better the performance of students in reading was found to be.

Students' performance was affected by the levels of teacher job satisfaction, low understanding of school curricular goals, low success in implementation of the curriculum and low expectation of students' achievement.

Other factors which positively affected performance were adequate instructional materials, including computers, safe school environment, high parental involvement and support for learning.

School Background Variables

The majority of the students in the sample were from schools in small towns or villages, (44%), followed by those from schools in remote rural areas (26%). The performance of the students varied with the locality of the school, with students from urban and sub-urban areas performing better than those from other localities in the sample.

The majority of the students (at least 76%) were from schools where school heads indicated *medium* and *low teacher* job satisfaction, teacher understanding of the curricula and teachers' degree of success in implementing the school curriculum.

Parental Background Variables

Non-formal pre-school activities performed at home were positively associated with performance. About 45% of the children had their parents sending them to pre-schools, and such children were found to be performing significantly better than those who did not attend pre-schooling. The majority (93%) of Botswana children attended school when they were 7 years or younger, as per the policy requirement, and performed better than older ones. A small proportion of children (26%) had parents who spoke English with them at home before they began schooling, and that enhanced the children's performance above that of those who did not speak English.

Children who either spent some time doing their homework and/or being helped by parents performed better than those who spent less time and/or did not do their homework at all. The majority of parents went as far as attaining junior secondary education (44%). Children whose parents had a high educational level performed better than those of parents with a low education level. Despite the high proportion of parents having low levels of education, their expectations of their children achieving a higher level of education than theirs was high, and children of such parents performed better.

CHAPTER ONE

INTRODUCTION

Progress in International Reading Literacy Study

This chapter covers the aims, objectives and the conceptual framework of the study. Reading is conceivably the most important skill that a child can develop. It is therefore important to cultivate the skill among students early in their schooling career. Reading is crucial for success in school, and so students need good reading comprehension in order for them to understand and learn materials which are being covered as it is the foundation for learning across all subjects. It is therefore crucial that schools have the necessary human and material resources so that they could cultivate effective reading skills in their students.

Progress in International Reading Literacy Study (PIRLS) is coordinated by the International Association for the Evaluation of Educational Achievement (IEA). PIRLS is an international comparative study of reading literacy for young learners. It studies the reading achievement, reading behaviours and attitudes of Standard 4 students worldwide.

For PIRLS 2011, reading literacy was defined as the ability to understand and use written language forms required by society and/or valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers in school and in everyday life, and for enjoyment (Ina Mullis, Michael Martin, Ann Kennedy, Kathleen Trong, and Marian Sainsbury, 2009).

The Aims and Objectives of PIRLS

The purpose of PIRLS is to investigate students' reading literacy and the factors associated with its attainment. Botswana participated in PIRLS for the first time in the 2011 cycle. In that year the PIRLS coincided with Trends in International Mathematics and Science Study (TIMSS), and this provided an opportunity to investigate the effect of English on students' performance in Mathematics and Science.

The following constituted the major objectives of the PIRLS programme:

1. assessing the level of reading in English at Standard 4
2. identification of factors that impact on teaching and learning of reading in English
3. detection of trends in learning achievement in English if Botswana continued to participate in future cycles
4. comparison of participating countries internationally
5. providing a rich source of information to policy makers and other stakeholders
6. to determine the impact of reading literacy on achievement in Mathematics and Science

All these objectives were in line with BEC's strategic goal of becoming globally competitive

Flexibility of PIRLS in 2011

The fourth year of schooling is taken as a transition stage, at which students had learned how to read and are now reading to learn. However, there are countries where most students are still developing fundamental reading skills due to various contextual factors. Recognising these challenges, IEA extended PIRLS to meet the needs of such countries by offering PIRLS at grade levels beyond fourth grade and by developing a less difficult reading assessment designed to be a stepping stone to PIRLS. The newly developed bridging assessment to PIRLS is called prePIRLS and is intended to measure the reading comprehension skills of students who are still in the process of learning how to read. Due to having performed below the minimum threshold required by the IEA during the PIRLS pilot study in March 2010, Botswana participated for the first time in PIRLS 2011 at Standard 6 and prePIRLS at Standard 4.

Conceptual Framework for the Study

PIRLS 2011 focused on three aspects of reading literacy:

- Purposes of reading;
- Processes of comprehension; and
- Reading behaviours and attitudes.

The first two formed the basis for the written test of reading comprehension. The learners' background questionnaire addressed the third aspect.

Purposes of reading: was covered by the two types of reading that account for most of the reading young learners engage in, both in and out of school, which are reading for literary experience, and reading to acquire and use information. In the PIRLS assessment, narrative fiction was used to assess learners' ability to read for literary experience, while a variety of informational texts were used to assess learners' ability to acquire and use information while reading. The PIRLS assessment contained an equal proportion of texts assessing each purpose.

Processes of comprehension: refers to ways in which readers construct meaning from the text. Four types of processes of comprehension were assessed in PIRLS and they included:

- focusing on and retrieving explicitly stated information
- making straightforward inferences
- interpreting and integrating ideas and information
- examining or evaluating content, language, and textual elements.

The four processes were assessed across both purposes of reading. Table 1 below shows the framework of purposes of reading and processes of comprehension as assessed in PIRLS and prePIRLS.

Reading Behaviours and Attitudes

The learners' background questionnaire addressed the behaviour and attitudes of the students.

Table 1. 1: *Percentage of the PIRLS and prePIRLS Reading assessment devoted to Reading Purposes and Processes*

		PIRLS %	PrePIRLS %
Purpose of Reading	Literary Experience	50	50
	Acquire and use information	50	50
Processes of comprehension	Focus on and retrieval of explicitly stated information	20	50
	Making straightforward inferences	30	25
	Interpreting and integrating ideas and information	30	25
	Examining or evaluating content, language, and textual elements.	20	

Source: Mullis et al, 2009

For analysis and reporting purposes, the Focus on and Retrieval of Explicitly Stated Information process were combined into the Straightforward Inferences Process, whereas Interpreting, Integrating Ideas, Examining and Evaluating content were combined into the Interpreting Process.

Table 1. 2: *Description of tasks addressing processes of comprehension*

Process	Tasks to include
Focus on and retrieve explicitly stated information	<ul style="list-style-type: none"> identifying information that is relevant to the specific goal of reading looking for specific ideas searching for definitions of words or phrases identifying the setting of a story (e.g., time, place) finding the topic sentence or main idea (when explicitly stated)
Make straightforward inferences	<ul style="list-style-type: none"> inferring that one event caused another event concluding what is the main point made by a series of arguments identifying generalisations made in the text describing the relationship between two characters
Interpret and integrate ideas and information	<ul style="list-style-type: none"> discerning the overall message or theme of a text considering an alternative to actions of characters comparing and contrasting text information inferring a story's mood or tone interpreting a real-world application of text information
Examine and evaluate content, language, and textual elements	<ul style="list-style-type: none"> evaluating the likelihood that the events described could really happen describing how the author devised a surprise ending judging the completeness or clarity of information in the text determining an author's perspective on the central topic

Source: Mullis et al, 2009

In PIRLS 2011, the purposes of reading and processes of comprehension were assessed based on ten passages, five for the literary purpose, and five for the informational purpose, each ranging in length from approximately 800 to 1,000 words. The prePIRLS passages were similar

to the PIRLS passages but shorter, approximately 400 words. PrePIRLS had six passages, three literary and three informational. The passages in both PIRLS and prePIRLS were accompanied by colourful illustrations to help engage students' interest.

CHAPTER TWO THE PROCESS OF THE STUDY

PIRLS Working Structures in Botswana

Chapter Two covers the research design, analysis and how data was interpreted. PIRLS required the involvement of a large number of people. Teachers, Examination Officers, and English Subject Officers from the Ministry of Education and Skills Development (MOESD) departments were involved in the study. Professionals drawn from various departments in the ministry worked with the Project Team which had the mandate of scrutinising the PIRLS 2011 draft assessment frameworks and developing/finalising data collection instruments for administration.

The developed data collection instruments had to be administered. This made it necessary to identify and train staff for that purpose. During the administration of the instruments, it was necessary to check that the manual was adhered to. This was done by quality controllers, who were recruited and briefed thoroughly on their role. IEA engaged International Quality Control Monitors, while Botswana engaged National Quality Control Monitors. The responses of the students on the tests were coded by teachers who had been trained for that purpose. The curriculum questionnaire was also completed.

The Project Team, led by the PIRLS National Research Coordinator (NRC), carried out the day-to-day operations of the project. The National Research Coordinator was the link with the IEA structures. On the other hand, the participating schools appointed a school coordinator to handle most of the study activities at the school level. These school coordinators were trained on their project roles. All communications on the project were subsequently directed to the School Coordinator.

Population and Sampling

Botswana's target populations were Standard 4 students for prePIRLS and Standard 6 for PIRLS. These were students who had four and six years of schooling, respectively. Botswana, South Africa and Colombia participated in prePIRLS. This study was the first of its kind. Botswana, Morocco, Honduras and Kuwait participated in PIRLS at Standard 6, while the rest of the world used the Standard 4 students. This was because the pilot results indicated that the Standard 4 students were scoring too low and this introduced a lot of measurement error in the international and respective country results. IEA duly advised these countries to use students from a higher grade.

The names of all government primary schools and private English medium schools in the country were obtained from the Department of Educational Planning and Research Services (DEPRS) of the Ministry of Education. A form was designed and sent to all these schools for

them to indicate the district and inspectoral region of the school, whether the school is in an urban or rural location, ownership of the school, the total number of students each school had for Standards 4 and 6, and the number of classes (streams) in each standard.

The sampling frame was sent to Statistics Canada, which is the institution responsible for handling sampling for IEA. The PIRLS study excluded special needs students from the sample. Also excluded were private study groups because there was no age limit restriction in their enrolment. The sampling was a multi-stage process, a stratified cluster with the probability of a school being sampled proportional to the school size. Statistics Canada used software designed for this purpose and sampled 40 schools for piloting and 149 schools for the main data collection. The number of students in the main data collection was about 4000 for each study. A class was randomly selected in each school sampled for piloting and main survey.

The School Coordinator was then requested to list the students in each class that was selected. The names of these students were entered into the database, assigning each student a unique ID using the software supplied by Statistics Canada.

PIRLS 2011 Assessment Design

The PIRLS assessment design uses a matrix sampling technique, whereby the reading passages and accompanying items are divided into groups or blocks, and student booklets are made up from these blocks according to a systematic arrangement, as shown in Table 2.1. Literary passages are labelled L1 to L5, while informational passages are labelled I1 to I5.

Table 2. 1: *PIRLS 2011 student booklet design*

Booklet	Part 1	Part 2
1	L1	L2
2	L2	L3
3	L3	L4
4	L4	I1
5	I1	I2
6	I2	I3
7	I3	I4
8	I4	L1
9	L1	I1
10	I2	L2
11	L3	I3
12	I4	L4
Reader	L5	I5

Source: (Mullis et al, 2009)

The pairing of blocks in Booklets 1 to 12 through rotation ensures that there is a balance between the literary and the informational passages and also between the two purposes of reading. The blocks in the Reader, L5 and I5, were not linked to any other blocks. However, the Reader was assigned to the same proportion of students to respond to blocks L5 and I5, just as to each of the other literary and informational blocks in booklets 1 to 12.

Assessment

Assessment instruments included fourth Standard 4-level stories and informational texts collected from several countries. Students were asked to demonstrate reading skills and strategies, including retrieving and focusing on specific ideas, making simple and more complex inferences, and examining and evaluating text features. The passages were followed by open-ended and multiple-choice format questions about the text.

Using different booklets allowed PIRLS to report results from more assessment items than could fit in one booklet, without making the assessment longer. To provide good coverage of each skill domain, the test items developed were placed in blocks. However, testing time was kept to one hour and twenty minutes for each student by clustering items in blocks and randomly rotating the blocks of items throughout the 12 student test booklets. As a result, no student received all items but each item was answered by a representative sample of students.

Questionnaires

Background questionnaires were administered to collect information about students' home and school experiences in learning to read. The students' questionnaire addressed students' attitudes towards reading and their reading habits. In addition, questionnaires were given to students' teachers and school heads to gather information about students' school experiences in developing reading literacy. A parent questionnaire, known as the Learning to Read Survey, was also administered.

Data Collection Schedule

Countries in the Southern Hemisphere, which Botswana is part of, conducted the assessment in October and November, 2010.

Data Analysis

The PIRLS achievement results were summarised using Item Response Theory (IRT) scaling and were reported on 0 to 1000 achievement scales. The international scale average has been set at 500. The country-by-country distributions of achievement scores provided information about how achievement compared among countries and whether scores were improving or declining as the country participates in different cycles. The analysis was limited to descriptive statistics, such as the mean, standard deviation, and percentages. The level of significance was determined on mean differences among selected categories, but it must be noted that any significant tests employed were used for comparing levels of the same category but not to test the level of association between an attribute and students' performance. The significance level was set at ± 1.96 . In this report, a significant mean difference was indicated by an asterisk (*), under the column for Diff. The regression analysis was also performed for selected variables.

Data Interpretation

(a) Means, standard error and significant differences

The results are mostly presented in tables indicating percentages and means of students in various groups; the standard errors of these percentages and means. Where subgroups are compared, mean differences and the standard error of the mean differences are reported. Standard errors indicate the extent of the accuracy of an estimation of the mean or mean difference. An example is presented in Table 2.2 for performance in English

Table 2. 2: *Students' performances by number of books in the home*

	n	%	Mean (SE)	SD	Diff
None or very few (0-10 books)	1630	40.08	455.26 (3.06)	74.14	1,2:-23.62(-4.90)*
1 shelf (11-25 books)	1183	28.08	478.88 (3.73)	82.79	1,3:-34.23(-4.08)* 1,4:1.71(.22)
1 book case(26-100 books)	641	15.42	489.49 (7.82)	94.00	2,3:-10.61(-1.22) 2,4:25.33(3.17)*
At least 2 book cases (At least 101 books)	679	16.41	453.55 (7.07)	91.64	3,4:35.94(3.41)*

**Statistically significant at 5% level*

The number of students in each category and the percentage they constitute.

The English mean of 455.26 with a standard error of 3.06 means that the mean could be between 452.2 and 458.32. Mean differences (**Diff**) is used throughout this report for checking whether subgroup differences are significant. In the example above, interest centres on finding out if there are significant differences in the performance of students who come from homes with different number of books. Is the difference in the English performance of students from homes with *0-10 books* and students from homes with *11-25 books* statistically significant? This question is answered by looking under the column of **Diff** for English. The first row in this column starts with „1, 2“. This means that the mean difference being considered is for the means of rows one and two. For English, row one mean is 455.26 and row two mean is 478.88. The difference between the two means is -23.62. A significant mean difference (Diff) is indicated by an asterisks (*).

(b) Regression Analysis

In some instances it is required to fit a complex model in order to estimate the effect of one or more variables on performance. The analysis of prePIRLS data is complex in nature because there are inter relationship between the students' achievements and exogenous factors, including students' background variables. In most cases, estimating the mean performance of students without taking into account this unique relationship between variables may result in misleading outcomes. The regression model which aims to relate the dependent variable and independent variable(s) was used. The essence of regression analysis is to predict the effect of one factor on the dependent variable in the presence of other factors which may have different effect on the same variable. Technically, interpretation of the effect of one variable on the dependent variable, in the presence of other factors is referred to as estimating the effect of one factor on the outcome when other factors are kept constant or controlling for other factors. This is the terminology used in analysis of prePIRLS data. The flexibility of regression analysis, allows for the use of different variables of varying measurement scales, e.g. ratio scale, ordinal,

nominal or interval as independent variables. But the dependent variables need to be continuous in nature for example students' achievements scores. In order to aid the readers to understand the regression analysis outcome in this report, a simple example on regression analysis is interpreted below:

Table 2. 3: *Regression for background variables*

Variables	Coefficients	Standard Error (SE)	t-Value
Constant	497.44	10.96	45.37
Age	-24.96	2.08	-11.99*
Sex			
Male	-5.05	3.72	-1.36
Home Possession			
Low	-49.64	7.1	-6.99*
Medium	-29.51	5.01	-5.89*
Number of Books at Home			
0--10 Books	-17.07	8.85	-1.93
11--25 Books	-11.54	8.29	-1.39
26--100 Books	-5.09	8.88	-0.57

*Statistically significant at 5% level

Table 2.3 shows four variables in the model, namely; *Age*, *Sex*, *Home possession* and *Number of books*. All variables except *Age* are categorical in nature. *Age* is continuous and it has been centred on the mean age of the group so that the intercept of the model translates to the overall mean score of the pupil. The coefficient for *Age* is -24.96. This value suggests that a pupil who is one year older than the mean *Age* of the pupil being studied will score on average 24.96 points lower than a pupil at the mean *Age*.

Sex has two categories; "*Male*" and "*Female*". The "*Female*" category is used as reference point for comparison with the *male* category. For instance the coefficient - 5.05 means that "*Male*" students scored 5 points lower than the "*Female*" students, when taking into account the effect of other variables in the model.

Home possession has 3 levels, "*High*", "*Medium*" and "*Low*". The category "*High*" is a reference for comparison with other categories of this variable. For example the coefficient of -49.64 for "*Low*" means a pupil who came from household with home possession regarded as "*Low*" scored 49.64 points lower than the pupil who came from household with home possession regarded as "*High*". For "*Medium*" household the difference is -29.51.

For the variable *Number of books at home*, the reference level is "*100 or more books at home*", so all level are contrasted to this level. The difference between students with "*0-10 books at home*" and "*100 or more books at home*" is -17.07, suggesting that students who have "*0-10 books at home*" will score 17.07 points lower on average compared to those with "*100 or more books at home*". For "*11-25 books at home*" the difference is -11.54 and it is -5.09 for students with "*26-100 books at home*".

The Constant term in the model represents the mean performance of students who have characteristics similar to reference level in each variable. For instance, 497.44 means that a “*Female*” whose age is around the mean “*Age*” of the students studied, came from household with home possessions regarded as “*High*”, had “*100 or more books at home*” will score an average 497.44 points. The t-value indicates statistical significance at 5% level for a two-tailed test. The t-value of -11.99* indicates that older students achieve significantly lower than the younger ones and this is not due chance occurrence.

(c) Indices

Questionnaires were made up of themes under which there were many items. The items were grouped together to form one or more construct. An index was therefore obtained by calculating the mean response for an individual for that construct. Negatively worded items were reversed before analysis to align with the rest. Naming the construct was a mammoth task because the name given must be representative of the underlying construct. In order for better appreciation by the readers, an example on how an index was constructed is given below. An Index of “frequency of parents support” is constructed from the following questions asked to students;

- (1) My parents ask me what I am learning in school
- (2) I talk about my schoolwork with my parents
- (3) My parents make sure that I set aside time for my homework
- (4) My parents check if I do my homework

The students had to indicate how often these things happen to them at home by responding “*Every day or Almost Every Day*”, “*Once or twice a week*”, “*Once or twice a month*” and “*Never or Almost Never*” for each question. Responses were coded 1, 2, 3 & 4 respectively. The index is constructed by first computing the mean response of pupil and the categorising the mean into four categories “*Every day or Almost Every Day*”, “*Once or twice week*”, “*Once or twice a month*” and “*Never or almost Never*”. The frequency distribution of mean response is displayed in Table 2.4. By so doing that only one variable with 4 responses is created. Forming categories of the Index is done by recoding the mean into 4 levels. Determining the threshold of the levels is arbitrary, for the “frequency of parents support” the cut points for “*Every day or Almost Every Day*” was 1.25, for “*Once or twice week*” was 2.25, for “*Once or twice a month*” was 3.25 and for “*Never or almost Never*” was 4. The index was then used indicate levels of frequency of parental support and then related to performance.

(d) International benchmarks for reading achievement

The scores obtained by students were then categorised into four, showing what students were capable of doing at the specified range of scores. The benchmarks included the low benchmark, which represents the minimum competencies the students can do, the intermediate, high, advanced benchmarks, which represented the highest level of competencies displayed by the student. A full description of the benchmarks is indicated below. As illustrated in APPENDIX A, examples of items that were scored at that particular benchmark were included in order to show the percentages of students who were getting it correct in each country.

Table 2. 4: *Frequency of parental support*

Mean Response	Frequency	%
1.00	1539	37.0
1.25	853	20.5
1.33	7	.2
1.50	418	10.1
1.67	9	.2
1.75	401	9.7
2.00	278	6.7
2.25	164	3.9
2.33	8	.2
2.50	203	4.9
2.67	4	.1
2.75	84	2.0
3.00	65	1.6
3.25	48	1.2
3.50	26	.6
3.75	16	.4
4.00	32	.8
Total	4155	100.0

(e) International benchmarks for reading achievement

The scores obtained by students were then categorised into four, showing what students were capable of doing at the specified range of scores. The benchmarks included the low benchmark, which represents the minimum competencies the students can do, the intermediate, high, advanced benchmarks, which represented the highest level of competencies displayed by the student. A full description of the benchmarks is indicated below. As illustrated in APPENDIX A, examples of items that were scored at that particular benchmark were included in order to show the percentages of students who were getting it correct in each country.

● Advanced International Benchmark

625

When reading *Literary Texts*, students can:

- Integrate ideas and evidence across a text to appreciate overall themes
- Interpret story events and character actions to provide reasons, motivations, feelings, and character traits with full text-based support

When reading *Informational Texts*, students can:

- Distinguish and interpret complex information from different parts of text, and provide full text-based support
- Integrate information across a text to provide explanations, interpret significance, and sequence activities
- Evaluate visual and textual features to explain their function

○ High International Benchmark

550

When reading *Literary Texts*, students can:

- Locate and distinguish significant actions and details embedded across the text
- Make inferences to explain relationships between intentions, actions, events, and feelings, and give text-based support
- Interpret and integrate story events and character actions and traits from different parts of the text
- Evaluate the significance of events and actions across the entire story
- Recognize the use of some language features (e.g., metaphor, tone, imagery)

When reading *Informational Texts*, students can:

- Locate and distinguish relevant information within a dense text or a complex table
- Make inferences about logical connections to provide explanations and reasons
- Integrate textual and visual information to interpret the relationship between ideas
- Evaluate content and textual elements to make a generalization

● Intermediate International Benchmark

475

When reading *Literary Texts*, students can:

- Retrieve and reproduce explicitly stated actions, events, and feelings
- Make straightforward inferences about the attributes, feelings, and motivations of main characters
- Interpret obvious reasons and causes and give simple explanations
- Begin to recognize language features and style

When reading *Informational Texts*, students can:

- Locate and reproduce two or three pieces of information from within the text
- Use subheadings, text boxes, and illustrations to locate parts of the text

○ Low International Benchmark

400

When reading *Literary Texts*, students can:

- Locate and retrieve an explicitly stated detail

When reading *Informational Texts*, students can:

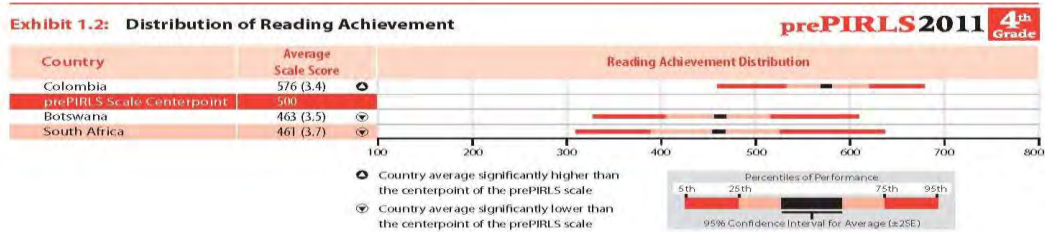
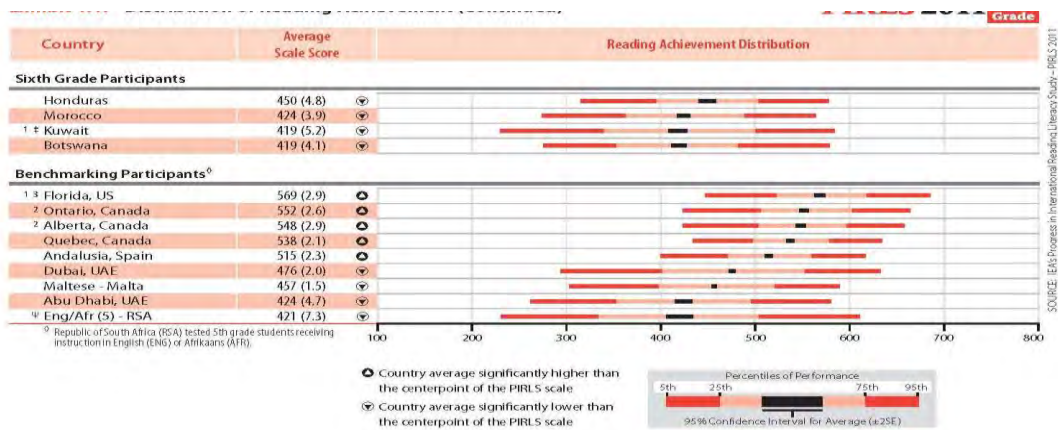
- Locate and reproduce explicitly stated information that is at the beginning of the text

CHAPTER THREE

STUDENTS' PERFORMANCE IN READING

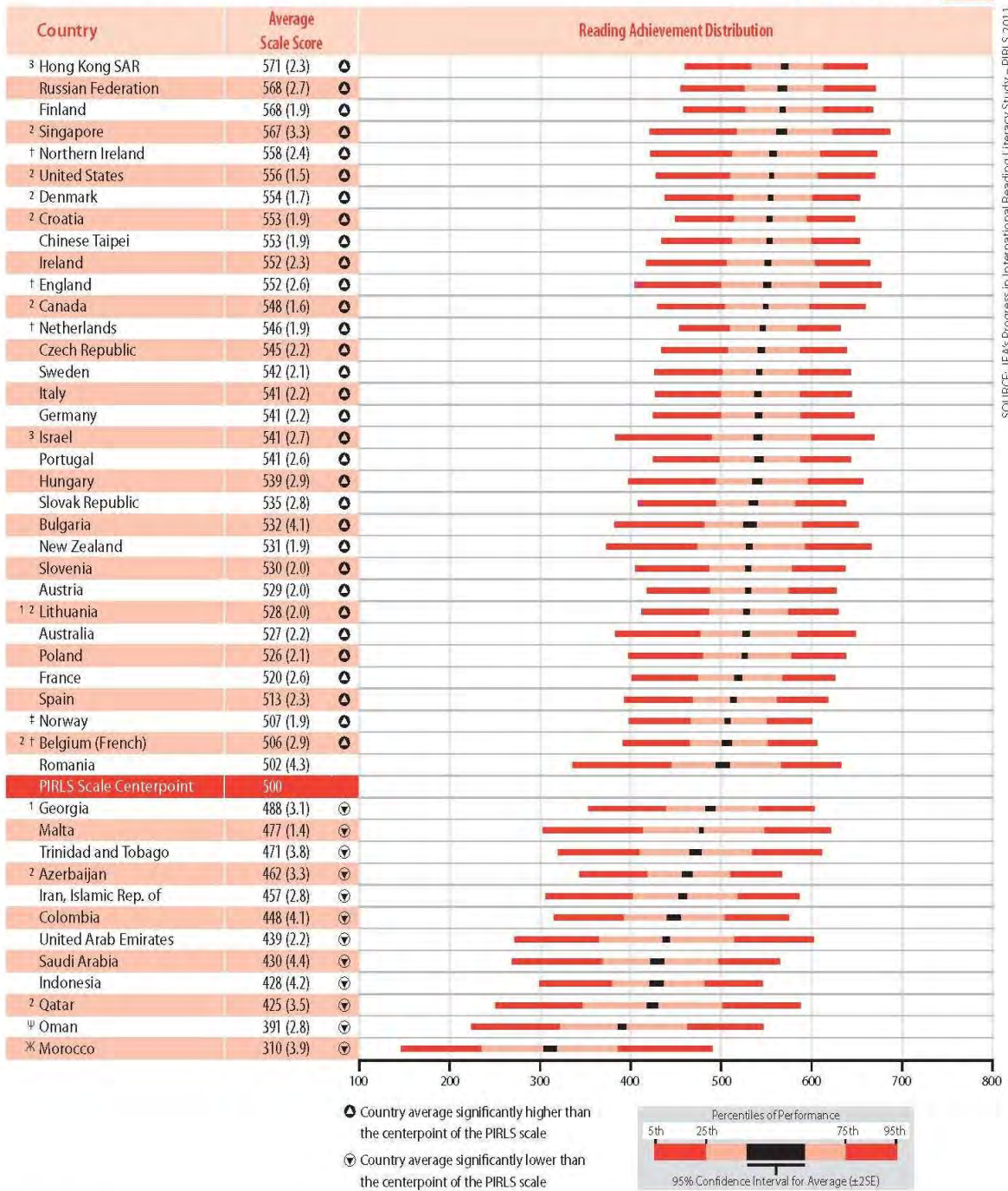
Chapter Three presents the achievement results of participating countries. The results also cover students' performance in purposes of reading and processes of comprehension. Forty-nine countries participated in PIRLS and prePIRLS 2011. Forty-five of them assessed students at Standard 4, 4 at Standard 6, whilst three countries participated in prePIRLS. In Botswana the total number of students who participated in PIRLS was 4197. The performance of Botswana students compared to those from the participating countries is shown in Figure 3.1 Exhibit 1.1 (Mullis, Martin, Foy, & Drucker, 2012). The achievement level of Botswana students is lower than the international average.

Figure 3. 1: PIRLS distribution of reading achievement



() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.1: Distribution of Reading Achievement



SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2011

^{*} Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.
[‡] Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%.
 See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Mullis, Martin, Foy, Drucker, 2012

The top performing country in Reading was Hong Kong SAR, followed by the Russian Federation, Finland, and Singapore, in that order. This is represented graphically by Figure 3.1.

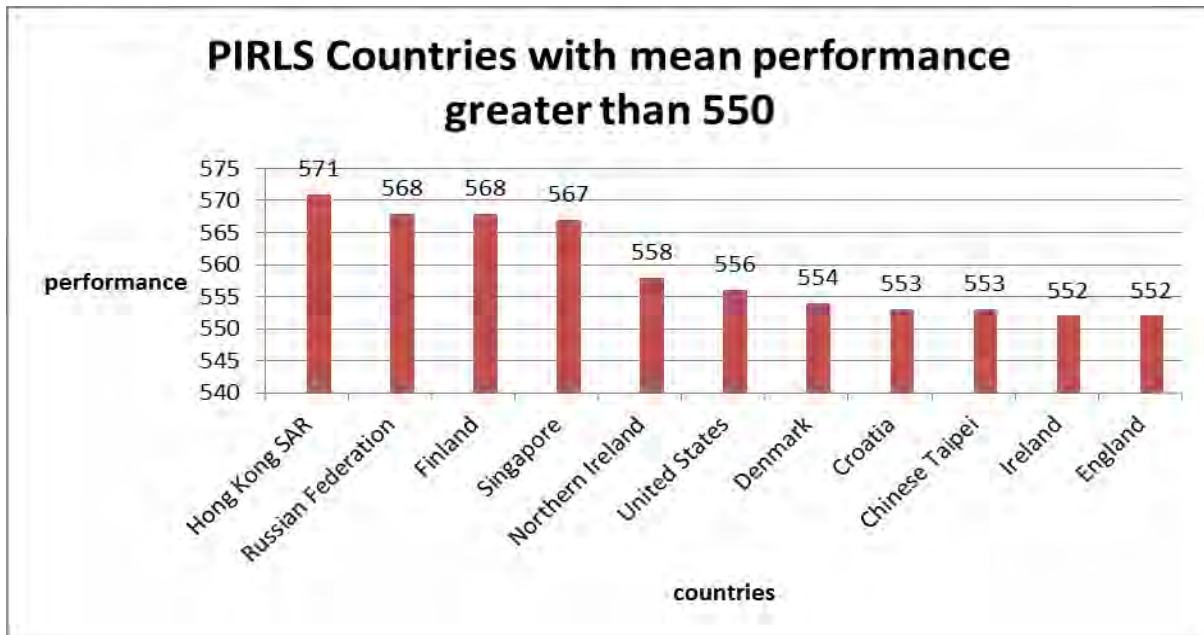


Figure 3. 2: PIRLS Countries with mean performance greater than 550

Figure 3.2 shows countries whose mean performance is greater than 550, above the PIRLS scale centre point of 500. The five top performing countries in Reading are Hong Kong SAR, Russian Federation, Finland, Singapore, and Northern Ireland.

PIRLS Countries with Mean Performance Greater than 550 by Sex

The performance of the top performing countries is further categorised by Sex as shown in Figure 3. 3.

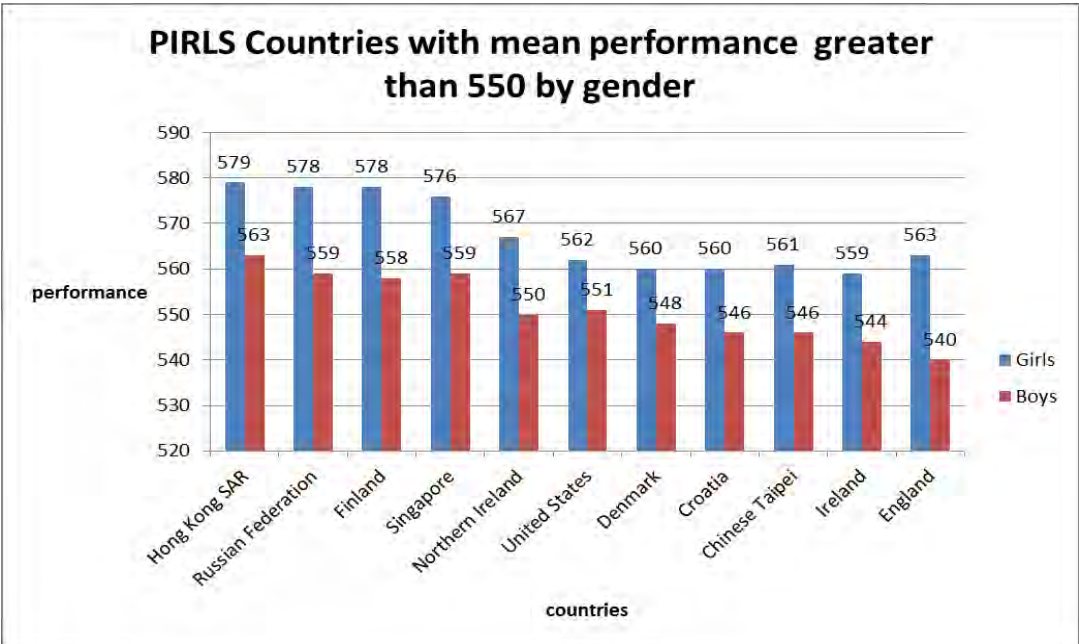


Figure 3. 3: PIRLS Countries with mean performance greater than 550 by Sex

Figure 3.3 shows that girls were performing better than boys in Reading in all the top performing countries.

Standard 6 Overall Performances

Four countries participated at PIRLS Grade 6, namely Honduras, Morocco, Kuwait, and Botswana. These performed below the PIRLS scale centre point of 500, as shown in Figure 3.4

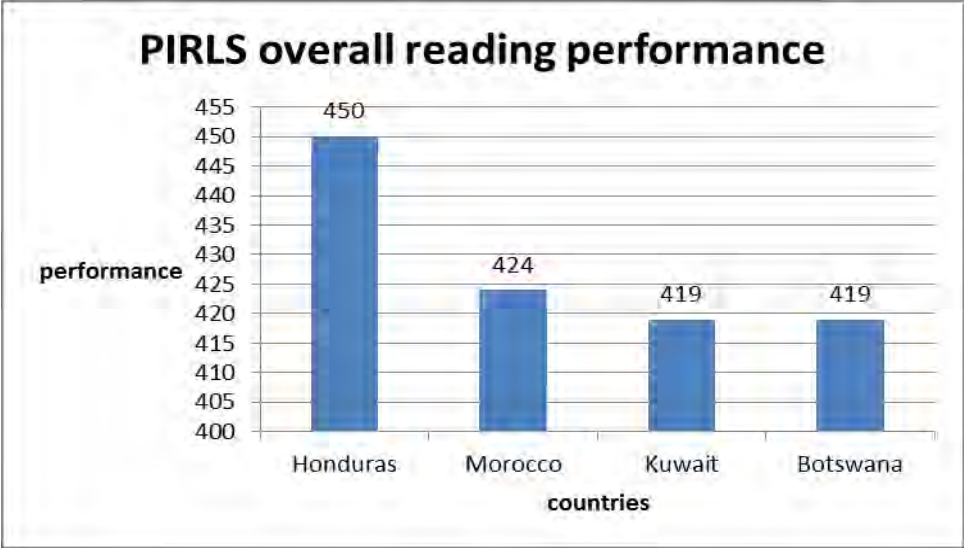


Figure 3. 4: PIRLS Overall Reading Performance at Standard 6

The performance of the standard six countries is also analysed by gender, as shown in Figure 3.5.

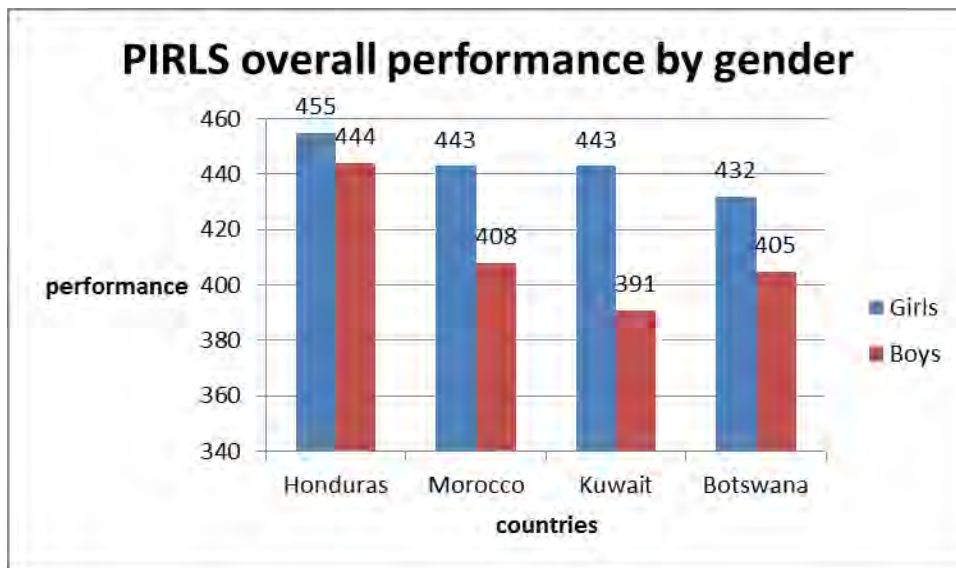


Figure 3. 5: PIRLS Grade 6 Performances by Sex

Figure 3.5 shows that girls performed better in reading than boys in the four countries.

Performance by Processes and Purposes of Reading

Table 3.1 shows students' overall performance as well as performance by purposes of reading and processes of comprehension in the PIRLS study.

Table 3. 1: *Performance of students in reading domains*

	n	Mean(SE)	SD
Reading	4197	418.99(4.13)	91.78
Literary	4197	383.93(5.10)	108.90
Informational	4197	456.39(3.45)	78.29
Interpreting	4197	421.20(3.92)	89.85
Straightforward	4197	416.61(4.11)	96.54

**Statistically significant at 5% level*

The overall mean achievement for reading, 418.99, was below the international benchmark scale of 500. Students performed much better in the Informational dimension. The dimension with the lowest score was Literary, with a mean of 383.93.

Performance by Purposes and Processes of Reading by Sex

An analysis was done to gauge the performance of the sexes and the findings are shown in Tables 3.2-3.4.

Table 3. 2: *Performance of students in reading by sex*

		n	%	Mean(SE)	SD	Diff
Reading	Girls	2144	51.41	432.45(4.22)	87.00	1,2: 27.70*
	Boys	2053	48.59	404.75(4.78)	94.50	

**Statistically significant at 5% level*

Slightly more girls (51.41%) than boys (48.59%) were investigated. Girls, at a mean performance of 432.45, outperformed boys, who recorded a mean of (404.75). The difference in performance between boys and girls was statistically significant.

Table 3. 3: *Performance of students in content domains by sex*

		n	%	Mean(SE)	SD	Diff
Literary	Girls	2144	51.41	396.49(5.17)	104.45	1,2: 5.84*
	Boys	2053	48.59	370.65(5.89)	111.89	
Informational	Girls	2144	51.41	470.90(3.77)	73.61	1,2: 9.87*
	Boys	2053	48.59	441.03(3.77)	80.14	

**Statistically significant at 5% level*

As shown in Table 3.3 in both literary and informational domains, the difference between girls and boys is statistically significant in favour of girls.

Table 3. 4: *Performance of students in cognitive domains by sex*

		n	%	Mean(SE)	SD	Diff
Interpreting Process	Girls	2144	51.41	432.40(4.22)	85.96	1,2: 23.05*
	Boys	2053	48.59	409.35(4.47)	92.33	
Straightforward Inferences Process	Girls	2144	51.41	431.37(4.19)	91.63	1,2: 30.38*
	Boys	2053	48.59	400.99(4.99)	99.11	

**Statistically significant at 5% level*

In the cognitive domain of interpreting process, girls performed better than boys, with a mean of 432.40 to 409.35. The same was observed in the cognitive domain of making Straightforward Inferences process: girls had a mean of 431.37, while boys had 400.99. In both reading processes the difference between girls and boys was statistically significant in favour of girls.

International Benchmarks for Reading Achievement

Reading achievement amongst the students in different countries was compared according to the four international reading benchmarks: advanced, high, intermediate and low. Figure 3.5 indicates the distribution of students in the different benchmarks for the top four performing countries.

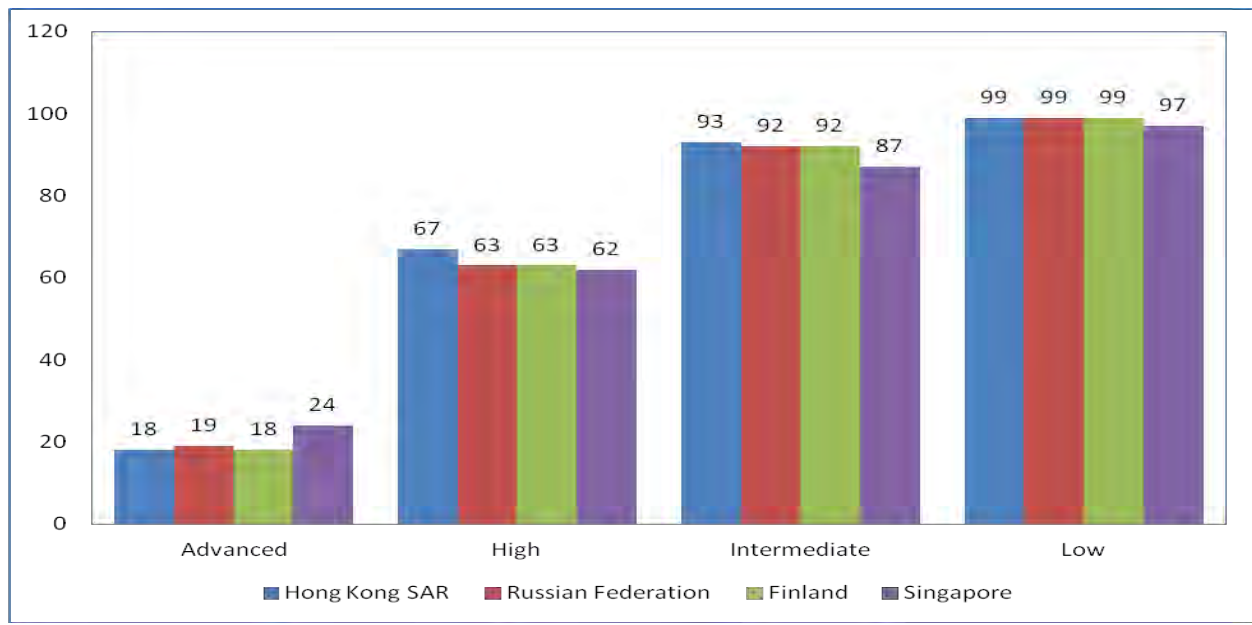


Figure 3. 5: Top performing countries and benchmark reached

Singapore had the highest proportion of students reaching the advanced international benchmark (24%), followed by the Russian Federation (19%), Finland and Hongkong SAR at 18% each. For the top performing countries, 99% of their students reached the low international benchmark of 400, except Singapore, which was at 97%. For the top performing countries, only one to three percent of their students did not reach the low international benchmark.

PIRLS Performance at each Benchmark- Standard 6 Countries

Performance in the benchmarks was also compared among those countries which participated at Grade 6. The results are shown in Figure 3.6.

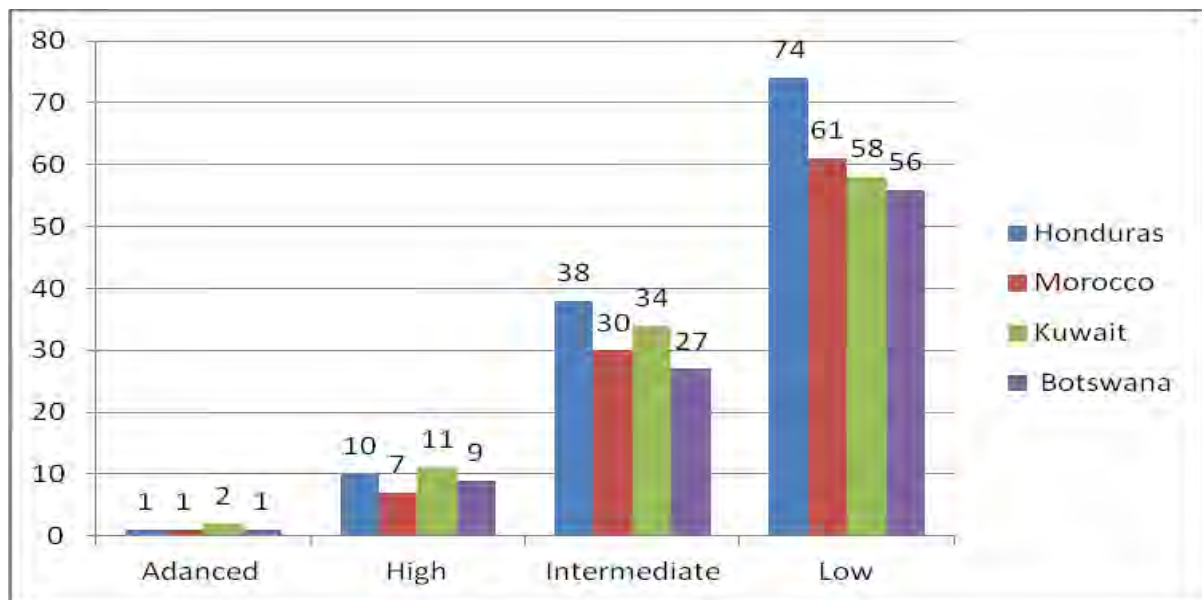


Figure 3. 6: Standard 6 PIRLS Performance at each Benchmark

Of the four countries which participated at Standard 6, only one percent of their students reached the advanced international benchmark, except for Kuwait, which had two percent. The percentages of students reaching the low benchmarks were as follows: Honduras (74%), Morocco (61%), Kuwait (58%), and Botswana (56%). For Botswana, this meant that 44% of the Standard six students had not reached the low international benchmark.

Examples of Items at each Benchmark

The Exhibits 2.4 in Fig 3.6 illustrates an example of the percentages of students in each country getting an item targeting a particular benchmark correct. For example, for the low benchmark, under literary experience, 99% of the students in the Russian Federation got the item correct, while only 57 % of Botswana students got the same item correct. All the examples in the benchmarks provided had to be interpreted in a similar way. For more examples of other benchmarks refer to APPENDIX A

Exhibit 2.4: Low International Benchmark – Example Item 1

Country	Percent Correct
Russian Federation	99 (0.4) ⬆
² Croatia	98 (0.7) ⬆
³ Hong Kong SAR	97 (0.8) ⬆
Italy	96 (0.7) ⬆
Finland	96 (0.7) ⬆
Austria	96 (0.7) ⬆
[†] Northern Ireland	96 (1.0) ⬆
Chinese Taipei	95 (0.8) ⬆
Czech Republic	95 (1.2) ⬆
³ Israel	95 (0.8) ⬆
Germany	95 (0.9) ⬆
² Denmark	94 (0.7) ⬆
[†] Netherlands	94 (0.8) ⬆
Slovenia	94 (1.0) ⬆
Bulgaria	94 (0.9) ⬆
Sweden	94 (1.3) ⬆
² Canada	94 (0.6) ⬆
^{1 2} Lithuania	93 (1.1) ⬆
Portugal	93 (1.1) ⬆
Ireland	93 (0.9) ⬆
France	93 (0.8) ⬆
¹ Georgia	93 (1.1) ⬆
² Singapore	92 (0.9) ⬆
² Azerbaijan	92 (1.1) ⬆
Hungary	91 (1.0) ⬆
Australia	91 (1.0) ⬆
[†] England	91 (1.1) ⬆
New Zealand	91 (1.0) ⬆
Slovak Republic	90 (1.2) ⬆
[‡] Norway	90 (1.5) ⬆
Poland	90 (1.1) ⬆
² United States	90 (0.8) ⬆
International Avg.	89 (0.2)
Romania	88 (1.5) ⬇
^{2 †} Belgium (French)	87 (1.5) ⬇
Spain	86 (1.1) ⬇
Iran, Islamic Rep. of	85 (1.4) ⬇
Malta	84 (1.3) ⬇
Indonesia	82 (1.6) ⬇
Colombia	81 (2.0) ⬇
Trinidad and Tobago	81 (1.7) ⬇
United Arab Emirates	74 (0.9) ⬇
Saudi Arabia	73 (1.7) ⬇
Oman	72 (1.3) ⬇
² Qatar	71 (1.7) ⬇
Morocco	52 (1.8) ⬇

Purpose: Literary Experience

Process: Focus on and Retrieve Explicitly Stated Information and Ideas

Description: Locate and retrieve explicitly stated detail from the beginning of the text

1. What did the farmer set out to look for at the beginning of the story?

a calf

herders

rocky cliffs

an eagle chick

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Country	Percent Correct
Sixth Grade Participants	
Honduras	81 (2.2) ⬇
Morocco	75 (2.5) ⬇
^{1 †} Kuwait	64 (1.9) ⬇
Botswana	57 (2.2) ⬇

Country	Percent Correct
Benchmarking Participants^o	
² Ontario, Canada	94 (1.1) ⬆
Quebec, Canada	92 (1.0) ⬆
² Alberta, Canada	92 (1.4) ⬆
^{1 3} Florida, US	91 (1.4) ⬆
Andalusia, Spain	87 (1.6) ⬆
Maltese - Malta	84 (1.3) ⬇
Dubai, UAE	81 (1.0) ⬆
Abu Dhabi, UAE	71 (2.0) ⬇
Eng/Afr (5) - RSA	65 (3.0) ⬇

^o Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Summary

The performance of Botswana students was below the international average of 500. Other studies conducted in Botswana, such as Monitoring of Learning Achievement (MLA 2001) for Standard Four students and Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ II 2005) for Standard Six students also revealed low performance by students in Botswana. The students performed better in the purpose of acquiring information than the literary purpose.

Girls performed significantly better than boys overall, in all the purposes of reading and processes of comprehension. Of the countries which participated at Standard 4, Singapore had the most students reaching the advanced international benchmark (24%), followed by the Russian Federation (19%), and Finland and Hongkong SAR at 18% each. Of the four countries which participated at Standard 6, only one percent of their students reached the advanced international benchmark, except for Kuwait, which had two percent. The percentages of students reaching the low benchmarks were Honduras (74%), Morocco (61%), Kuwait (58%), and Botswana (56%). For Botswana, 44% of the Standard 6 students did not reach the low international benchmark.

Recommendations

1. The decline in the performance of boys needs to be addressed. Government had initiatives to empower women and the girl child through the adoption of the Millennium Development Goals (MDGs) and the Revised National Policy on Education of 1994. However, there might be a need to revisit such policies in order to empower both boys and girls.
2. In order to raise proportions of Botswana students attaining higher levels of reading skills teaching of the purpose of literary experience in reading should be emphasised in pre and in-service training. Classroom instruction should be monitored with the intension of ensuring that the purpose of literary experience is taught effectively.

CHAPTER FOUR

STUDENTS' BACKGROUND VARIABLES AND PERFORMANCE OF STUDENTS

This chapter presents findings based on the analysis of students' responses to questions about their backgrounds, including those concerning what they thought about their homes and their schools. Regression and correlation analyses were conducted to predict and determine the extent to which the background variables influenced students' achievement. The aim of the study was to establish the relationship between the background variables and students' achievement. Also there was comparison between boys' and girls' performance in purposes or reading.

Performance of Students by Sex

Table 4. 1: *Performance of students by sex*

		n	%	Mean(SE)	SD	Diff
Literary	Girls	2144	51.41	396.49(5.17)	104.45	1,2: 5.84*
	Boys	2053	48.59	370.65(5.89)	111.89	
Informational	Girls	2144	51.41	470.90(3.77)	73.61	1,2: 9.87*
	Boys	2053	48.59	441.03(3.77)	80.14	

**Statistically significant at 5% level*

The purposes of reading are the cornerstones of reading comprehension. The PIRLS assessment focused on the two overarching purposes for reading, namely reading for literary experience and reading to acquire and use information. As shown in Table 4.1 students performed better in informational texts than in reading to acquire literary experience. In both literary and informational domains, the difference between girls and boys is statistically significant in favour of girls.

Book Possession

Books are an important source of information and contribute positively to easy learning in all cognitive domains of Reading. Table 4.2 indicates the number of books the students had at home.

Table 4. 2: *Performance of students by the number of books*

	n	%	Mean(SE)	SD	Diff
0 - 10 books	1639	40.44	399.92(3.31)	80.31	1,2:-30.09* 1,3:-55.10*
11 - 25 books	1359	33.45	430.01(3.94)	87.46	1,4:-27.44*
26 - 100 books	665	16.58	455.02(7.46)	98.72	2,3:-25.01* 2,4: 2.65
> 100 books	388	9.52	427.36(11.15)	109.34	3,4: 27.66*

**Statistically significant at 5% level*

The majority of students, accounting for 40.44 %, had fewer books (0-10), whilst 33.45% had 11-25, and 16.58 % had 26-100. There was a positive correlation between the number of books and performance, as Table 4.5 indicates that the greater the number of books the better the performance. However, students with more than 100 books had a lower performance score, perhaps due to other factors. There was no significant statistical difference in performance between students who came from households with more books and those who came from households with fewer books.

Home Possessions

Home possession is another background variable that may impact on students' performance and achievement. In this regard, having a computer, study desk, owning books, owning a room, internet, electricity, television, radio, etc., constituted the home possession variable in Table 4.3 below.

Table 4. 3: *Reading achievements by level of home possessions*

	n	%	Mean(SE)	SD	Diff
High	1802	46.53	457.64(5.93)	92.52	1,2: 60.64*
Medium	1640	42.07	397.00(3.59)	81.79	1,3: 84.12*
Low	422	11.4	373.52(3.70)	69.52	2,3: 23.48*

**Statistically significant at 5% level*

The relationship between performance in reading and the level of home possessions suggest that students who come from homes with more possessions tended to do well in reading. The number of home possessions might have been an indicator of the socio-economic status for particular households. Students who had access to basic amenities, such as tap water, electricity, internet, etc., tended to do better than students who had only or nothing of these items, as observed in Table 6, where a higher number of home possessions contributed to students scoring a mean performance of 457.64, while a lower number of home possessions contributed to a mean performance of 373.52, which is the lowest on this variable. There is a statistical difference across all mean performances.

Impact of Bullying on Achievement

Data was analysed to establish the impact that bullying had on student achievement, and the results are presented in Table 4.4 below. Bullying in this case referred to practices such as making fun of or calling other students names, being left out of games, being hit or hurt by other students, etc.

Table 4. 4: *Reading achievements by frequency of bullying at school*

	n	%	Mean(SE)	SD	Diff
At least Once a Month	1042	29.35	409.74(4.76)	91.66	1,2: -10.06
A Few Times a Year	1962	56.53	419.80(4.62)	90.35	1,3 -36.35*
Never	497	14.12	446.09(8.25)	91.71	2,3:-26.29*

**Statistically significant at 5% level*

Students who reported that they were bullied at school at least once a month (29.35%) performed lower than those who were bullied a few times a year (56.53%) and those who were

never (14.12%) bullied. A statistically significant difference in performance was observed between students who were bullied at least once a month and those who were never bullied; and between those who were never bullied and those who were bullied a few times a year. There were no significant differences between those who were bullied a few times a year and those who were bullied at least once a month. This outcome implied that the responses could be dichotomized into „bullied“ or „never bullied“.

Relationship between Reading Achievement and Students' Background Variables

A regression analysis is a way of estimating the composite effect of background variables on performance when studying them together. The results were shown in Table 4.9.

Table 4. 5: *Results of regression analysis of reading achievements on student's background variables*

Variables	Coefficients	Standard error	t-value
(constant)	486.97	11.19	43.53*
Age	-25.15	2.07	-12.17*
Sex			
Male	-18.23	3.59	-5.07*
Number of Home Possessions			
Low	-60.56	5.90	-10.27*
Medium	-45.71	5.16	-8.85*
Number of Books at Home			
0--10 Books	-9.28	7.62	-1.22
11--25 Books	-3.02	8.19	-0.37
26--100 Books	12.11	7.79	1.55
Frequency Of Bullying At School			
At Least Once A Month	-30.81	6.45	-4.78*
A Few Times A Year	-19.27	6.19	-3.11*
Frequency of Home Support			
Once or Twice a Week	-11.82	4.26	-2.78*
Once or Twice a Month	-18.87	6.94	-2.72*
Never	-0.89	15.85	-0.06

**Statistically significant at 5% level*

Most coefficients in the model, except for age, represented contrast effects between the focal category and the reference category. For age, the coefficients were interpreted as reflecting the performance of students who were one year older than the mean age of the group studied and who scored 25.15 lower than the students at mean age after controlling for other variables. But those who were one year younger scored 25.15 higher than those who were at the mean age. This also supports the assertion that the older students find it harder in reading when compared to younger ones.

The average achievement score for a female student who came from a home with a higher level of home possession, with more books, who was never bullied at school and was supported by parents on a daily basis, was 486.97, which is closer to the international bench mark of 500. This suggests that if students' learning environments could be improved, their performance would improve drastically. It is also evident that males achieved lower than their female

counterparts in reading. When the differences in students' everyday experience at school, at home, etc., were taken into account, there was a statistically significant difference in performance in reading between males and females.

It was observed that these results could be unreliable if the differences between female and male students were attributable to the way the questions had been asked (DIF on items) or to any other factor that could have advantaged girls over boys. However, the analysis was not exhaustive because not all factors regarding parents, teachers, and school environment had been included in the model. The number of books at home had an insignificant effect on performance. Students with a smaller number of books and a large number of books performed similarly when other variables were factored in. The study revealed that the indices of the number of possessions and frequency of bullying at school impacted on performance more than any other factors studied. The coefficients for these factors were large in absolute value, implying that the students with lower levels of these indices performed poorly.

Summary

The girls outperformed boys in all purposes and processes in reading. A majority of the students (40%) had very few books in their homes. Their performance was lower than those who have more books at home but lower than the international average. A lower proportion of 20% of the students had a high index of home possessions that promote learning. Students who received home support everyday consisted of 40% of the population and outperformed those who received lower frequencies of home support.

Only 10% of the students were never bullied and they had the highest mean scores than those who were bullied. Students who were over the school entry age level performed lower than those who were at the appropriate age. After controlling for all variables, the following were found to be positively associated with performance namely speaking English at home, more books at home, high home possession and frequent home support for learning whilst bullying and age were negatively associated..

Recommendations

1. The lower performance in reading of the boys compared to that of the girls in all reading purposes and processes is of serious concern. There is need for research to be conducted in this area with the purpose of finding ways of realising sex parity in the achievement of reading skills.
2. Students whose reading skills are affected by medium and low Home possessions are in a large majority. Greater access could be provided to some of the items like computers in the schools to enhance their reading skills.
3. The rest of the 60% of the students do not receive home support very frequently. Schools and PTA's should develop ways by which parents could be capacitated to provide more frequent home support.
4. Of serious concern is the finding that 90% of the students experienced some bullying at low to high frequencies. All forms of bullying should be identified. Policies and frameworks to

deal with bullying should be developed by the stakeholders including PTA's, school management and students leadership structures.

CHAPTER FIVE

TEACHERS' BACKGROUND VARIABLES AND PERFORMANCE OF STUDENTS

For this chapter data was collected through a teachers' questionnaire which sought information about teachers' academic and professional backgrounds, classroom resources, instructional practices, professional development and attitudes toward teaching. The analysis was mainly designed to determine the extent to which students' performance was associated with these variables. The analysis was not only limited to descriptive statistics, such as the mean, standard deviation and percentages. The level of significance was determined in mean differences among selected categories. However, it must be noted that any significant tests employed in this chapter were used for comparing levels of the same category and not to test the level of association between an attribute and students' performance. The significance level was set at ± 1.96 . Further analyses were conducted to measure the extent to which the teachers' academic and professional backgrounds, classroom resources, instructional practices, and attitudes toward teaching related to the performance of students, taking into account the fact that these variables did not have a direct effect on performance.

Specific questions were asked to establish the availability of enhancing resources; the teachers' qualifications, teachers' job satisfaction, teachers' working conditions, teachers' understanding of curricular goals, parents' involvement / support for achievement of students, security of the school, availability of computers, teachers' interactions with each other for benchmarking, and the condition of buildings. The aspect of reading effect also comes up on reading questions where teachers' questions emphasize on the pedagogy of English such as reading instructions, strategies and activities they give their students. Some of the questions bordered on resources that contribute to the pedagogy such as literary reading materials and informational reading materials.

Teachers' Demographic Variables

While there is substantial literature on the relationship between general teacher characteristics and student learning, school districts and states often rely on in-service teacher training as a part of school reform efforts. There is substantial literature on the relationship between teacher characteristics and student learning. Most prior research on this topic has focused on teachers' educational background, years of teaching experience and salaries. While it is clear that certain teachers are more effective than others at increasing student performance, there is considerably less consensus on whether specific, observable teacher characteristics, such as education or experience, produced higher performance. However, the PIRLS Standard 6 questionnaires went further to measure the effect of age and Sex as well, besides that of experience and qualification. Table 5.1 below shows students' mean performance by teachers' years of experience, age and Sex.

Table 5. 1: *Teachers' demographic variables and performance*

		n	%	Mean (SE)	SD	Diff
Years of Experience	1-10yrs	1770	46.73	406.29(5.82)	85.99	1,2: -25.82* 1,3: -27.38*
	11-20yrs	989	27.16	432.11(11.56)	96.89	1,4: 8.17
	21-30yrs	905	24.36	433.67(9.27)	91.69	2,3: -1.56 2,4: 33.99*
	Above 30yrs	73	1.75	398.12(8.01)	81.66	3,4: 35.55*
Age	under 29yrs	641	16.50	413.20(10.16)	89.83	1,2: -5.91
	30-49yrs	2940	74.73	419.11(5.31)	90.74	1,3: -28.61
	above 50yrs	416	8.77	441.81(17.40)	90.32	2,3: -22.70
Sex	Female	2526	62.71	413.07 (4.27)	84.41	1,2: -18.73
	Male	1403	37.29	431.80(10.32)	100.00	

**Statistically significant at 5% level*

Teachers' Years of Experience

Students who were taught by teachers with the least years of experience, ranging from 1-10 years, made up the highest percentage, 46.73%. Those whose teachers' years of experience were within the 11-20, 21-30, and above the 30 years range made up 27.16%, 24.36% and 1.75% of the total population respectively. It was only the students of teachers who had between 11 and 30 years of experience who had a high mean 432.11 and 433.67. However, the statistically significant difference in the means for student performance was between learners whose teachers had 1-10 years of teaching experience and those whose teachers had 21-30 years of experience.

Teachers' Sex

As shown in Table 5.1 above, students who were taught by female teachers made up 62.7% and those taught by males made up 37.3 % of the sample. The students taught by male teachers had a mean of 431.8, whereas those taught by female teachers had a mean of 413.07. The test showed no significant difference in the mean scores, both of which were below the international average of 500.

Teachers' Age

There were three categories for age, namely those teachers who were under the age of thirty (30), those who were thirty (30) to forty-nine (49) years and, lastly, and those who were fifty (50) years and above. It was evident that there were more students (74.7%) for teachers within the age bracket of 30-49 years than for those under thirty (30) years, at 16.5%, and for those who were fifty (50) years and above, at 8.8%. Students that were taught by teachers who were above fifty (50) years of age had the highest mean of 441.8, followed by those who were taught by teachers aged between 30-49 years, at a mean of 419.1 and, lastly, those who were taught by teachers under the age of thirty (30) years, at a mean of 413.2. According to these mean scores, it seems the older the teachers the better the reading achievement of the students. However, these mean scores were not significantly different and they were all below the international average of 500.

Formal Education Completed by Teachers

Historically, the training of primary school teachers in Botswana was primarily the responsibility of the Teacher Training Colleges (TTCs). Over the years, the TTCs had awarded four different kinds of teaching certificates, namely the Elementary Teachers Certificate (ETC), Primary Lower (PL), Primary Higher (PH), and Primary Teacher Certificate (PTC). All TTCs had recently been upgraded to Colleges of Education following the Revised National Policy on Education recommendations to raise teacher qualifications to the Diploma level. The Colleges of Education and the University of Botswana (UB) currently sharing the responsibility of training and certifying teachers. Four Colleges of Education train teachers for the primary school level, while two are responsible for training teachers for the junior secondary school level. The minimum entry qualification for colleges of education for both primary and junior secondary is the Senior Secondary School Certificate, while the minimum teacher professional qualification is the Diploma.

After three years of full-time study, the Colleges of Education award a Diploma qualification (equivalent to an Associate Degree) as certification to teach either in primary or junior secondary schools, while the University of Botswana (UB) awards a Bachelor's degree in Education qualification. Table 5.2 below depicts the qualifications of teachers sampled for the study and the impacts thereof on the students' performance.

Table 5. 2: *Highest level of formal education completed by teachers*

	n	%	Mean(SE)	Diff
At most senior secondary	63	1.44	389.34(4.07)	1,2: -26.97(4.33*)
At most diploma	3217	81.35	416.31(4.72)	1,3:-54.02(3.37*)
At least first degree	635	17.22	443.36(15.5)	2,3:- 27.05(1.67)

**Statistically significant at 5% level*

Students who were taught by teachers who had a diploma as their highest qualification accounted for 81.35% of the study population, whilst 1.44% and 17.22% were taught by teachers who had at most a senior secondary school education and a degree, respectively. Learners with teachers who had at most a degree had the highest mean of 443.36, and those whose teachers had at most a diploma and secondary school education had means of 416.31 and 389.34, respectively. There was a significant difference in the means of learners who were taught by teachers who had completed at most senior secondary and at most diploma and first degree, respectively. However, the means were all below the international average of 500.

Teachers' Main Area of Study

Teachers who responded to the teacher questionnaire majored in Primary Education, Secondary Education, Maths, Science, and English mostly, but there were some who had majored in other disciplines that were not listed in the questionnaire. Table 5.3 showed the proportions of their main areas of study.

Table 5. 3: *Teachers' main areas of study during post-secondary education*

		n	%	Mean(SE)	SD	Diff
Education	Yes	2625	69.85	420.59(6.51)	93.65	1,2: 0.01
Primary	No	1170	30.15	420.58(7.31)	86.89	
Education	Yes	557	14.66	431.54(11.63)	85.34	1,2: 12.77
Secondary	No	3207	85.34	418.77(5.11)	92.40	
Maths	Yes	988	27.72	414.65(9.5)	88.71	1,2: -7.85
	No	2765	72.28	422.50(5.86)	92.58	
Science	Yes	1190	33.91	423.90(10.84)	94.72	1,2: 5.74
	No	2594	66.09	418.16(5.06)	89.80	
English	Yes	1350	35.98	428.20(8.87)	93.85	1,2: 12.3
	No	2403	64.02	415.90(5.80)	89.99	
Other	Yes	1728	48.78	420.27(6.47)	91.49	1,2: -3.67
	No	1833	51.22	423.94(7.60)	91.86	

**Statistically significant at 5% level*

The major or main area of study with the highest proportion among the teachers was Primary or Elementary Education at 69.85%. The major area of study with the least proportion of 14.56% was Secondary Education, whilst proportions of 27.72%, 33.91%, 35.98%, and 48.78% were recorded for Mathematics, Science, English and Other major areas of study respectively. Students whose teachers had Secondary Education as the main area of study had the highest mean of 431.54. Just below that mean was that of 428.2 for students whose teachers had English as their main or major area of study. The students who were taught by teachers with Mathematics as their main area of study had the lowest mean of 414.65. There were no significant differences in the means.

Teachers' Job Satisfaction and Competence

Teachers were asked to rate the following from very low to very high:

- Teachers' job satisfaction
- Teachers' understanding of the school curricular goals
- Teachers' degree of success in implementing the school's curriculum
- Teachers' expectations for student achievement
- Parental involvement in school activities
- Students' regard for school property
- Students' desire to do well in school

The levels for teachers' perceptions about teacher characteristics in the schools were initially five: very high, high, medium, low, and very low. However, the options for rating were collapsed from these five to three: low, medium and high, as was shown in Table 5.4 below:

Table 5. 4: *Teachers' perceptions about teacher characteristics in the schools*

		n	%	Mean(SE)	SD	Diff
Teachers' job satisfaction	High	1599	41.47	435.91(7.27)	91.12	1,2: 28.58*
	Medium	1685	44.24	407.33(6.99)	89.26	1,3: 18.41
	Low	617	14.29	417.50(13.2)	92.56	2,3: -10.17
Teachers' understanding of the school's curricular goals	High	2927	74.11	427.43(5.34)	92.44	1,2: 26.85*
	Medium	1006	24.39	400.58(8.26)	84.96	1,3: 50.49
	Low	64	1.50	376.94(40.07)	78.34	2,3: 23.64
Teachers' degree of success in implementing the school's curriculum	High	2450	61.31	432.56(6.54)	95.12	1,2: 29.77*
	Medium	1223	31.04	402.79(5.22)	80.63	1,3: 41.38*
	Low	297	7.65	391.18(13.59)	84.25	2,3: 11.61
Teacher's expectation of student's achievement	High	3171	79.08	425.36(5.04)	91.55	1,2:20.61
	Medium	721	17.99	404.75(10.34)	88.34	1,3: 52.27*
	Low	105	2.93	373.09(16.45)	79.20	2,3:31.66

**Statistically significant at 5% level*

The highest proportion of students, 44.2%, was taught by teachers who viewed the level of job satisfaction in their schools to be medium, whilst 41.47% and 14.29% of students were taught by teachers who described it as high and low, respectively. The mean 435.91 for students' achievement was the highest and it was linked to where teacher job satisfaction was deemed to be high. Where teacher job satisfaction was characterized as medium, the mean for students' achievement was 407.33, whilst it was 417.50 where job satisfaction was described as low. The mean for the perceived high job satisfaction was significantly higher than the means for the other levels. The significance test reflects a significant difference between the mean scores of the students taught by teachers who viewed their job satisfaction to be high and those who viewed theirs as medium. However, at all the levels the mean scores of students' achievement were lower than the international average of 500.

A greater proportion of students (74.1%) were taught by teachers who reported the teachers' understanding of the school's curricular goals to be high, whilst 23.4% and 1.55% were taught by teachers who thought it was medium and low, respectively. The mean for pupil's achievement of 427.4, where teachers' understanding of the curriculum goals was believed to be high, was significantly higher than the means where there were medium and low perceptions of the teachers' understanding of the curriculum. The mean scores were significantly different between the high and medium teachers' understanding of the school curricular goals.

Students who were taught by teachers who considered teachers' degree of success in implementing the school's curriculum to be high comprised 61.3%, whereas those whose teachers rated it medium and low made up 31% and 7.7% of the population, respectively. The mean for pupil's achievement of 432.56, where teachers believed that their degree of success in implementing the school's curriculum was high, was significantly higher than where implementation was viewed to be medium and low, at 402.8 and 391.1, respectively.

A majority of 79% of students were taught by teachers that viewed teachers' expectations of students' achievement to be high compared to 17.99% and 2.93% who were taught by teachers who viewed teachers' expectations to be medium and low, respectively. There was a significant difference between the mean scores of the learners' performance where teachers' expectations

were considered to be high and those where expectations were perceived to be medium and low.

Parental Support for Students' Achievement

Teachers were asked to give their views on how they would characterize parental involvement and support for school activities and student achievement within their school. Their responses are shown in Table 5.5.

Table 5. 5: *Teachers' views of parental support for students' achievement and involvement in school activities in their schools*

		n	%	Mean(SE)	SD	Diff
Parental Support	High	590	14.63	490.97(16.68)	93.58	1,2: 66.23*
	Medium	1 242	30.62	424.74 (7.28)	86.74	1,3: 92.36*
	Low	2 165	54.75	398.61(4.23)	82.94	2,3: 26.13*
Parental involvement	High	417	11.04	480.58(18.97)	89.81	1,2: 45.94*
	Medium	1 259	31.90	434.64(8.73)	92.67	1,3: 80.28*
	Low	2 321	57.05	400.30(4.31)	83.93	2,3: 34.34*

**Statistically significant at 5% level*

As regards parental support for students' achievement, it was expected that where the support was high, the achievement would be much higher than where the support was medium and low at a mean of 490.97, which would have been close to the international average of 500. However, the percentage of students whose parents consistently supported school activities was very low, at 14.63%, while for the students whose parents gave low support the percentage was high, at 54.7%. There was a significant difference in learner performance in reading between the mean scores of all the three levels of parental support: high, medium, and low. These responses from teachers indicated that generally, in Botswana, there is very low parental support for student achievement, hence the below average performance of students on the international scale.

Generally, parental involvement in school activities was very low since Table 5.5 shows a small percentage (11%) of students whose parents were consistently involved in the school activities. Nonetheless, it was that small percentage (11%) of high parental involvement that had the highest mean for performance of 480.5. From this, it could be inferred that despite the fact that the percentage was below the international average of 500, high parental involvement in school activities has the potential of breeding high performance. The significance test showed a significant difference between all mean scores across all the levels, high, medium, and low.

Students' Regard for School Property and Their Desire to Do Well in School

Furthermore, the study was intended to establish teachers' views on how students regard school property, as well as the level of students' desire to do well in school. Their responses are shown in Table 5.6:

Table 5. 6: Teachers' views on students' regard for school property and their desire to do well in school

		n	%	Mean(SE)	SD	Diff
Regard for school property	High	454	11.40	437.43(12.25)	82.01	1,2: 5.97
	Medium	2 109	54.00	431.46(6.66)	95.80	1,3: 40.71*
	Low	1 434	34.60	396.72(5.50)	82.05	2,3: 34.74*
Desire to do well in school	High	856	21.09	463.30(13.81)	96.26	1,2: 43.30*
	Medium	1 920	48.95	420.00(4.95)	87.83	1,3: 73.36*
	Low	1 221	29.97	389.94(5.68)	80.65	2,3: 30.06*

*Statistically significant at 5% level

According to teachers, students who regarded school property highly performed better than those who regarded it at a medium level and those who regarded it lowly. This is substantiated by the fact that Table 6.6 shows that a small percentage (11.4%) of students regarded school property highly and also that they had the highest mean scores of performance. There was a significant difference between the mean scores of learners who had a high regard for school property and those whose level was, and between those that had a medium regard and low regard for school property. Those who fell in between concerning regard for school property had the highest percentage (54%) but a lower mean score for performance. All the three mean scores, however, were below the international average of 500.

Students with a high desire to do well in school had the highest mean score of 463 than those with medium and low desire who had mean scores of 420 and 389.94 respectively. There was a significant difference between the mean scores of learners whose desire to do well in school was high, medium, or low across all categories. All the mean scores, including that for high, were below the international average of 500.

Discipline and Safety in the School

Standard 6 teachers were also asked to think about their current school and indicate the extent to which they agreed or disagreed with the following statements:

- a) This school is located in a safe neighbourhood
- b) I feel safe at this school
- c) This school's security policies and practices are sufficient.

The findings are presented in Table 5.7 below:

Table 5. 7: Teachers' views on school location, feelings of safety and schools' safety policies and practices

		n	%	Mean(SE)	SD	Diff
The school is located in a safe neighbourhood	Agree A Lot	1 608	41.31	444.09(8.16)	95.70	1,2:40.32* 1,3:27.85
	Agree A Little	1 434	36.55	403.77(6.18)	84.12	1,4: 54.85* 2,3: -12.47
	Disagree A Little	440	11.25	416.24(13.33)	91.15	2,4: 14.53 3,4: 27.00
	Disagree A Lot	415	10.89	389.24(9.88)	78.71	
I feel safe at this school	Agree A Lot	1 826	47.02	439.64(7.16)	93.77	1,2: 32.17* 1,3: 34.06*
	Agree A Little	1 402	35.27	407.47(7.29)	88.48	1,4: 63.77* 2,3: 1.89
	Disagree A Little	433	10.52	405.58(8.53)	80.95	2,4: 31.60* 3,4: 29.71*
	Disagree A Lot	264	7.19	375.87(9.26)	76.28	
This school's security policies and practices are sufficient	Agree A Lot	888	24.94	454.04(11.75)	96.46	1,2: 45.08*
	Agree A Little	1 79	45.45	408.96(5.89)	89.40	1,3: 42.35* 1,4: 41.39
	Disagree A Little	834	20.78	411.69(5.92)	81.79	2,3: - 2.73 2,4: -3.69
	Disagree A Lot	366	8.82	412.65(14.60)	90.46	3,4: -0.96

*Statistically significant at 5% level

For teachers who were of the view that their schools were located in a safe neighbourhood, the mean performance of the students was high at 444.09. For the teachers who felt the schools were in an averagely safe neighbourhood, the mean performance of the students was lower than for those who thought they were in a safe place, at 403.77 and 416.24, respectively. Those students whose teachers disagreed a lot that their schools were in a safe place had the least mean score of 389.24. There was a significant difference between the mean scores of those agreeing a lot and those agreeing a little, as well as between those agreeing a lot and those disagreeing a lot. In any case, all the mean scores were below the international average of 500. The safer the location of the school the better the performance of the learners is the conclusion that could be drawn from these findings.

For teachers who agreed a lot to feeling safe at their schools, the mean performance of the students was high at 439.64. For the teachers who felt their schools were somewhat safe, the mean performance of the students was lower than that for those who felt safe, and for those who felt unsafe, at 407.47 and 405.58, respectively. Those who disagreed a lot with feeling safe had the least mean score of 375.87. There was a significant difference between the mean scores of learners across the board, except between those who agreed a little and disagreed a little. Nevertheless, all the mean scores were below the international average of 500. Students whose teachers felt safe in their schools performed better than those whose teachers felt

unsafe. For teachers who agree a lot that their schools' security policies and practices were sufficient, the mean performance of their students was higher at 454.04.

For the teachers who felt their schools' security policies and practices were somewhat sufficient, the mean performance of their students was lower than that for those who agreed a little at 408.96 and 411.69 respectively. Those who disagreed a lot with the schools' security policies and practices being sufficient had a mean higher (412.65) than those who disagreed a little (411.69). There is a significant difference between the mean scores of students whose teachers were agreeing a lot and those of students whose teachers somewhat agreeing or somewhat disagreeing. Nevertheless, all the means were below the international average of 500. Students whose teachers felt safe in their schools performed higher in reading than those of teachers who felt unsafe.

Teachers' Views on Students' Behaviour

The study asked teachers to reflect on their current school and indicate the extent to which they agreed or disagreed with each of the following statements about behaviour, by either agreeing a lot or agreeing a little, or disagreeing a little or disagreeing a lot:

- The students behave in an orderly manner
- The students are respectful of the teachers

The findings are presented in table 5.8 below.

Table 5. 8: *Teachers views on students' behaviour*

		n	%	Mean(SE)	SD	Diff
Students behave in an orderly manner	Agree a lot	677	18.29	435.46(11.59)	92.29	1,2: 10.93 1,3: 23.39
	Agree a little	1775	44.64	424.53(7.86)	92.84	1,4: 36.62* 2,3: 12.46
	Disagree a little	963	23.57	412.07(8.14)	90.04	2,4: 25.69
	Disagree a lot	510	13.50	398.84(10.83)	84.25	3,4: 13.23
The students are respectful of teachers	Agree a lot	1222	31.69	433.92(7.99)	92.21	1,2: 14.23
	Agree a little	1701	42.84	419.69(7.54)	91.52	1,3: 30.88* 1,4: 28.90*
	Disagree a little	692	17.21	403.04(11.31)	89.11	2,3: 16.65
	Disagree a lot	310	8.26	405.02(11.54)	86.90	2,4: 14.67 3,4: -1.98

**Statistically significant at 5% level*

The highest mean for students' achievement was 435.11 and was linked to the level where teachers agreed a lot that students behaved in an orderly manner. That mean was significantly higher than that of students whose teachers disagreed a lot that students behaved in an orderly manner.

The highest percentage, 42.8%, was of students whose teachers agreed a little that student were respectful towards teachers. There was a tendency of the mean scores for students' performance to increase with levels of agreement on students' behaviour. The mean scores for students' achievements were significantly higher where it was agreed that students were respectful of teachers.

Teachers' Working Conditions

Table 5. 9: *Teacher working conditions and their association with performance*

		n	%	mean(SE)	SD	Diff
School buildings need significant repair	Not a problem	413	11.95	467.63(20.86)	102.21	1,2:47.21* 1,3: 3.18*
	Minor problem	1 289	34.98	420.42(7.64)	90.43	1,4: 4.49* 2,3: 5.97
	Moderate problem	1 299	31.16	414.45(6.67)	87.82	2,4: 17.28 3,4: 11.31
	Serious problem	890	21.91	403.14(6.94)	84.77	
Classrooms are overcrowded	Not a problem	1 387	38.14	420.97(7.97)	97.56	1,2: -6.67 1,3: 10.61
	Minor problem	852	21.89	427.64(11.59)	95.67	1,4: 1.83 2,3: 17.28
	Moderate problem	777	18.29	410.36(7.91)	82.76	2,4: 8.50 3,4: -8.78
	Serious problem	880	21.68	419.14(7.24)	83.55	
Teachers have too many teaching hours	Not a problem	974	26.67	419.60(8.57)	92.52	1,2: -5.66 1,3: 4.79
	Minor problem	1 007	25.60	425.26(9.91)	91.70	1,4: -3.67 2,3: 10.45
	Moderate problem	1 066	28.54	414.81(11.22)	93.27	2,4: 1.99 3,4: -8.46
	Serious problem	793	19.19	423.27(8.74)	90.49	
Teachers do not have adequate workspace	Not a problem	1 039	27.69	442.93(12.43)	100.91	1,2: 4.48* 1,3: 20.39
	Minor problem	889	22.33	398.45(7.34)	89.37	1,4: 9.34* 2,3: -4.09
	Moderate problem	822	19.99	422.54(6.16)	81.87	2,4: -5.14 3,4: 8.95
	Serious problem	1 175	29.99	413.59(7.46)	85.59	
Teachers do not have adequate instructional materials and supplies	Not a problem	298	9.02	533.08(17.71)	87.99	1,2:111.68* 1,3:122.16*
	Minor problem	497	12.23	421.40(9.95)	89.86	1,4:129.52* 2,3: 10.48
	Moderate problem	1 406	36.62	410.92(6.22)	82.39	2,4: 17.84 3,4: 7.36
	Serious problem	1 724	42.13	403.56(5.35)	83.43	

**Statistically significant at 5% level*

In an effort to establish the severity of problems that schools might have been facing in the area of teacher working conditions, teachers were asked to indicate whether the following were Not a Problem, a Minor Problem, a Moderate Problem or a Serious Problems with regards to the items :

- The school buildings need significant repairs
- Classrooms are overcrowded
- Teachers have too many teaching hours
- Teachers do not have adequate workspace for preparation, collaboration or meeting with students

- Teachers do not have adequate instructional materials and supplies

As indicated in Table 5.9 concerning school buildings needing significant repair, only 11.95% believed that there was no significant problem, whilst 34.98% and 31.16% indicated there was either a minor problem or a moderate problem, respectively. However, there was a significant difference between the performance of students whose teachers saw no problem and those of teachers who thought it was minor; between those of teachers who thought it was not a problem and those of teachers who thought it was a moderate problem. Lastly, the same was observed between the performance of those students whose teachers thought it was not a problem and those whose teachers thought it was a serious problem.

A majority (38.1%) of teachers indicated that overcrowding in classrooms was a problem, while the remaining percentage was almost evenly split among those who thought otherwise regarding overcrowding. The performance mean scores of students also did not display major differences between each other. The highest was 427.64 for students who were taught by teachers who thought overcrowding was a minor problem.

Only 26.67% of the students were taught by teachers who stated that they had too many teaching hours, whilst 25.6%, 28.54% and 19.19% indicated that there was a minor, moderate and serious problem respectively. There were no significant differences amongst the different students grouped by teachers' perceptions of the problem.

It can be argued that there was a problem of not having adequate workspace for preparation, collaboration, or meeting with students, since the collapsed percentages for students taught by teachers who believed that there was a moderate to a serious problem was almost 50%. On the other hand, slightly over 50% were taught by teachers who thought that there were adequate workspaces. There was a significant difference between the mean scores of students whose teachers thought there was no problem and those of teachers who thought it were a serious problem.

As regards instructional materials and supplies, there was absolutely no doubt that teachers felt that they were inadequate. Only 9% of students were taught by teachers who indicated that adequate instructional materials and supplies were not a problem. Adequate materials and supplies did have a positive relationship with good performance because it was observed that learners who were taught by teachers who felt that materials and supplies were not a problem had a high mean performance of 533.08, even higher than the international average mean of 500. There was a significant difference between the mean scores of learners whose teachers thought materials and supplies were not a problem and those of teachers who thought it was a minor/moderate /serious problem.

Use of Computers

The following section presents findings on the use of computers in schools.

Use of Computers for Lesson Preparation

There was need to establish whether teachers used computers for preparation. There was a very small proportion of students who were taught by teachers who said they use computers, as seen in Table 5.10 below.

Table 5. 10: *Use of computers for preparation*

	n	%	Mean (SE)	SD	Diff
Yes	159	4.52	516.96(25.21)	94.56	1,2:
No	3 838	95.48	415.54(3.92)	88.62	101.42 *

**Statistically significant at 5% level*

Students who were taught by teachers who did not use computers in their teaching constituted the vast majority of 95.5%, while only 4.5% were taught by teachers who used computers. Despite the small proportion, the mean performance for students who were taught by teachers who used computers for preparation in teaching was significantly higher, at 516.96, than that of learners whose teachers did not use computers for learning at 415.54. The learners whose teachers used computers for preparation had reached and gone beyond the international average mean of 500.

Use of Computers for Administration

As regards the use of computers for administration, a good proportion of students were taught by teachers who indicated that the use of computers for administration was low as indicated in Table 5.11.

Table 5. 11: *Use of computers for administration*

	n	%	Mean(SE)	SD	Diff
Yes	1 384	33.89	435.79(10.32)	98.24	1,2:
No	2 613	66.11	412.09(4.30)	86.53	23.70*

**Statistically significant at 5% level*

The majority (66.1%) of students were taught by teachers who did not to use computers for administration, while a minority (33.9%) were taught by teachers that used computers for that purpose. As shown in Table 5.11 Students whose teachers used computers for administration in their teaching performed significantly higher even though the means were below the international average.

Use of Computers for Classroom Instruction

Generally, in Botswana the use of a computer for classroom instruction is minimal, especially in public schools. It might have been found in private schools, but even then, in most cases it happens during computer lessons, where students are being taught how to use a computer. The findings that provide evidence in support of this are recorded in Table 5.12 below.

Table 5. 12: *Use of computers for classroom instruction*

	n	%	Mean(SE)	SD	Diff
Yes	430	10.74	449.77(16.97)	95.69	1,2: 33.52
No	3 537	89.26	416.25(4.71)	90.08	

**Statistically significant at 5% level*

A substantial proportion of students (89.3%) were taught by teachers who did not use computers for classroom instruction, while only 10.7% were taught by teachers who did. As illustrated in Tables, 5.10, 5.11 and 5.12 above, it was reasonable to assume that the use of computers in teaching for any purpose, be it preparation, administration or classroom instruction, enhances performance among learners. This was because the mean scores of students taught by teachers who used computers were always higher than those of learners whose teachers did not.

Use of Computers for Teaching

Teachers who had indicated that they used computers in classroom instruction were further probed to find out if they were comfortable using computers in teaching, if they had ready access to computer support staff and if they received adequate support for integrating computers in teaching activities. The findings are in Tables 5.13, 5.14 and 5.15.

Table 5. 13: *Comfortable using computers in teaching*

	n	%	Mean(SE)	SD	Diff
Agree A Lot	310	74.23	465.27(20.67)	97.73	1,2: 64.65*
Agree A Little	57	12.23	400.32(14.14)	73.24	1,3: 55.83*
Disagree A Lot	63	13.54	409.44(14.50)	72.23	2,3: -9.12

**Statistically significant at 5% level*

The mean performance of students who were taught by teachers who agreed a lot that they felt comfortable using computers in their teaching was significantly high, at 465.27, and the least mean performance was 400.32 for the students whose teachers agreed a little. Feeling comfortable using computers in teaching did not add that much value. This is substantiated by the mean performance (409.44) which is higher than the mean (400.32) for the learners who were taught by teachers who did not feel comfortable using computers in teaching. All the three mean scores were below the international average of 500.

Ready Access to Computer Support Staff

Table 5. 14: *Ready access to computer support staff*

	n	%	Mean(SE)	SD	Diff
Agree A Lot	132	35.43	498.58(25.49)	83.88	1,2: 43.76
Agree A Little	118	27.41	454.82(21.55)	91.54	1,3: 139.92* 1,4: 97.36*
Disagree A Little	21	7.67	358.66(12.21)	73.23	2,3: 96.16*
Disagree A Lot	127	29.50	401.22(13.36)	77.89	2,4: 53.60* 3,4: -42.56*

**Statistically significant at 5% level*

Teachers who agreed a lot and those who agreed a little that they had access to computer staff technicians when they had technical problems during classroom instruction taught 62.84% of the students. However, students whose teachers agreed a lot that they had a technician performed much better, with a performance mean of 498.58, almost reaching the international average mean of 500. All the mean scores for the students are below the international average mean. There was a significant difference across all mean scores, except between those who agreed a lot and those who agreed a little. The mean performance of the learners whose teachers disagreed a lot is higher than that of those whose teachers who disagreed a little even though they were both below the international average mean. The proportions were rather small and therefore they might not have been reliable.

Adequate Support for Integrating Computers in Teaching

Table 5. 15: *Adequate support for integrating computers in teaching*

	n	%	Mean(SE)	SD	Diff
Agree A Lot	123	32.26	481.40(33.75)	100.38	1,2: 13.19
Agree A Little	67	15.34	468.21(36.85)	62.66	1,3: 81.89 1,4: 52.81
Disagree A Little	49	15.69	399.51(25.14)	88.73	2,3: 68.70 2,4: 39.62
Disagree A Lot	159	36.72	428.59(24.03)	92.72	3,4: -29.08

**Statistically significant at 5% level*

Teachers who agreed a lot and those who agreed a little that they had adequate support for integrating computers in teaching during classroom instruction taught 47.6% of the students. Students whose teachers agreed a lot performed much better, with a performance mean of 481.40, while from teachers who agreed a little had a performance mean of 468.21.

Teachers' Collaboration

The study also sought to establish the frequency of interaction among them to do the following:

Discussing How to Teach a Particular Topic with Other Teachers

Given the responses summarised below, it was evident that teachers did meet with their colleagues to discuss how to teach particular topics. Table 5.16 below provides information on the findings.

Table 5. 16: *Discussing how to teach a particular topic with other teachers*

	n	%	Mean(SE)	SD	Diff
Never Or Almost Never	275	9.00	450.35(27.65)	103.74	1,2: 42.16 1,3: 25.80
2 Or 3 Times Per Month	1 433	37.78	408.19(6.90)	90.54	1,4: 29.76 2,3: -16.36
1-3 Times Per Week	1 331	30.61	424.55(7.06)	89.92	2,4: -12.40 3,4: 3.96
Daily Or Almost Daily	928	22.61	420.59(9.03)	85.60	

**Statistically significant at 5% level*

37.8% of students were taught by teachers who met two or three times a month while 30.6% were taught by teachers who met one to three times a week and 22.6% had teachers who met daily or almost daily. In total, 91% of students were taught by teachers who met with their colleagues to discuss how to teach a particular topic. Nonetheless, the mean performance of the 9% of learners who were taught by teachers who never met was higher at 450.35 than that for learners whose teachers said that they met to discuss how to teach a particular topic. However, all the mean scores were below the international average mean of 500.

Collaboration in Planning and Preparing Instructional Materials

An overwhelming majority of teachers indicated that they met to collaborate in planning and preparing instructional materials. This is substantiated by the percentages for students who were taught by teachers who met two or three times per month, weekly, one to three times, and daily or almost daily, which altogether added to 83.8%, as shown in Table 5.17.

Table 5. 17: *Collaboration in planning and preparing instructional materials*

	n	%	Mean(SE)	SD	Diff
Never Or Almost Never	602	16.17	435.90(17.00)	103.10	1,2: 23.99 1,3: 18.03
2 Or 3 Times Per Month	1 330	34.75	411.91(7.76)	93.86	1,4: 11.80 2,3: -5.96
1-3 Times Per Week	1 298	31.72	417.87(6.12)	83.16	2,4: -12.19 3,4: -6.23
Daily Or Almost Daily	737	17.36	424.10(10.00)	86.50	

**Statistically significant at 5% level*

The frequency of meetings to collaborate in planning and preparing instructional materials did not have a significant effect on the performance of the students. This was because all the mean scores for students who were taught by such teachers were lower (411.91, 417.87, 424.1) than the mean for students who were taught by teachers who alleged they never met or almost never met, which is 435.9. In any case, all mean scores were still below the international average mean of 500.

Share Learned Teaching Experiences

Also here, without doubt, many teachers reported that they did meet to share what they had learned in their teaching experiences. This is substantiated by the high percentages for students who were taught by teachers who met two or three times per month, weekly, one to three times, and daily or almost daily, which altogether added to 92.1%, as shown in Table 5.18.

Table 5. 18: *Share learned teaching experiences*

	n	%	Mean(SE)	SD	Diff
Never Or Almost Never	346	9.93	450.09 (23.02)	103.71	1,2: 37.10 1,3: 21.34
2 Or 3 Times Per Month	1 610	41.84	412.99 (6.60)	89.90	1,4: 37.55 2,3: -15.76
1-3 Times Per Week	839	20.59	428.75(10.04)	92.94	2,4: 0.45
Daily Or Almost Daily	1 172	27.64	412.54(6.72)	84.43	3,4: 16.21

**Statistically significant at 5% level*

The meetings to share learned teaching experiences did not have a significant effect on the performance of the students, since all the mean scores of students who were taught by teachers who affirmed that they met to share experiences were lower (412.99, 412.54, 428.75) than the mean of students who were taught by teachers who reported that they never met or almost never met, which is 450.09. However, all mean scores were still below the international average mean of 500.

Visit another Classroom

Just like the former two, it was evident that many teachers did visit other classrooms to learn more about teaching. This is substantiated by the percentages for students who were taught by teachers who visited two or three times per month, weekly, one to three times and daily or almost daily, which altogether added to 77.7%, as shown in Table 5.19.

Table 5. 19: *Visit another classroom*

	n	%	Mean	SD	Diff
Never Or Almost Never	698	19.32	459.27(16.23)	105.88	1,2: 55.02* 1,3: 40.99*
2 Or 3 Times Per Month	1 846	45.80	404.25(4.82)	83.43	1,4: 40.78* 2,3: -14.03
1-3 Times Per Week	883	21.99	418.28(8.05)	88.92	2,4: -14.24
Daily Or Almost Daily	540	12.89	418.49(10.37)	80.50	3,4: -0.21

**Statistically significant at 5% level*

It was established that teachers' visits to another classroom to learn more about teaching did not have a significant effect on the performance of the students. This was because all the mean scores of students who were taught by teachers who affirmed that they visited other classes to learn more about teaching were lower (404.25, 418.28, and 418.49) than the mean of students

who were taught by teachers who said they never met or almost never met, which stood at 459.27.

Work Together to Try New Ideas

The frequency patterns in Table 5.20 proves that many teachers did work together to try out new ideas. This is corroborated by the high percentages for students taught by teachers who met two or three times per month, weekly, one to three times and daily or almost daily, which altogether added to 92.1%, as was shown in Table 5.20 below.

Table 5. 20: *Work together to try new ideas*

	n	%.	Mean(SE)	SD	Diff
Never Or Almost Never	247	7.74	498.23(25.29)	95.62	1,2: 83.62* 1,3: 81.21*
2 Or 3 Times Per Month	1 737	42.80	414.61(6.74)	91.61	1,4: 89.74*
1-3 Times Per Week	815	20.40	417.02(7.70)	84.10	2,3: - 2.41 2,4: 6.12
Daily Or Almost Daily	1 168	29.06	408.49(7.62)	84.43	3,4: 8.53

**Statistically significant at 5% level*

However, working towards trying out new ideas did not have an effect on the performance of the students since all the mean scores of students who were taught by teachers who affirmed that they worked together to try new ideas were lower (414.61, 417.02, 408.49) than the mean of students who were taught by teachers who said they never met or almost never work together, which was 498.23, almost reaching the international average mean of 500.

It was noted that to a great extent teachers did interact with each other in all categories discussed above, especially two or three times a month and one to three times per week. However, another observation made was that teachers' interactions with each other did not really have an impact on the mean performance of students.

Teaching English/Reading, Mathematics or Science

Teachers were asked to indicate whether they taught English, Mathematics or Science. The findings are presented in Table 5.21 below.

Table 5. 21: *Teach English/reading, mathematics and science*

		n	%.	Mean (SE)	SD	Diff
English	Yes	3 743	94.85	420.38(4.49)	91.77	1,2:-3.27
	No	217	5.15	423.65(11.07)	84.53	
Mathematics	Yes	2108	54.03	416.37(6.86)	92.81	1,2:-9.09
	No	1852	45.97	425.46(5.30)	89.50	
Science	Yes	2440	63.87	424.41(6.24)	92.46	1,2:10.70
	No	1520	36.13	413.71(6.70)	89.15	

**Statistically significant at 5% level*

Table 5.21 reflects no significant differences in mean performances of students regardless of the subject taught by teachers.

Approaches to Teaching

Teachers were asked how often they summarised what students had learned from the lesson, how often they related the lesson to students' daily lives, how often they used questions to elicit reasons and explanations, how often they encouraged all students to improve their performance, how often they praised students for making an effort to learn, and how often they brought interesting materials to class. The findings were presented in Table 5.22.

Table 5. 22: *Methods of teaching*

	Frequency	n	%	Mean(SE)	SD	Diff
Summarise the lesson	Every or Almost Every Lesson	3 230	80.82	418.10(4.97)	88.64	1,2: -0.86 1,3: -0.54
	About Half The Lessons	408	11.07	434.08(17.84)	101.78	1,4: 4.32*
	Some Lessons	302	7.51	430.56(22.71)	102.02	2,3: 0.12
	Never	20	0.59	374.58(8.76)	73.12	2,4: 2.99* 3,4: 2.30*
Relate lesson to students' daily lives	Every or Almost Every Lesson	2 613	66.02	421.67(5.87)	91.66	1,2: -0.51
	About Half the Lessons	621	15.28	428.76(12.48)	97.75	1,3: 1.34
	Some Lessons	726	18.69	409.87(6.58)	83.94	2,3: 1.34
Use questions	Every or Almost Every Lesson	3 035	76.54	424.67(4.72)	90.71	1,2: 0.07 1,3: 3.22*
	About Half the Lessons	432	11.34	423.47(17.53)	96.75	1,4: 2.12*
	Some Lessons	440	11.41	392.54(8.79)	87.27	2,3: 1.58
	Never	30	0.71	406.15(7.33)	85.59	2,4: 0.91 3,4: -1.19
Encourage students	Every or Almost Every Lesson	3 848	97.06	420.77(4.30)	91.84	0.38
	About Half the Lessons	112	2.94	413.19(19.40)	75.97	

**Statistically significant at 5% level*

Summarising the lesson is critical in the teaching and learning process. The teacher, through the question and answer technique, highlights certain aspects of the subject as a way of reinforcing what has been learnt. The mean performance of students whose teachers provided a synopsis at the end of every lesson or almost every lesson was 418.10. That of students whose teachers summarised about half the lessons was 434.08 and 430.56 for those whose teachers provided a summary only in some lessons. The results proved that it was counterproductive to summarise each and every lesson as the students might not have learned a significant amount of material. It was therefore productive to summarise material which had been presented in a comprehensive way and not in bits and pieces. The mean performance of learners whose teachers never summarised the lesson was very low, at 374.58.

This result served to underscore the importance of summarising lessons. That finding was further substantiated by the high significance difference between the mean scores of students

whose teachers said they summarise every or almost every lesson, and those of students who said they never summarised.

Further, the responses demonstrated that it was important to relate what students learn to their daily experiences as education did not take place in a vacuum. The mean performance of students whose teachers related each lesson to daily life occurrences stood at 421.67. The mean performance of those who related half their lessons to daily life experiences was 428.76. Understandably, the mean performance of those students whose teachers related some of their lessons to daily life experiences stood at 409.87

The use of this multifaceted strategy of using a range of probing questions to elicit a wide range of responses was an important teaching and learning tool. These questions posed ranged from those of a low order to those of a high order. There was definitely a strong relationship between the frequency of probing questions asked and performance. The mean performance of students who were asked probing questions in every or almost every lesson stood at 424.67, which was indicative of good performance. Those whose teachers asked them probing questions in about half the lessons stood at 423.47 followed by those who were asked probing questions in some lessons at 392.54. There was a high significance difference between the mean scores of learners whose teachers said they asked questions every or almost every lesson and those whose teachers said they asked questions in some lessons or never did so.

The point was made that it was imperative that a teacher should make a conscious effort to encourage all students to improve their performance. This was because most students perceived the teacher as a mentor and role model. Constant encouragement was therefore a useful tool to use in order for students to improve their performance. The mean performance of students whose teachers constantly encouraged them was high. At 420.77, it was higher than that for those who were praised in about half the lessons, standing at 413.19. It was thus established that praising students served as positive reinforcement since it provided the impetus for them to strive for success.

Motivating Students when Teaching

It was noted that generally, students need to be praised for making an effort to learn. This normally made them feel appreciated and served to encourage them to make a positive contribution to the learning process. In the literature, this is called positive reinforcement. Therefore, in order to stimulate students' creativity, a range of interesting materials needed to be brought to class. The chalk and talk method, in which the teacher was the sole provider of information, inhibited students' learning. Table 5.23 presented the findings of the research conducted in order to establish what teachers actually did in practice.

The mean performance of students who were praised for making an effort to learn in every or almost every lesson or in about half the lessons stood at 420.18 and 429.82, respectively. There was no statistical significance across the mean scores.

Table 5. 23: *Motivation of students when teaching*

		n	%	Mean(SE)	SD	Diff
Praise students for making an effort	Every or Almost Every Lesson	3 728	93.73	420.18(4.67)	91.37	1,2: -9.64
	About Half the Lessons	179	4.87	429.82(18.51)	93.23	1,3: 7.17
	Some Lessons	53	1.40	413.01(3.93)	86.13	2,3: 16.81
Bring interesting materials to class	Every or Almost Every Lesson	1534	38.42	440.87(8.96)	96.49	1,2: 43.68*
	About Half the Lessons	1067	26.78	397.19(7.20)	83.71	1,3: 24.78*
	Some Lessons	1359	34.81	416.09(6.58)	86.29	2,3: -18.9

**Statistically significant at 5% level*

The mean performance of students whose teachers brought a wide array of interesting materials to every or almost every lesson was 440.87, which was indicative of good performance. The mean performance of learners whose teachers brought interesting materials to about half the lessons stood at 397.19. There was a significant statistical difference between the mean performance of learners whose teachers reported that they brought materials to class every lesson and that of those whose teachers reported that they brought them to about half the lessons or only to some lessons.

Students Lacking Prerequisite Knowledge

The issue of prerequisite knowledge was also addressed in the hope of establishing the extent to which it might limit how teachers teach their classes. The findings are shown in Table 5.24.

Table 5. 24: *Students lacking prerequisite knowledge*

	n	%	Mean(SE)	SD	Diff
Not applicable	73	2.84	545.63(37.25)	74.45	1,2: 81.7 * 1,3: 117.75*
Not at all	282	7.06	463.93(17.84)	86.67	1,4: 158.53 * 2,3: 36.05
Some	2 373	57.65	427.88(5.18)	89.75	2,4: 76.83
A lot	1 232	32.44	387.10(5.51)	79.55	3,4: 40.78

**Statistically significant at 5% level*

Regarding the extent to which students lacked prerequisite knowledge or skills limited how they performed in class, the majority of students (57.7%) reported that this factor negatively affected them in some lessons, followed by 32.4% who indicated that they were limited a lot. Only 9.9% (a combination of not applicable and not at all) of students were taught by teachers who thought that students' lack of prerequisite knowledge or skills did not limit how they taught each class. This was substantiated by the high mean performance of the learners (545.63) whose teachers indicated that possessing prerequisite knowledge was not applicable. This mean score was even higher than the international average mean of 500. The significant difference was higher at 4.21 between the mean scores of learners whose teachers reported that lacking prerequisite knowledge was not applicable to limiting how they taught each class, on the one hand, and those who reported that it limited them a lot, on the other.

Students Suffering Lack of Nutrition

The teachers' opinions on the extent to which students suffering from lack of basic nutrition might limit how they taught their classes were canvassed. The findings were then presented in Table 5.25.

A majority of students (40.7%) were taught by teachers who felt that lack of nutrition did not limit how they taught in some lessons, followed by 30 % of students who were taught by teachers who thought it was not applicable. All the students' mean performances however, were lower than the international average mean of 500. There was a significant difference between the mean score of those learners whose teachers reported that whether students suffered from lack of basic nutrition or not was neither applicable nor did it limit how they taught the class, on the one hand, and the mean of those whose teachers said they were limited by it to some extent, on the other.

Table 5. 25: *Students suffering lack of nutrition*

	n	%	Mean(SE)	SD	Diff
Not applicable	1 193	30.01	441.23(9.47)	95.56	1,2: 2.81 1,3: 46.26*
Not at all	1 015	26.57	438.42(8.80)	90.37	1,4: 39.75 2,3: 43.45*
Some	1 611	40.73	394.97(4.88)	82.69	2,4: 36.94 3,4: -6.51
A lot	114	2.68	401.48(20.45)	83.37	

**Statistically significant at 5% level*

Students Not Getting Enough Sleep

The teachers' opinions on the extent to which the possibility of students not getting enough sleep might limit how they taught their classes were canvassed. The findings were then presented in Table 5.26.

Table 5. 26: *Students not getting enough sleep*

	n	%	Mean(SE)	SD	Diff
Not Applicable	901	24.30	440.17(9.13)	94.79	1,2: 6.66 1,3: 32.83*
Not at all	574	14.63	433.51(13.27)	89.47	1,4: 21.63 2,3: 26.17
Some	2 143	55.59	407.34(5.73)	87.41	2,4: 14.97 3,4: -11.2
A lot	242	5.47	418.54(23.61)	98.94	

**Statistically significant at 5% level*

A majority of students (55.6%) were taught by teachers who reported that students' lack of sleep did limit them in some lessons, followed by 24.3 % students who were taught by teachers who reported that this factor was not applicable. Only 5.5 % of students were taught by teachers who thought students not getting enough sleep did limit how they taught the class a lot. All the students mean performances however, were lower than the international average mean of 500. There was a significant difference between the mean score of learners whose teachers indicated that students suffering from not getting enough sleep did not limit how they taught the class at all and the mean score of those whose teachers indicated that this factor limited them to some extent.

The Extent to Which Students with Special Needs and Certain Behaviours Limit Teaching

The two burning issues in the education fraternity in Botswana concerned students with special needs and those with somewhat peculiar behaviours. These were also addressed in a survey that was designed to find out the extent to which they might have limited how teachers taught each of their classes. The findings were shown in Table 5.27.

Table 5. 27: *The extent to which students with special needs and certain behaviours limit teaching*

		n	%	Mean(SE)	SD	Diff
Disruptive students	Not applicable	212	6.08	440.38(13.04)	87.62	1,2: -3.74 1,3: 22.47
	None at all	473	12.61	444.12(22.88)	104.06	1,4: 37.64 2,3: 26.21
	Some	2763	70.69	417.91(4.77)	89.36	2,4: 41.38
	A lot	453	10.62	402.74(12.51)	86.08	3,4: 15.17
Uninterested students	Not applicable	130	4.03	514.90(13.4)	83.37	1,2: 80.65*
	None at all	353	8.67	434.25(12.88)	92.99	1,3: 95.83*
	Some	2700	68.83	419.07(4.77)	90.63	1,4: 114.26* 2,3: 15.8
	A lot	743	18.47	400.64(12.51)	82.33	2,4: 33.61 3,4: 18.43
Students with special needs	Not applicable	1258	32.60	433.96(9.49)	96.58	1,2: 10.00 1,3: 25.89*
	None at all	586	16.34	423.96(11.13)	89.29	1,4: 2.88
	Some	1841	44.80	408.07(6.08)	86.52	2,3: 15.89 2,4: -7.12
	A lot	275	6.26	431.08(16.79)	91.28	3,4: - 23.01

****Statistically significant at 5% level**

As illustrated in Table 5.27, a considerable majority (70%) of students were taught by teachers who indicated that disruptive students limited the way they taught to some extent. The mean score for student achievement of 444.12 was the highest and was associated with disruptive behaviour „Not at all“ limiting teaching. The mean was not significantly higher than that for students whose teachers indicated that disruptive behaviour limited teaching to some extent. There was no significant difference between the mean scores of learners taught by teachers who reported that the problem was not applicable to them and those who reported that the problem limited them to some extent.

With regards to uninterested students, 68.8% of students were taught by teachers who indicated that such students limited their teaching to some extent, whilst 18.4% were taught by teachers

who stated that they limited their teaching a lot. The highest mean (514.9) for students' performance was reported for the extent to which uninterested students limited teaching being not applicable. The highest significant difference was between the mean scores of learners whose teachers said the factor „uninterested student“ was not applicable to or not at all limiting how they taught the class, on the one hand, and those who said they were limited a lot or they were limited to some extent, on the other.

When it came to students with special needs, the majority of students (44.8%) were taught by teachers who reported that they were limited in teaching the class to some extent, followed by 32.6% whose teachers reported the issue to be not applicable to them. Only 16.34% of students were taught by teachers who reported that special needs students did not limit their teaching at all. There was a significant statistical difference between the mean scores of students whose teachers reported the factor of students with special needs as being not be applicable to them and those students whose teachers reported that students with special needs limited their teaching to some extent.

Meeting with Students' Parents

Teachers were asked to indicate the frequency of their meeting or talking with students' parents to discuss the students' learning progress. They were required to indicate that by showing whether they met at least once a week, once or twice a month, four to six times a year, one to three times a year, or never. The findings were presented in Table 5.28.

Table 5. 28: *Meeting with students' parents*

	n	%	Mean(SE)	SD	Diff
At least once a week	143	3.66	387.10(12.78)	81.47	1,2: -49.72* 1,3: -27.18
Once or twice a month	1 441	36.69	436.82(9.16)	90.54	1,4: -27.32 1,5: 26.01
4-6 times a year	793	18.51	414.28(7.23)	85.42	2,3: 22.54 2,4: 22.40
1-3 times a year	1 509	39.13	414.42(7.80)	93.23	2,5: 75.73* 3,4:-0.14
Never	74	2.00	361.09(20.87)	78.32	3,5: 53.19* 4,5: 53.33*

**Statistically significant at 5% level*

39.13% of students were taught by teachers who reported that they met with parents one to three times a year, followed by 36.7 % whose teachers reported that they did so once or twice a month. The mean performance of students who were taught by teachers who said they never met with students' parents was the lowest (361.09). Given these figures, it could be concluded that meeting students' parents once in a while had a positive influence on the performance of the students, while meeting often, i.e. weekly, had a negative influence, as could be seen from the fact that such students' mean performance was the second lowest (387.1) of all the mean scores. However, all the mean scores, regardless of the fact that teachers did meet with parents to discuss learning progress, were lower than the international average mean score of 500. The highest significant difference was between the mean scores of learners whose teachers said they met with students' parents once or twice a month, and those of teachers who said they never met with parents.

Progress Report

Educators were requested to specify the regularity with which they sent progress reports on their students' learning home. They were required to indicate that by showing whether they met at least once a week, once or twice a month, four to six times a year, one to three times a year, or never. The findings were presented in Table 5.29 below.

Table 5. 29: *Send a progress report home*

	n	%	Mean(SE)	SD	Diff
At least once a week	25	1.32	575.29(4.70)	54.80	1,2: 164.04* 1,3: 156.62*
Once or twice a month	474	11.64	413.25(12.15)	83.25	1,4: 155.93* 1,5: 160.46*
4-6 times a year	364	9.18	418.67(13.97)	89.54	2,3: -5.42 2,4: -6.11
1-3 times a year	3 015	75.89	419.36(4.54)	91.15	2,5: -1.58 3,4: -0.69
Never	82	1.98	414.83(15.87)	85.58	3,5: 3.84 4,5: 4.53

**Statistically significant at 5% level*

75.9% of students were taught by teachers who reported that they sent a report one to three times a year, followed by 11.6 % whose teachers reported that they sent a report once or twice a month. The mean performances of students who were taught by teachers who said they sent reports at least once a week was the highest (575.29), even higher than the international average mean of 500. It could therefore be concluded that sending students' reports at least once week had a positive influence on the performance of the students. The rest of the performance mean scores were lower than the international average mean of 500. There was a significant difference between the mean scores of learners whose teachers said they sent a progress report home once or twice a month and those of learners whose teachers said they did so one to three times a year.

Teaching Reading as a Class Activity

Table 5. 30: *Teaching reading as a class activity*

	n	%	Mean(SE)	SD(SE)	Diff
Always or almost always	953	24.15	416.67(7.36)	85.15(4.20)	1,2: -495 1,3: -6.90
Often	1 486	42.15	421.62(6.37)	91.10(3.58)	1,4: 5.83 2,3: -1.95
Sometimes	1 142	32.88	423.57(10.6)	93.88(4.93)	2,4: 10.78 3,4: 12.73
Never	27	0.82	410.84(6.11)	65.26(7.65)	

**Statistically significant at 5% level*

Forty two percent of the students were often taught reading as a whole class, whilst 32.9% and 24.2% were sometimes and always taught reading as a whole class, respectively. However, the frequency with which students were taught reading to a whole class caused no significant differences in students' performance in the subject. In general, the findings indicated that teaching reading to a whole-class activity was widely practised in Botswana, despite the disparity in frequencies. There was a slight difference (1.95) in the mean performances of the learners between those of teachers who stated that they taught reading as a whole-class activity often and those whose teachers stated that they did it sometimes. All the mean scores were below the international average mean of 500.

Creating Same Ability Groups

Teachers were asked to indicate whether or not they created same ability groups for purposes of teaching reading. Specifically, they were required to respond in terms of whether they did so always or almost always, often, sometimes, or never. Their responses were then presented in Table 5.31 below.

Table 5. 31: *Creating same ability groups*

	n	%	Mean(SE)	SD(SE)	Diff
Always or almost always	260	7.57	436.98(16.84)	90.66(6.13)	1,2: 2.78
Often	901	25.66	434.20(12.49)	95.24(5.64)	1,3: 20.93 1,4: 36.14*
Sometimes	2 000	55.42	416.05(5.10)	89.03(3.07)	2,3: 18.15 2,4: 33.36*
Never	447	11.35	400.84(7.27)	79.41(2.93)	3,4: 15.21

**Statistically significant at 5% level*

The findings presented in Table 5.31 indicated that a large proportion of the students (55.4%) were taught under conditions where same-ability groups were sometimes created as part of reading instruction, and that 25.7% and 11.4% were often or never taught under the same conditions, respectively. Students' performance in reading was significantly higher where students were taught more often in same-ability groupings than otherwise. Deducing from this finding, the conclusion was reached that the more teachers created same-ability groups for purposes of teaching reading, the better the performance of the learners. Nonetheless, all the mean scores were below the international average mean of 500. However, there was a significant difference between learners' mean performances for students whose teachers always or often created same-ability groups and those of learners whose teachers never did so.

Table 5. 32: *Creating mixed-ability groups*

	n	%	Mean(SE)	SD(SE)	Diff
Always or almost always	1 064	28.51	416.77(10.85)	91.39(6.80)	1,2: 1.23 1,3: -11.35
Often	1 257	35.85	415.54(7.27)	86.16(3.35)	1,4: -2.42 2,3: -12.58
Sometimes	1 242	35.23	428.12(8.59)	93.82(4.01)	2,4: -3.65
Never	9	0.41	419.19(7.61)	70.79(5.30)	3,4: 8.93

**Statistically significant at 5% level*

In Botswana, students were ordinarily taught in mixed-ability groups for purposes of instruction in reading. Table 5.32 showed that they were either always or almost always (28.5%), often (35.9%) or sometimes (35.2%) taught in mixed-ability groups. Even though all the mean performances for the learners were not significant and below the international average mean of 500, the mean performance for learners whose teachers said they created mixed-ability groups sometimes (428.12) was higher than that of the others.

Use of Individualised Instruction

Table 5. 33: *Use of individualised instruction*

	n	%	Mean(SE)	SD(SE)	Diff
Always or almost always	614	16.45	403.69(5.99)	79.92(2.74)	1,2: -19.30 1,3: -20.99*
Often	1 134	31.70	422.99(9.60)	88.21(5.66)	1,4: -8.49
Sometimes	1 732	48.86	424.68(7.35)	94.97(3.63)	2,3: -1.69 2,4: 10.81
Never	102	2.99	412.18(7.69)	74.56(9.23)	3,4: 21.50

**Statistically significant at 5% level*

Apart from the mixed-ability grouping of students for teaching reading, teachers in Botswana popularly used individualised instruction as well. As shown in Table 5.33 above, students were either always or almost always (16.5%), often (31.7%) or sometimes (48.9%) given individualised instruction.

Even though all the mean performances for the learners were below the international average mean of 500, and the disparity between those whose teachers often used individualised instruction and those whose teachers used it sometimes was small, the mean performance for learners taught sometimes under individualised instruction was higher than that of the others (424.68), leading to the conclusion that what was important in determining the learners' performance was the activity itself and not its frequency. There was however, a significant difference between learners' mean performances for students whose teachers always or often used individualised instruction and those who whose teachers used it sometimes.

Students Work Independently on an Assigned Goal

Table 5. 34: *Students work independently on an assigned goal*

	n	%	Mean(SE)	SD(SE)	Diff(SE)
Always or almost always	857	21.63	440.42(12.85)	92.81(6.70)	1,2: 21.95(1.47)
Often	1 105	30.97	418.47(7.66)	88.25(3.12)	1,3: 27.09(1.85)
Sometimes	1 675	47.40	413.33(6.95)	89.35(4.06)	2,3: 5.14(0.50)

**Statistically significant at 5% level*

As indicated in Table 5.34, assigning students to work independently on a goal was a common practice in Botswana. The majority (47.4%) of students sometimes worked independently on an assigned goal, whilst 31% and 21.6% often and always worked independently on an assigned

goal, respectively. The performance mean scores for the different frequencies were all below the international average mean of 500. But although not statistically significant, there was a difference between the mean scores for students who were often assigned to work independently and that for those who were less often assigned to work independently.

Students Working Independently On a Goal They Chose

Table 5. 35: *Students working independently on a goal they chose*

	n	%	Mean(SE)	SD(SE)	Diff
Always or almost always	519	14.74	427.81(20.37)	101.07(11.40)	1,2: 2.84 1,3: 10.56
Often	932	24.50	424.97(8.98)	85.88(3.57)	1,4: 9.28 2,3: 7.72
Sometimes	1 925	53.98	417.25(5.27)	88.94(2.88)	2,4: 6.44 3,4:-1.28
Never	261	6.78	418.53(12.44)	91.62(4.68)	

**Statistically significant at 5% level*

As illustrated in Table 5.35, the majority (54%) of the students sometimes worked independently on a goal which they had chosen, compared to 24.5% who were often assigned to work towards a goal, and to 14.7% who were always or almost always given an assignment to work independently towards a goal which they had chosen, respectively. Although the performance of students was below the international average of 500, the frequency at which students worked independently did not impact significantly on the performance of students.

Table 5.36 indicates that textbooks were used as a resource for instruction and as a supplement amongst 73.6% and 26.3% of the students, respectively. The students' performance was lower than the international average of 500, but it did not significantly differ according to the manner textbooks were used.

Further, as shown in Table 5.36, a great majority of the students (80%) used a reading series for supplementary reading, whilst 12.6% did not use them at all, and 7% used them as a basis for instruction. The performance of students was lower than the international average of 500, but it did not vary significantly according to the way the reading series were used.

Use of Reading Materials and Students' Performance

Table 5.36 shows that textbooks were used as a resource for instruction and as a supplement amongst 73.6% and 26.3% of the students, respectively. The students' performance was lower than the international average of 500, but it did not significantly differ according to the manner textbooks were used.

Further, as shown in Table 5.36, a great majority of the students (80%) used a reading series for supplementary reading, whilst 12.6% did not use them at all, and 7% used them as a basis for instruction. The performance of students was lower than the international average of 500, but it did not vary significantly according to the way the reading series were used.

Table 5. 36: *The use of reading resources and students' performance*

		n	%	Mean	SD	Diff
Textbooks	Basis for instruction	2 716	73.64	421.02 (5.06)	89.83	1,2: -0.72
	Supplement	955	26.36	421.73 (9.82)	91.57	
Reading series	Basis for instruction	275	7.38	440.16(19.75)	98.07	1,2: 21.13
	Supplement	2 860	79.96	419.02(5.01)	90.07	1,3: 13.42
	Not used	476	12.66	426.74(11.08)	86.73	2,3: -7.72
Workbooks	Basis for instruction	716	18.68	410.17(10.31)	88.18	1,2: -21.92
	Supplement	1 573	43.25	432.09(8.04)	93.07	1,3: -2.38
	Not used	1 386	38.07	412.55(6.27)	87.48	2,3: 19.52
A variety of children's books	Basis for instruction	394	10.06	443.75(16.98)	16.98	1,2: 25.06
	Supplement	2,987	82.47	418.69 (4.94)	4.94	1,3: 33.92
	Not used	286.	7.47	409.82 (13.9)	13.96	2,3: 8.87
Materials from different curricular areas	Basis for instruction	726	17.88	421.68(12.25)	92.18	1,2: 2.58
	Supplement	2 758	76.09	419.10(4.84)	90.26	1,3: -12.62
	Not used	218	6.02	434.30(17.31)	86.70	2,3:-15.2
Children's newspapers and magazines	Basis for instruction	227	5.85	426.03(10.27)	81.06	1,2: 3.33
	Supplement	2 904	79.62	422.70(5.18)	90.93	1,3: 19.96
	Not used	571	14.52	406.07(11.13)	90.13	2,3: 16.63
Computer software for reading instruction	Basis for instruction	33	0.89	507.58(6.27)	65.44	1,2: 30.77 1,3: 93.47* 2,3: 62.7*
	Supplement	320	9.08	476.81(22.41)	99.60	
	Not used	3 203	90.02	414.11(4.23)	87.66	
Use of reference material	Basis for instruction	469	12.11	428.20(17.71)	97.15	1,2: 8.09
	Supplement	2 919	80.67	419.21(5.07)	89.26	1,3: 8.91
	Not used	285	7.22	419.29(15.74)	92.04	2,3: -0.08

**Statistically significant at 5% level*

The highest proportion of students (43 %) used workbooks and worksheets to supplement reading activities, whilst 38% did not use them at all. These different trends in the uses of workbooks did not account for any differences in the performance of the students, as indicated in Table 36. A large majority of students (82%) used a variety of children's books (e.g. novels, collections of stories, nonfiction) in supplementary reading activities, whilst 10% used them as a basis for instruction. The different frequencies of use of a variety of children's books did not have any significant impact on the performance of the students in reading, which was below the 500 international averages.

Students, whose teachers claimed to have used materials from different curricular areas, and those who said they had used materials from children's magazines and newspapers to supplement reading activities, made up 18% and 79% of the study population, respectively. The manner in which materials from different curricular areas and those from children's newspapers and magazines were used did not cause any significant differences in the performance of students in reading, as was shown in Table 5.36 above.

According to teachers' responses, students who did not use computer software for reading instruction were in the vast majority (90%), whilst 9% used software to supplement reading

activities. The performance of students whose teachers used computer software as a basis for instruction and to supplement reading activities was significantly higher than that for those whose teachers did not.

Reference materials were used to supplement reading by teachers of 80% of the students. The way reference materials were used for reading activities by teachers did not cause significant differences in the performance of students in reading. .

An index for Literary Reading Materials was developed by combining data for different types of literary texts that included short stories, longer fiction books, plays, and other. Another index was created for Informational Reading Materials from data sourced from responses on nonfiction subject area books, longer nonfiction books, and nonfiction articles.

Table 5. 37:

Frequency of the use of various types of reading materials and students' performance in reading

		n	%.	Mean	SD	Diff
Literary reading materials	Every day or almost every day	60	1.67	416.45(5.75)	76.73	1,2: 2.75 1,3: -7.14
	Once or twice a week	1 277	35.56	413.70(5.4)	83.95	1,4: -40.85*
	Once or twice a month	1 903	56.88	423.59(7.34)	94.99	2,3: -9.89 2,4: -43.60*
	Never or almost never	198	5.89	457.30(15.56)	79.10	3,4:- 8.46
Informational reading materials	Every day or almost every day	229	8.41	434.65(20.22)	80.16	1,2: 12.99 1,3: 16.24
	Once or twice a week	855	31.69	421.66(8.07)	92.51	1,4: -0.92
	Once or twice a month	1 320	53.49	418.41(9.13)	93.06	2,3: 3.25
	Never or almost never	143	6.42	453.57(14.98)	72.98	2,4: -13.91 3,4: -17.16

**Statistically significant at 5% level*

Frequency of Reading Literary Reading Materials and Students' Performance

The frequency of teachers having students read the two types of texts in Table 5.37 was measured on a four point scale: Every Day or Almost Every Day, Once or Twice a Week, Once or Twice a Month, and Never or Almost Never.

The largest proportion of the students (57%) were instructed by their teachers to read Literary Reading Materials once or twice a month, whilst 35% were instructed to read Once or Twice a week. Students whose teachers instructed them to read Literary Reading Materials more often performed significantly better in reading than those whose teachers never instructed them to do so, as was shown in Table 5.37 above.

Frequency of Reading of Informational Reading Materials and Student's performance

Students whose teachers instructed them to read Informational Reading Materials Once or Twice a month comprised 53%, and those who were instructed to read Once or Twice a week constituted 32%. The frequency of reading Informational Materials did not cause significant differentials in students' performance.

Frequency of Comprehension Activities and Students' Performance

Table 5. 38: *Types of reading and students' performance*

		n	%	Mean	SD	Diff
Reading aloud	Every day or almost every day	1 236	34.32	409.91(7.30)	85.09	1,2: -14.66
	Once or twice a week	2 122	58.85	424.57(5.93)	92.96	1,3: -35.35
	Once or twice a month	277	6.83	445.26(13.88)	89.59	2,3: -20.60
Reading silently own choice	Every day or almost every day	672	16.90	418.81(7.87)	82.37	1,2: -7.71
	Once or twice a week	2 320	63.09	426.52(6.08)	92.70	1,3: 14.83
	Once or twice a month	677	20.02	403.98(10.13)	87.91	2,3: 22.54
Teaching strategies on decoding sounds and words	Every day or almost every day	593	17	428.36(13.20)	91.52	1,2: 5.50 1,3: 14.78
	Once or twice a week	1 931	55.78	422.86(6.24)	91.32	1,4: -33.02 2,3: 9.28
	Once or twice a month	955	24.70	413.58(8.31)	87.42	2,4: -38.52* 3,4: -47.8*
	Never or almost never	84	2.53	461.38(10.61)	77.42	
Comprehension skills	Every day or almost every day	704	20.08	434.38(11.36)	87.50	1,2: 15.28 1,3: 30.64 1,4: -9.33
	Once or twice a week	2 001	63.23	419.10(6.29)	93.58	2,3: 9.28
	Once or twice a month	509	15.8	403.74(9.04)	84.4	2,4: -38.52 3,4: -47.80
	Never or almost never	29	0.83	443.71(2.89)	81.57	

**Statistically significant at 5% level*

Fifty nine percent of the students were instructed by their teachers to read aloud Once or twice a week, whilst 34% were made to read aloud every day. There was no significant difference in students' performance in reading based on the frequency of reading aloud. A majority (63%) of the students were instructed to read silently Once or Twice a week. There was no significant difference in the performance of students based on the frequency of reading silently. The highest proportion of students (56%) was instructed on the strategies of decoding sounds and words. The performance of students in reading did not differ significantly based on the frequency of teaching strategies for decoding sounds and words.

An index was developed by combining data from responses to a number of items related to the activities teachers performed to assist students acquire comprehension skills.

They included:

- a) Locating information within the text
- b) Identifying the main ideas in what they read

- c) Explaining or supporting their understanding of what they had read
- d) Comparing what they read with what they had experienced in their lives
- e) Comparing what they had read with other materials which they had read
- f) Making predictions about what would happen next in the text that they were reading
- g) Making generalisations and drawing inferences based on what they had read
- h) Describing the style or structure of the text they had read
- l) Determining the author's perspective or intention

Table 5. 39: *Students' performance and the frequency of doing activities related to the development of comprehension skills*

		n	%	Mean	SD	SE
Activities related to development of comprehension skills	Every day or almost every day	704	20.08	434.38(11.36)	87.50	1,2: 15.28 1,3: 30.64
	Once or twice a week	2 001	63.23	419.10(6.29)	93.58	1,4: -9.33 2,3: 9.28
	Once or twice a month	509	15.85	403.74(9.04)	84.40	2,4: -38.52 3,4: -47.80
	Never or almost never	29	0.83	443.71(2.89)	81.57	

**Statistically significant at 5% level*

A high proportion of students (63%) were engaged by their teachers Once or Twice a week in activities that were aimed at developing comprehension skills, as illustrated in Table 5.39. There were no significant differences in the performance of students based on the frequency of the development of comprehension skills activities.

Computer and Library Resources

Table 5. 40: *Availability of computers for use during reading lessons and students' performance*

		n	%	Mean (SE)	SD	Diff
Availability of computers	YES	243	5.72	452.12(26.61)	103.67	1,2:32.71
	NO	3361	94.28	419.41(4.05)	89.46	
Internet connection for computers	YES	75	29.57	535.97(10.08)	58.38	1,2:119.06*
	NO	168	70.43	416.92(23.38)	98.10	

**Statistically significant at 5% level*

Standard 6 teachers were asked if students in the PIRLS/TIMSS class had computer(s) available to use during reading lessons. According to the information in Table 5.40, in Botswana only 5.72% students had computers available for use during reading lessons, whilst 94.28% did not. There was no significant difference in performance between those students reported as having and those reported as not have computers available for reading lessons.

Of the computers available, 29.6% had, whilst 70% did not have, internet connection. There was a significant difference in performance in reading between students whose computers had and those whose computers did not have internet connection. Therefore, computers with internet connection had a positive impact on reading achievement. It is important to note that the mean for students with internet connection was one of the few in Botswana which was above the international average of 500.

As shown in Table 5.41, students who never used computers for reading stories and other texts made up the highest proportion of 57.5%, whilst 30% and 13% used them once or twice in a week and once or twice in a month, respectively. The performance of students in reading was significantly higher when the computer activities were done more frequently. Similar results were found where software was used to develop reading skills and also where computers were used by students to write stories.

Teachers were asked the following questions on the library resources available in the schools or classrooms:

Do you have a library or reading corner in your classroom?

About how many books are available in the classroom library?

About how many magazines with different titles are available in your classroom library?

How often do you give the students in your class time to use the classroom library or reading corner?

Can the students borrow books from the classroom library or reading corner to take home?

Availability of Reading Resources and Student Performance in Reading

A very high percentage of students (83%) had access to a library or a reading corner, whilst 17% did not. The performance of students in reading was significantly higher for students who had a library or reading corner than that of those who did not, as shown in Table 5.42 above. . The highest proportion of teachers (45%) had 25-50 books. There were no significant differences in the performance of the students which be related to the differences in the number of books in the library or to the availability of a reading corner in the classroom.

A majority (56.8%) of students was given time to use the library or reading corner every day and only 0.4% were never given such time. The performance of the former students in reading was significantly higher compared to that of the latter.

45.9% of the students were assigned reading as part of homework by their teachers, one or two times a week, as was shown in Table 5.43 above. The frequency of assignment of reading as part of homework did not have a significant impact on performance since the mean scores for performance in reading were not significantly different.

The most common time period which students were expected to spend on homework by teachers was 16-30 minutes, since 53% of the students were engaged in that period, as indicated in Table 5.43. The amount of time which was the least expected, namely more than 60 minutes, involved 5.7% of the students. The performance of students in reading did not differ significantly across the different times students were expected to spend on the reading assignment.

Table 5. 41: *Reading resources and student performance in reading*

		n	%	Mean (SE)	Diff
Availability of reading corner or library in the classroom	Yes	2,994	83.01	416.58 (4.99)	
	No	640	16.99	440.98 (11.52)	1,2: -24.40 *
Number of books in the class library	0-25	807	26.44	412.99 (5.86)	1,2: 1.84 1,3: -4.56
	26-50	1,324	45.12	411.15 (8.73)	1,4: -42.00 2,3: -6.40
	51-100	546	19.86	417.55 (8.39)	2,4: -43.84 3,4: -37.44
	More than 100	265	8.59	454.99 (37.70)	
Number of magazines with different titles	0	384	12.62	440.40 (16.21)	1,2:40.06*
	1-2	720	24.53	400.34 (7.89)	1,3: 19.13 1,4: 25.27
	3-5	900	32.26	421.27 (12.07)	2,3: -20.93 2,4:14.79
	More than 5	938	30.58	415.13 (9.29)	3,4:6.14
Time given to use of classroom library and reading corner	Every day or almost every day	1,742	56.76	414.48 (7.43)	1,2:-1.36
	Once or twice a week	1,040	37.97	415.84 (8.42)	1,3: -38.94 1,4: 48.82
	Once or twice a month	141	4.84	453.42 (28.54)	2,3: -37.58 2,4:18.5955* 3,4: 33.01*
	Never or almost never	19	0.43	365.66 (16.58)	
Can students borrow books	Yes	2,305	79.12		
	No	637	20.88		
	Once or twice a month	565	15.71		
	A few times a year	450	11.91		
	Never or almost never	482	13.91	420.24 (5.61) 403.18 (12.58)	1,2: 17.06

****Statistically significant at 5% level**

Only 12.6% of the students did not have access to magazines with different titles in the classroom library. The performance of students in reading differed significantly only where the teachers did not have magazines with different titles in the library or reading corner. The performance of students in reading did not differ significantly for the different ranges of magazines with different titles in the library or reading corner.

A great majority of the students (85%) always had their assignments corrected and were given feedback. There was no significant difference in performance between the students whose teachers always and those who sometimes corrected and gave feedback.

Students whose teachers always discussed homework with them made up 88% of the total, compared to those whose teachers sometimes did. Students whose teachers always discussed homework in class performed significantly higher than those whose teachers sometimes discussed the homework in reading.

Ninety five percent of the students had their teachers always monitor if homework had been completed. Not surprisingly, the performance of these students in reading was significantly higher compared to that of those whose teachers sometimes monitor.

The Assignment of Reading as Part of Homework and Performance in Reading

Students whose teachers waited to see if their students improved comprised 43%, whilst those whose teachers did not wait made up 57% of the total. Performance in reading did not differ significantly between students whose teachers waited to see if they improved and those who did not wait.

Table 5. 42: Frequency of *homework activities and performance in reading*

		n	%	Mean (SE)	Diff
Frequency of assigning reading as part of homework	Less than once a week	573	15.38	413.10 (6.60)	1,2: -6.77
	1 or 2 times a week	1,551	45.91	419.87 (8.43)	1,3: -0.57
	3 or 4 times a week	536	15.93	413.67(11.51)	1,4: -18.16
					2,3: 6.2
					2,4: -13.82
Every day	579	15.34	431.26(10.96)	3,4: -17.59	
Time students are expected to spend on reading assignment	15 minutes or less	386	11.45	421.08 (10.42)	1,2: -1.89
	16-30 minutes	1,786	53.04	422.97(7.45)	1,3: 7.16
					1,4: 3.06
	31-60 minutes	974	29.77	413.92(7.09)	2,3: 9.05
					2,4: 4.95
More than 60 minutes	208	5.74	418.02(17.97)	3,4: -4.10	
Frequency of correcting assignments and giving feedback	Always or almost always	2,784	85.16	421.93 (5.07)	1,2: 14.86
	Sometimes	487	14.84	407.07(11.18)	
Frequency of discussion of homework in class	Always or almost always	2,951	88.15	422.85(5.10)	1,2: 25.64*
	Sometimes	376	11.85	397.21(10.80)	
Frequency of monitoring if homework was completed	Always or almost always	3,044	92.80	421.65 (4.81)	1,2: 26.78 *
	Sometimes	227	7.20	394.87(4.81)	

**Statistically significant at 5% level*

Measures Taken For Remediation and Students' Performance in Reading

Table 5. 43: Remediation and students' performance

		n	%	Mean (SE)	SD	Diff
I have the student work with specialised professional	Yes	231	7.10	453.15 (16.39)	89.87	1,2: 34.43 *
	No	3,373	92.90	418.72 (4.18)	90.15	
I wait to see if student improves	Yes	1,506	43.28	415.60 (8.35)	92.70	1,2: -9.33
	No	2,065	56.72	424.93 (4.87)	88.64	
I spend more time individually with that student	Yes	3,049	85.99	420.44 (4.82)	89.79	1,2: -7.06
	No	522	14.01	427.50 (14.23)	95.78	
I ask parents to help	Yes	3,390	94.23	422.96 (4.42)	90.90	1,2: 26.56
	No	181	5.77	396.40 (13.21)	83.14	

**Statistically significant at 5% level*

A great majority (86%) of the students who fell behind had teachers who spent more time with them individually. However, there were no significant differences in performance in reading between such students and those whose teachers did not.

A very high proportion of students (94%) had teachers who would ask for help if the students fell behind. However, the mean for students whose teachers sought help was not significantly higher than that of those whose teachers did not seek help.

Teachers were asked to what extent they emphasised evaluating students' ongoing work. As shown on Table 5.45, students who had teachers who placed major emphasis on evaluating students' ongoing work comprised 66%. There was no significant difference in performance of students in reading related to the areas of emphasis.

Evaluating Students' Learning in Reading and Students' Performance

Table 5. 44: Assessment of reading

		n	%	Mean (SE)	SD	Diff
Evaluation of students' ongoing work	Major emphasis	2329	66.17	422.86 (5.79)	89.67	1,2: 2.35
	Some emphasis	1190	33.83	420.51 (7.45)	91.93	
Class tests	Major emphasis	2852	80.68	418.11 (4.96)	89.05	1,2: -25.22
	Some emphasis	623	17.47	443.33 (11.92)	96.07	1,3: 24.19
	Little or no emphasis	44	1.85	393.92 (32.83)	59.32	2,3: 49.41
National or regional achievement tests	Major emphasis	2398	67.72	412.75 (4.67)	85.48	1,2: -31.46
	Some emphasis	830	24.56	444.20 (13.20)	99.36	1,3: -21.27
	Little or no emphasis	264	7.72	434.02 (22.16)	90.63	2,3: -10.18

**Statistically significant at 5% level*

Eighty percent of the students had teachers who placed major emphasis on the use of class tests for monitoring progress in reading. Whether teachers placed major, some or little emphasis on reading, there were no significant differences in the mean scores for performance in reading amongst students.

Teachers' Areas of Study during Training and Students' Performance in Reading

Table 5. 45: *The extent to which teachers studied different areas and students' performance*

		n	%	Mean (SE)	SD	Diff
English	Overview or introduction to topic	1,703	46.69	406.89 (5.11)	86.51	1,2: -26.77 *
	It was an area of emphasis	1,884	53.31	433.66 (6.99)	92.72	
Pedagogy/ Teaching Reading	Not at all	184	5.45	395.36 (17.84)	76.62	
	Overview or introduction to topic	1,713	49.08	406.21 (5.24)	88.20	1,2: -10.85 1,3: -43.25
	It was an area of emphasis	1,541	45.47	438.61(8.28)	91.68	2,3: -32.40
Educational Psychology	Not at all	90	2.52	426.85 (9.74)	87.15	
	Overview or introduction to topic	1,501	43.07	410.69(6.27)	86.77	1,2 :16.16 1,3: -0.97
	It was an area of emphasis	2,021	54.41	427.82(7.09)	92.95	2,3: -17.13
Remedial Reading	Not at all	491	13.06	408.16(9.15)	88.08	
	Overview or introduction to topic	1,969	54.49	408.86(4.42)	87.48	1,2: -0.70 1,3: -37.46
	It was an area of emphasis	1,185	32.45	445.62(9.70)	91.95	2,3: -36.76
Reading Theory	Not at all	578	14.91	406.99(10.08)	87.79	
	Overview or introduction to topic	1,924	53.30	409.7(4.75)	86.43	1,2: -2.78 1,3: -38.35
	It was an area of emphasis	1,170	31.79	445.34 (10.25)	93.75	2,3: -35.57
Special Education	Not at all	605	15.91	433.48 (13.08)	94.90	
	Overview or introduction to topic	2,158	60.33	413.74 (5.64)	87.78	1,2: 19.74 1,3: 2.5
	It was an area of emphasis	926	23.76	430.98 (9.07)	92.03	2,3: -17.24
Second Language Learning	Not at all	486	13.50	419.09 (16.21)	95.35	
	Overview or introduction to topic	1,770	48.61	408.12(5.09)	84	1,2: 10.97 1,3: -18.45
	It was an area of emphasis	1,322	37.90	437.54 (9.30)	94.40	2,3: -29.42
Assessment Methods in Reading	Not at all	436	11.98	418.93 (9.67)	86.28	
	Overview or introduction to topic	1,935	52.65	406.27(4.50)	85.38	1,2: 12.66 1,3: -23.75
	It was an area of emphasis	1,301	35.37	442.68(8.75)	95.09	2,3: -9.83

*Statistically significant at 5% level

A total of 67.7% of the students was taught by teachers who placed major emphasis on the use of national or regional tests for assessment of reading. The different extents of emphasis did not cause significant differences in students' performance in reading, as shown on Table 5.45.

Teachers were asked to indicate the extent to which they went through different areas of study by indicating: Not at all, an Overview or introduction, It was area of emphasis.

Slightly more than half of the students were taught by teachers who had English as an area of emphasis, whilst the rest had teachers for whom it was an overview or introduction of the topic. The mean for student performance in reading was significantly higher amongst students whose teachers had English as an area of emphasis.

Almost 45% of the students had teachers who had Pedagogy or Teaching as an area of emphasis taught, whilst 49% and 6% of students were taught by teachers who had Pedagogy as an overview or none, respectively. Although the mean for performance in reading was higher among teachers who had pedagogy as an area of emphasis, there was no significant difference in students' performance arising from the different areas of emphasis.

Fifty four percent of the students had teachers with Educational Psychology as an area of emphasis; whilst 49% and 3% had teachers who had it as an introduction and none, respectively. A majority of students (53%) had teachers with Remedial Reading as an area of emphasis, whilst 32% and 13% of teachers had it as an introduction and none, respectively. There was no significant difference in students' performance related to their teachers' different areas of emphasis.

A greater proportion of the students (60%) had teachers with Special Education as an introduction. This area of emphasis did not cause any difference in performance in reading amongst the students.

As shown in Table 5.47, teachers who had never engaged in in-service activities taught 48.7% of the students. The proportion of teachers also declined with the number of hours which they spent on professional development. This indicated that teachers lacked professional development in teaching reading. There were no significant differences in students' performance due to the different hours spent on professional development by teachers.

A majority of students (77%) were taught by teachers who read children's books for professional development at least once a week, as illustrated in Table 5.47 above. Students' performance in reading was significantly higher where teachers read children's books for professional development more frequently.

Teachers' Professional Development and Students' Performance

Table 5. 46: *Teachers' time spent in professional development and students' performance*

		n	%	Mean (SE)	SD	Diff
Number of hours spent on reading related in-service development activities in the last 2 years	None	1,699	48.68	418.49 (7.29)	94.06	1,2: -5.22 1,3: 12.26
	Less than 6 hours	969	26.16	423.71 (6.79)	88.91	1,4: -1.92 1,5: -31.07
	6-15 hours	564	14.75	406.23 (7.09)	76.88	2,3: 17.48 2,4: 3.3
	16-35 hours	120	3.36	420.41(27.23)	93.39	2,5: -25.85 2,6: -14.18
	More than 35 hours	264	7.05	449.56(19.75)	88.17	3,4: -43.33 3,5: -29.15 4,5: -29.15
Frequency of reading children's books for professional development	At least once a week	2,444	77.06	421.69 (5.91)	89.88	1,2: -13.69
	Once or twice a month	558	17.94	435.38 (12.94)	99.14	1,3: 13.76 1,4: -52.04*
	Once or twice a year	122	4.07	407.93 (19.52)	88.87	2,3: 27.45 2,4: -38.35*
	Never or almost never	21	0.93	473.73 (6.65)	70.56	3,4: -65.8*

****Statistically significant at 5% level**

Summary

On the basis of the teachers' demographic background, it was clear that the number of years which they had spent accumulating teaching experience had a significant association with students' performance. Students taught by teachers with teaching experience between 21 and 30 years had the highest scores in performance in reading, while those taught by teachers with 30 years of experience and above had the least. 75 % of the students were taught by teachers between the ages of 30-49, and 62% of the students are taught by females. The age and Sex of teachers did not account for any differences in the performance of students in reading.

There was higher performance in reading among students when the teacher's level of education was high. A great majority (81%) of the students were taught by diploma holding teachers with 61.35% of them having Primary Education as their main area of study. The different areas of study taken by teachers during their training did not influence students' performance in reading.

Higher levels of teachers' perceptions about their own job satisfaction, their understanding and completing of the curriculum within the prescribed time, and about meeting the expectations of their students, were all associated with their students' higher performance in reading. A majority of the students, ranging from 41% to 79%, were taught by teachers who had high perceptions of themselves on the said attributes. More than 50% of the students were taught by teachers who believed that parents were not involved in their children's education. Performance in reading among students was much higher where parents were perceived to be participating. About 77%

of the students were taught in safe schools. Large proportions of students were taught by teachers who felt that the behaviour of students was satisfactory.

For teacher working conditions, only overcrowding of classrooms and too many teaching hours did not affect performance whereas the physical conditions of buildings, inadequate workspace and inadequate instructional materials adversely affected performance.

The proportions of students, ranging from 35% to 45%, were in classes where their teachers collaborated two or three times a month for purposes of discussing instruction. Working together to try out new pedagogical methods had a more positive impact on the performance of students than other forms of collaboration. From 67% to 96% of the students were instructed under conditions where their teachers summarised lessons, related lessons to students' daily lives, used questioning techniques, encouraged students to improve performance, praised students and brought interesting materials to class. Summaries of lessons, questioning techniques and bringing interesting materials to class had a positive impact on performance in reading.

Limitations on instruction brought about by students' lack of prerequisite knowledge, inadequate nutrition, sleep, interest, discipline, and by students with special needs affected 40% to 60% of the students to some extent. These attributes had an impact on the performance in reading except for disruptive students. A majority (76%) of the students had teachers send their parents school reports 1 to 3 times a year, and students' performance was higher when reports were more frequently sent to parents.

Higher frequencies of organizing classes into individualized and same ability groups during instruction had a positive impact on performance in reading. However, only 7% and 16% of students were organised into same ability and individualized reading groups, respectively. Textbooks were used as a basis for instruction for 76% of the students. Other materials, such as book series, work books, children's books form curricular areas and reference materials were used as supplementary materials by 43% to 80% of the students. Except for computer software, which was used by 10% of the students, none of the materials were associated with any differentials in performance.

The use of informational materials was not associated with any differences in performance. Using reading activities once or twice a week was common in most lessons for 50% to 60% of the students. It was only the higher frequencies in the use of teaching strategies on decoding sounds and words that positively enhanced performance in reading.

About 50% to 57% of the students never used computers for the various reading activities. Higher frequencies of the use of computers were associated with higher performance in reading. More than 80% of the students were in classrooms with a reading corner with about 26 to 50 books. The availability of books in the classroom and the frequency with which students were made to read them were associated with higher performance in reading.

Homework was assigned 1 or 2 times a week to a majority (46%) of the students. There was higher performance in reading when homework was always discussed and its completion monitored. Only 7% of the students who had difficulties in reading were referred to a specialised professional, whilst 85% had their teachers spend more time with them individually. A greater proportion (80%) of the students had teachers who placed major emphasis on class tests,

compared to the evaluation of students' ongoing work and national or regional achievements tests. Various forms of emphasis on forms of assessment did not account for differences in performance.

During teacher training, English and Educational Pedagogy were areas of emphasis for teachers who taught 53% and 54%, respectively. It is only where English was emphasised that significant differences in performance in reading occurred.

A total of 48% of the students had teachers who had never gone on professional development. Teachers who read children's books for professional development taught 77% of the students, and higher frequencies accounted for differences in performance.

Recommendations

1. About 81% and 17% of the students who were taught by teachers with at least a diploma or degree respectively, performed significantly higher than students whose teachers had at least secondary education. The international average for teachers with a diploma and degree is 15% and 53% respectively. The percentage of teachers with a degree in Botswana is far less than the international average whilst the percentage of teachers with diploma is much higher in Botswana. The MoESD should upgrade teachers to higher degree and higher qualification so that achievement in reading improves in Botswana.
2. The proportion of students who were taught by teachers who perceived their job satisfaction to be high was at 41%, and the learners performed higher than the 55% whose teachers perceived their job satisfaction to be between medium and low. The teacher job satisfaction have to be ceaselessly sustained to raise it to higher levels for a great majority of teachers. The Ministry of Education and Skills Development by should continuously engage teachers in consultative dialogue about their professional needs.
3. About 85% of the students were taught by teachers who thought parental support and involvement was medium to low. The performance of those students was lower than that for the 15% whose teachers perceived parental involvement and support to be high. Programmes have to be designed, implemented and sustained, PTA's and school management to ensure that parents support and get involved in the education of their children.
4. There was a higher proportion of students, at 77%, whose teachers stated that their desire to do well in school was medium to low. The performance of the students was lower than that of students with a higher level of the desire to do well. The importance of education and higher achievement at school has to be emphasised amongst students by the teachers and parents. Also, teacher education programmes need to emphasise techniques for the motivation of students. The guidance and counselling programmes in schools should be strengthened to address students' various needs.

5. Only 11% of the students were taught by teachers who indicated that the conditions of buildings in the school were not a problem and they did not need repair. The performance of the learners was higher than that of the 89% of learners whose teachers indicated that the conditions of the buildings ranged from being a minor to being a serious problem. In addition to the conditions of the buildings, the adequacy of workspace for teachers influenced performance, with the students whose teachers stated that they had adequate space performing higher than those who said otherwise. MoESD should address conditions of buildings needing serious repair and provide workspace for teachers.
6. Only 9% of the learners were taught by teachers who indicated that the adequacy of the instructional materials was not a problem. Their students performed higher than the 91% whose teachers stated that the inadequacy of the instructional materials ranged from being a minor to being a serious problem. To improve the reading skills, a substantial investment has to be made by the MoESD towards the improvement of the adequacy of the instructional materials.
7. The proportion of learners whose teachers used computers for instructional purposes was 10%, and those learners performed higher than those whose teachers did not use computers. Also, less than 10% of the students had teachers who felt comfortable with and were using computers for preparation and administration. Since instruction nowadays should prepare learners for the 21st century information age, there was a need to consider a major investment in teacher training, especially in the use of computers for instructional purposes. Examples of the benefits of this included Singapore, where a phased programme was used to implement the use of digital instruction, which resulted in huge benefits in learner achievement.
8. Higher frequencies in summarising lessons and the use of questions during instruction influenced performance, with students whose teachers less frequently summarised lessons and rarely posed questions in class performing lower than those whose teachers used these techniques more frequently. The more frequent use of the techniques had to be emphasised in teacher education and professional development.
9. The results also indicated that the very high frequencies with which interesting reading materials were brought to the class was related to higher performance among learners compared to when teachers did that for half or for some of the lessons. That was why bringing interesting reading materials to the classroom everyday had to be emphasised in teacher education programmes.
10. Among the learners, 42% were taught by teachers who indicated that learners suffered lack of nutrition and that they performed lower than those whose teachers indicated otherwise. Lack of nutrition should be investigated by the MoESD to ensure that learners did not suffer from it.
11. About 44% of the students were taught by teachers who indicated that students with disabilities limited how they taught their classes to some extent, compared to 32% whose teachers said limitation to their teaching by such students did not apply. Teacher education programmes must infuse techniques for the teaching of learners with special needs.

12. Students who were taught by teachers who used more frequent individualised groupings, whole class activities and individualised instruction performed higher than those whose teachers used less frequent activities. More frequent activities should be used by teachers to improve performance in reading.
13. Discussion of Homework and monitoring if Homework was completed had an impact on the performance in reading. Teachers should increase the frequency of discussion of homework and monitor if homework is completed to improve reading.

CHAPTER SIX

SCHOOL BACKGROUND VARIABLES AND PERFORMANCE OF STUDENTS

Chapter Six presents findings on the extent to which school variables relate to students' performance. The School heads whose students were sampled to take part in the TIMSS and PIRLS studies were requested to fill a questionnaire on which they provided some background information about their schools on some of the variables. The information was mainly on: School's Enrolment and Characteristics, Instructional Time, Resources and Technology, Involvement of Parents in School, School Climate, Teachers in School, Leadership Activities, School Readiness, and Reading in School. The questions under each variable were related to the students' performance in reading. The analysis done in this chapter was aimed mainly at establishing the association between students' performance and some background information relating to schools.

School Enrolment and Characteristics

In this section, the school heads reported on the overall school enrolment and the characteristics of students in the school. In particular, the school heads gave information on the overall enrolment of the schools, Standard 6 enrolments, proportion of economically disadvantaged students compared to affluent ones, the type of area the school was located in, and the average income level of the schools' surrounding area. All these variables were associated with students' performance.

Table 6. 1: *School overall enrolment and performance*

	n	%	Mean (SE)	SD	
0-200	333	9.80	389.73 (8.71)	76.90	1,2:-36.27* 1,3:- 11.16 1,4:- 37.46*
201-400	754	21.87	426.00 (14.17)	101.42	1,5:- 45.55* 1,6:- 71.62 2,3: 25.11
401-600	1,096	25.83	400.89 (6.29)	88.98	2,4: -1.19 2,5:- 9.28 2,6: -35.35
601-800	949	21.53	427.19 (8.07)	88.27	3,4:-26.30* 3,5:-34.39* 3,6: -60.46*
801-1000	920	19.32	435.28 (8.31)	86.46	4,5:- 8.09 4,6: -34.16
1001-1200	72	1.64	461.35 (21.55)	85.70	5,6: -26.07

**Statistically significant at 5% level*

School's overall Enrolment and Students' Performance

The responses to the question about associating the students' performance with school overall performance are displayed in Table 6.1 and those on the relationship between students' performance and Standard 6 enrolment are displayed in Table 6.2

Most students (25.83%) belonged to schools with overall school enrolments ranging from 401 to 600 students. The schools with 1001 to 1200 students were the least, with a 1.64% population of students in the sample. Relating overall school enrolment with performance yielded a mixed outcome in that it was not clear whether schools with a small number of students did better than those with a large population. In fact, schools with a student population of 1001 to 1200 had a high mean performance than those in any other category. The direction of performance would have been much clearer if there had been no drop in performance for schools in the category with 401 to 600 students. Otherwise, we would have concluded that there were positive associations between students mean performance and students population size. However, this could not hold because the 1001 to 1200 category had fewer students and that might not have been consistent in the long run. The standard deviations of the performance were close, implying that the spread of scores was relatively the same in each category except that for the 201 to 400 students. Only the centre of location was different, with some categories having the distribution shifted to the right, while others had it shift to the left of the mean. All categories had significant differences from the 0-200 group, except the 201 to 400 categories.

Table 6. 2: *Standard 6 school enrolment and students' performance*

	n	%	Mean(SE)	SD	
0-20	144.00	4.23	411.17(14.37)	78.94	1,2:31.07 1,3:-20.29
21-40	261.00	7.54	380.10(24.03)	95.19	1,4:10.27 1,5:-5.72 1,6:-17.98
41-60	831.00	22.86	431.46(11.81)	98.76	2,3:-51.36 2,4:-20.80 2,5:-36.79
61-80	687.00	14.58	400.90(12.38)	91.69	2,6:-49.05* 3,4:30.56 3,5:14.57
81-100	897.00	21.81	416.89(6.21)	86.01	3,6:2.31 4,5:-15.99 4,6:-28.25*
100+	1,369.00	28.96	429.15(5.87)	85.22	5,6:-12.26

**Statistically significant at 5% level*

It is well known that class size is relevant to students' achievement. But the effects of a particular grade overall population on performance is not known. From Table 6.2, it was observed that the responses did not make it clear whether schools with a larger population of Standard 6 students did better than those with fewer students. The mean performance ranged from 411.17 to 429.15. Schools with 100 or more students scored the highest, while schools with student populations in category 21 to 40 scored the least, and not those with a 0 to 20 student population, as usually perceived. The standard deviations of the performance were close, implying that the spread of scores was almost the same in each category and that only the mean scores were different. In some category, the distribution shifted to the right, while in others it shifted to the left.

Students' Performance and Their Economic Background

In this subsection, the relationship between students' mean performance and their economic status as viewed by the school head was explored. The thinking was that the economic characteristics of students could be used as a proxy to their home socio-economic status in the absence of the data. The results of the analysis are presented in Table 6.3.

Table 6. 3: *Students' performance by economic background*

		n	%	Mean (SE)	SD	Diff
Disadvantaged	0 to 10%	771	19.41	458.56(13.35)	100.94	
	11 to 25%	983	24.39	428.18(5.76)	81.88	1,2:30.38*
	26 to 50%	1,094	25.13	396.44(6.10)	82.32	1,3:62.12* 1,4:69.59*
	>50%	1,133	31.08	388.97(5.30)	79.19	2,3:31.74* 2,4: 39.21* 3,4: 7.47
Affluent	0 to 10%	1,207	31.66	384.14(5.41)	80.34	1:2 -25.19*
	11 to 25%	707	19.29	409.33(5.93)	78.88	1,3:-51.06*
	26 to 50%	996	25.27	435.20(9.36)	94.01	1,4:-71.88* 2,3:-25.87*
	>50%	976	23.78	456.017(11.61)	96.28	2,4:-46.69* 3,4:-20.82

**Statistically significant at 5% level*

Schools which reported that 50% and more of their students were economically disadvantaged (31.08%) performed lower compared to those in schools with fewer disadvantaged students. Likewise, schools with a larger proportion of economically affluent students performed much better than schools with a larger proportion of less affluent students. It was clear that the socio-economic status of students had to improve in order for them to perform well. There existed a significant difference in performance between students who came from schools with larger proportions of disadvantaged students and those with fewer disadvantaged students.

Proportion of Native English Speakers in School and Students' Performance

The effect on students' achievements of using the native language in teaching is well known around the world. Some countries prefer to teach their children in their mother tongue rather than using a foreign language. In this section, the relationship between Standard 6 students' performance and the proportion of them who were native English language speakers was explored. The results are displayed in Table 6.4.

Table 6. 4: *Percentage of students who had English as native language and their performance*

%	n	%	Mean(SE)	SD	Diff
>90%	210	4.67	390.61(11.32)	77.26	1,2:-31.94 1,3:-133.29
76 to 90%	87	2.06	422.55(34.70)	87.37	1,4: -27.17* 2,3:-101.35
51 to 75%	51	1.59	523.90(70.23)	100.22	2,4: 4.77 3,4: 106.12
<25%	3,514	91.69	417.78(4.41)	90.23	

**Statistically significant at 5% level*

Larger proportions of students in the sample were not native English speakers, and made up 91.69% of the population. Only 4.67% of students were reported to come from schools which had over 90% of their students being native English speakers. The mean performance was higher for the schools with 51% to 75% of the students being native English speakers. However, there was a larger standard deviation of 100.27 suggesting that there were disparities between students' scores in that category. Further, only very few students (1.59%) belonged to that category. Being a native English language speaker was associated with a student's higher performance in reading compared to when the student was not. It was concluded that the issue of using the mother tongue in teaching had to be looked at. .

Effect of School Locality and Income Level of the School Area on Students Performance

In this part of the research, the school location type, and the income level of the school area were investigated in order to establish how they relate students' performance. These two variables are viewed as a proxy to the socio-economic status of the school in absence of the raw data. Schools which are adjacent to cities and high income areas are usually better equipped than schools in the remote areas with low income levels. The results of the analysis are displayed in Table 6.5.

A larger proportion of students attended schools which were located in a small town or a village 44.10% followed by 25.66% of students from schools which were located in remote rural areas. The urban schools had 12.57% of the students. It was clear from the mean performance scores that the students who came from urban schools performed better compared to others and that performance decreased according to the socio-economic status of the school. Those attending schools in rural areas performed lower compared to others. The students from schools which were located in areas with income regarded as higher performed better than students who came from low income areas. Significant differences in the mean scores for performance were found between those of students who attended schools which were situated in the urban and those which were situated in remote areas. This implied that the location in which a school was situated had a profound effect on students' performance.

Table 6. 5: Performance by school locality and average income of the area

	n	%	Mean (SE)	SD	Diff
Urban	540	12.57	459.85(11.34)	91.20	1,2: 17.22 1,3: 30.25
Suburban	480	11.35	442.63(17.13)	97.29	1,4: 38.52 1,5: 79.93*
Medium Size City	273	6.32	429.60(13.37)	86.60	2,3: 13.03 2,4: 21.30
Small Town	1,899	44.10	421.33(7.02)	90.67	2,5: 62.71* 3,4: 8.27 3,5: 49.68*
Remote Village	969	25.66	379.92(5.56)	76.21	4,5: 41.41*
High	53	1.53	569.32(13.47)	57.36	1,2: 123.33*
Medium	1,871	44.10	445.99(7.08)	92.53	1,3: 177.49*
Low	2,174	54.37	391.83(4.15)	80.25	2,3: 54.16*

**Statistically significant at 5% level*

Effect of Resources and Technology on Students' Performance

This study proceeded on the understanding that school resources, such as libraries, computers, books, teachers, audio-visual equipment, and classrooms are important for students' education. Lack of such facilities might lead to dismal performance for students. Most governments in the world faced with the challenge of equipping their schools with relevant technologies in order to improve students' performance. The problem is that technology and other resources changed frequently, which makes it difficult for the resource providers to keep pace with the demand. In this section, the importance of resources to students' performance is investigated. The results are presented in Table 6.6.

Availability of Computers and Students' Performance

This study proceeded on the understanding that computers were being extensively used in class teaching for a variety of purposes. They were also being used to introduce students to surfing the internet, etc. The use of computers at lower standards in the learner's school career was important in preparing students to face on-going challenges and changes in technologies. The students' performances and their relation to the availability of computers were shown in Table 6.6.

Most students (74.86%) were in schools with only a few of computers (0-20). Nevertheless, the performance of students with respect to the availability of computers did not suggest that the number of computers in school enhanced performance or hindered performance. The mean performance for students was high for schools with 21 to 40 computers. But from there it dropped for schools with 41 computers or more. However, there existed significant differences in students' mean performance among those in categories 0-20 and 41-60 as against those in 61-80. However, the proportion of students with 61 to 80 computers was low. These results had to be interpreted with caution since it was thought that they might not be consistent in the long run.

Table 6. 6: *Availability of computers and students' performance*

No. of Computer	n	%	Mean (SE)	SD	Diff
0-20	3,093.00	74.86	415.43(4.57)	89.79	
					1,2: -38.29
					1,3: -6.26
21-40	464.00	11.41	453.72(21.22)	104.49	1,4: 17.59*
					1,5: 11.89
					2,3: 32.03*
41-60	55.00	1.69	421.69(51.99)	75.92	2,4: 55.88*
					2,5: 50.18
					3,4: 23.85
61-80	31.00	0.71	397.84(4.36)	74.32	3,5: 18.15
					4,5: -5.7
100+	546.00	11.33	403.54(8.71)	81.73	

**Statistically significant at 5% level*

Availability of Library and Laboratory and Students' Performance

In this section, the relationship between students' performance and availability of library and laboratory in schools is explored. The results are displayed in Table 6.7.

Table 6. 7: *Performance by availability of laboratory and assistance for doing experiments*

Laboratory	n	%	Mean (SE)	SD	
YES	294.00	6.81	489.89(28.11)	100.70	
NO	3,864.00	93.19	413.42(3.56)	88.50	1,2: 76.47*
Library					
YES	2,046.00	49.83	430.15(8.03)	98.87	
NO	2,047.00	50.17	407.90(5.01)	82.27	1,2: 22.25*

**Statistically significant at 5% level*

A majority of students were in schools with no laboratory (93.19%) and no library (50.17%). Only 6.81% of the students had a laboratory and 49.83% had a library in their schools. The availability of these two resources was associated with a high mean performance. Those with a laboratory available scored a mean of 489.89 compared to 413.42 for those without. The students with a library scored a mean of 430.15 compared to the mean of 407.90 for those who did not. Significant differences were observed between those with a library or laboratory and those who did not have those resources.

How Shortage or Inadequacy of School Resources Affected Schools' Capacity to Provide Instruction

The school heads of schools were asked to indicate in a Likert scale response how capacity to provide instruction was affected by a shortage or inadequacy of resources. Their response pattern ranged from not affected at all to affect a lot. It was noted that school resources played an important role in students' achievements and learning. This was so because schools with ample resources performed well in all aspects of learning. In this study several resources items had been concatenated into an index representing the availability of resources in schools.

These resources included: instructional materials, stationary, infrastructure, heating, classrooms, technology and computers for instructions. The results were shown in Table 6.8.

Table 6. 8: *Inadequacy of school resources and students' performance*

	n	%	Mean (SE)	SD	Diff
Not at all	66.00	2.32	550.71(4.54)	59.97	1,2: 133.85* 1,3: 145.90*
A little	1,180.00	28.09	416.86(7.96)	86.60	1,4: 87.67* 2,3: 12.05
Somewhat	2,362.00	56.81	404.81(4.26)	83.79	2,4: -46.18*
A lot	529.00	12.78	463.04(20.01)	105.05	3,4: -58.23*

**Statistically significant at 5% level*

Only 2.32% of students were in schools whose school heads claimed that inadequacy of school resources had not affected reading at all. On the other hand, 12.78% of students were in schools which claimed that inadequacy of resources affected performance in reading a lot. The mean performance was high among those schools whose heads claimed that they were not affected at all, followed by those who said they were affected a lot. These two differed by a small proportion. However, the value might not be consistent in the long run. Given that, perhaps the best approach would have been to look at each item independently to see how it related to students' performance. Looking at each resource closely, it became evident that only the inadequacy of instructional materials significantly affected the mean performance of students in reading at G Standard 6. .

How Shortage or Inadequacy of Reading Resources Affected Schools' Capacity to Provide Instruction

The heads of schools were asked how much the shortage or inadequacy of resource for reading affected reading at schools. The focus was on specialised teachers in reading, computers software for reading, library books, and audio-visual resources for reading instruction. An index representing these items was formulated. The results showed that 11.40% of students were not affected entirely, 27.27% were affected a lot, and around 61% were somewhat or a little affected. The mean performance was high for the „not affected“ group, followed by the „somewhat affected“ group. There were no significant differences between these two groups. Those schools which claimed to be affected by inadequacy or shortage of resources for reading performed almost the same as those which claim to be not affected.

Table 6. 9: *Shortage or inadequacy of reading resources and students' performance*

	n	%	Mean (SE)	SD	Diff
Not at all	466	11.40	425.85(11.56)	93.21	1,2: -13.23
A little	1,525.00	35.92	412.62(7.79)	87.94	1,3: -1.03 1,4: -6.66
Somewhat	1,030.00	25.41	424.82(9.44)	94.06	2,3: 12.20 2,4: 6.57
A lot	1,116.00	27.27	419.19(10.01)	92.04	3,4: -5.63

**Statistically significant at 5% level*

Involving Parents in School

It was noted that parents as well as teachers had equal responsibility for students' performance at school. Without the effort of the two stakeholders, it would be difficult for the schools to cope with the growing challenges facing the students today. Therefore, head teachers were asked to indicate the frequency with which they engaged parents on issues concerning the school in general, and students in particular. There was a long list of issues, ranging from those which related to the wellbeing of students and teachers to issues relating to the extent to which the school involved the parents, especially on the pedagogical principles of the schools. All these issues were analyzed in relation to students' performance to find out if they impacted on students' performance. The results were summarised as below.

The Frequency with Which Schools Informed Parents about Issues Concerning Students

The researchers were aware of the fact that the ability of schools to engage parents on issues concerning students had been highlighted in many respects as an instrumental factor affecting students' achievements. Parents needed to be informed about their children's learning progress, and their children's behaviour and well-being. Therefore, schools needed to educate parents on how to support their children at home, and to discuss parents' concerns and wishes about child learning. All these factors had been combined to form an index capturing parents' involvement in their children's work. The results were presented in Table 6.10.

Table 6. 10: *Frequency at which the school informed parents about students' performance and Students' Performance*

	n	%	Mean (SE)	SD	Diff
Once a Year	859.00	21.18	430.71(10.30)	93.72	1,2: 4.75
2-3 times a year	2,853.00	68.18	415.96(5.08)	90.29	1,3: 20.42
More than 3 times a year	444.00	10.64	410.29(15.34)	93.38	2,3: 5.67

**Statistically significant at 5% level*

Clearly, when the parents got involved in students' work more frequently, the performance was much lower compared to when parents were involved less frequently. This negative relationship was surprising because it was expected that parental support for students' work was important to their performance. Nevertheless, there were no significant differences in performance between students who were supported once a year and those who were supported more than 3 times a year. Hence it seemed the frequency of parental support was not important. Rather, what was important was that the parents should show interest in their children's studies.

Frequency with which the School Informed Parents about School Issues in General and Students' Performance

It was noted that the parents had to be informed not only about issues concerning students, but also about issues concerning the school in general. For instance, parents needed to be updated on the school's academic achievements, about school accomplishments in sporting tournaments, about the educational goals and pedagogic principles of the school, about school rules, etc.

Table 6. 11: *Frequency with which the School Informed Parents about School Issues in General, and students' performance*

	n	%	Mean (SE)	SD	Diff
Once a year	139.00	3.62	375.73(9.52)	81.92	
2-3 times a year	1,602.00	38.86	428.67(8.62)	95.23	1,2: -52.94*
More than 3 times					1,3: -38.47*
a year	2,448.00	57.52	414.20(4.91)	88.13	2,3:14.47

**Statistically significant at 5% level*

Most students (57.52%) were in schools which reported that they engaged parents on these issues more than 3 times a year. The mean performance in reading was significantly different between students in those schools which informed parents once a year and those which informed parents more than 2 times a year.

No significant difference was observed between those that engaged parents 2 to 3 times a year and those that did so more than 3 times a year.

School Climate

The school working environment was considered as one of the factors that were associated with the performance of students. A good school environment benefited both teachers and students. A healthy working and learning environment was characterized by teachers' job satisfaction, by the extent to which teachers understood and implemented the schools' curriculum, regular parental support of school activities, teachers' high expectations of their students' achievements, a high students' regard for school property, and students strong desire to do well in school. On the other hand, a bad school environment hinders performance. It was discovered that there were several negative behaviour that were associated with students in the schools. These included arriving late at school, absence from school for no apparent reason, class room disturbances, cheating, profanity, vandalism, theft, intimidation of other students, physical fights, and intimidation of teachers.

School Climate and Students' Performance

This section addressed the relationship between students' reading performance and certain attributes that were usually necessary for students to do well. School heads were asked to indicate to what degree these factors were present in their school, the same factors which were listed in the preceding section. The results of the analysis were shown in Table 6.12 below.

Table 6. 12: *School climate and students' performance*

		n	%	Mean (SE)	SD	Diff
Teacher Job Satisfaction	High	1,583.00	39.87	435.35(8.98)	99.99	1,2: 30.77*
	Medium	2,241.00	51.72	404.58(4.36)	84.10	1,3: 10.89
	Low	327.00	8.41	424.46(6.89)	77.23	2,3: -19.88*
The extent to which teachers understood the schools' curriculum	High	2,851.00	68.94	424.80(6.00)	93.06	
	Medium	1,284.00	30.14	402.31(6.69)	85.57	1,2: 22.49*
						1,3: -14.48
						2,3: -36.97*
The extent to which teachers implemented the school curriculum	High	2,003.00	48.96	432.39(7.79)	96.90	
	Medium	2,006.00	46.92	405.47(5.47)	83.07	1,2: 26.92*
	Low	150.00	4.13	393.44(13.53)	85.85	1,3: 38.95*
Teachers' expectation of students' achievements	High	3,065.00	74.91	427.10(5.31)	93.23	
	Medium	1,006.00	23.41	391.22(6.10)	79.06	1,2: 35.88*
	Low	52.00	1.69	419.84(9.34)	87.26	1,3: 7.26
Parental support in school activities	High	642.00	15.74	466.26(17.01)	101.80	2,3: -28.62*
	Medium	1,557.00	37.06	429.08(6.25)	88.94	1,2: 37.18
	Low	1,937.00	47.20	394.42(4.66)	81.17	1,3: 71.84
Parental involvement in school activities	High	701.00	16.10	431.01(13.24)	95.56	2,3: 34.66*
	Medium	1,933.00	47.67	424.88(7.36)	93.12	1,2: 6.13
	Low	1,525.00	36.23	403.60(5.50)	84.85	1,3: 27.41*
Students' regard for school property	High	734.00	19.21	449.52(16.94)	109.17	2,3: 21.28
	Medium	2,073.00	50.36	415.34(5.19)	84.75	1,2: 34.18
	Low	1,325.00	30.42	403.12(6.11)	84.84	1,3: 46.40
Students' desire to do well in school	High	916.00	22.54	465.95(12.48)	96.41	2,3: 12.22
	Medium	2,034.00	47.95	411.32(4.69)	86.61	1,2: 54.63*
	Low	1,209.00	29.51	392.76(5.07)	80.64	1,3: 73.19*
						2,3: 18.56*

*Statistically significant at 5% level

In all issues mentioned above, the school heads reported that 39.87% of students came from schools in which teachers' job satisfaction was high, and that 51.72% of students belonged to schools where job satisfaction was medium. The performance was higher for students who came from schools where job satisfaction was high than for those who came from schools where job satisfaction was medium or low. Both the extent to which teachers understood the school curriculum and the success with which they implemented it were high. Most students came from schools where teachers' understanding of the curriculum was high (68.94%). The teachers' success in implementing the curriculum was also high (48.96%). However, most students came from schools where parental support was low (47.20%), and that hindered performance.

Teachers' expectation of students' achievements was high (74.91%) and their students performed well compared to those whose teachers' expectation was low (1.69%).

Table 6. 13: *Students' problematic behaviour and students' performance*

		n	%	Mean (SE)	SD	Diff
Arriving late at school	Not a problem	729.00	19.55	453.54(14.29)	98.19	1,2: 39.59* 1,3: 0.15*
	Minor problem	2,364.00	55.88	413.95(5.41)	87.35	1,4: -105.67* 2,3: 9.56
	Moderate problem	1,015.00	22.95	404.39(8.64)	86.97	2,4: 66.08*
	Serious problem	81.00	1.61	347.87(12.16)	74.43	3,4: 56.52*
Absenteeism	Not a problem	884.00	21.28	463.33(13.18)	96.49	1,2: 51.75* 1,3: 62.48*
	Minor problem	2,406.00	57.78	411.58(4.74)	86.19	1,4: 89.18* 2,3: 10.73
	Moderate problem	570.00	13.77	400.85(9.75)	85.15	2,4: 37.43*
Classroom disturbance	Serious problem	329.00	7.17	374.15(10.11)	78.40	3,4: 26.70
	Not a problem	1,197.00	30.97	427.74(9.46)	91.20	1,2: 8.14 1,3: 24.11
	Minor problem	2,123.00	49.79	419.60(6.33)	91.82	1,4: 28.66 2,3: 15.97
	Moderate problem	632.00	14.94	403.63(11.36)	89.23	2,4: 20.52
Cheating	Serious problem	191.00	4.34	399.08(14.29)	88.18	3,4: 4.55
	Not a problem	1,685.00	44.47	423.34(8.35)	95.94	1,2: 9.92 1,3: -11.87
	Minor problem	1,747.00	42.42	413.42(5.87)	87.75	1,4: 47.42 2,3: -21.79
	Moderate problem	435.00	8.78	435.21(12.75)	85.16	2,4: 37.50*
Profanity	Serious problem	204.00	4.33	375.92(8.22)	79.13	3,4: 59.29*
	Not a problem	1,466.00	46.12	431.61(8.87)	96.86	1,2: 15.01 1,3: 40.14*
	Minor problem	1,410.00	41.35	416.60(7.21)	87.01	1,4: 55.19* 2,3: 25.13
	Moderate problem	344.00	8.86	391.47(11.25)	85.60	2,4: 40.18*
Vandalism	Serious problem	157.00	3.67	376.42(10.98)	77.72	3,4: 15.05
	Not a problem	1,476.00	38.57	423.76(8.80)	94.88	1,2: -1.52 1,3: 17.48
	Minor problem	1,624.00	39.78	425.28(7.38)	90.73	1,4: 42.09* 2,3: 19.00
	Moderate problem	667.00	14.87	406.28(7.28)	84.34	2,4: 43.61*
Theft	Serious problem	320.00	6.79	381.67(10.85)	79.47	3,4: 24.61
	Not a problem	1,425.00	36.41	426.53(9.84)	100.23	1,2: 8.71 1,3: 13.93
	Minor problem	1,917.00	45.33	417.82(5.17)	85.58	1,4: 54.47* 2,3: 5.22
	Moderate problem	618.00	13.95	412.60(9.24)	85.99	2,4: 45.76*
Intimidation or verbal abuse among students	Serious problem	194.00	4.31	372.06(8.78)	74.85	3,4: 40.54*
	Not a problem	1,181.00	32.05	421.36(10.17)	95.93	1,2: -4.70 1,3: 23.51
	Minor problem	2,103.00	48.86	426.06(6.33)	90.38	1,4: 30.57

						2,3: 28.21*
	Moderate problem	544.00	11.95	397.85(8.16)	83.94	2,4: 35.27*
	Serious problem	302.00	7.14	390.79(13.05)	79.82	3,4: 7.06
	Not a problem	675.00	18.06	445.93(15.72)	99.00	1,2: 30.87
						1,3: 33.96
Physical Fights	Minor problem	2,418.00	58.65	415.06(5.35)	88.64	1,4: 59.51*
						2,3: 3.09
	Moderate problem	832.00	17.76	411.97(9.75)	88.21	2,4: 28.64*
	Serious problem	234.00	5.52	386.42(12.70)	83.76	3,4: 25.55
Intimidation or Verbal abuse of teachers or staff	Not a problem	2,887.00	70.97	427.45(5.76)	93.26	1,2: 31.14*
						1,3: 27.32*
	Minor problem	1,037.00	23.69	396.31(6.13)	82.07	1,4: 61.79*
						2,3: -3.82
	Moderate problem	216.00	5.03	400.13(12.33)	85.92	2,4: 30.65
	Serious problem	19.00	0.31	365.66(16.58)	71.86	3,4: 34.47

**Statistically significant at 5% level*

Students Problematic Behaviour and Their Performance

The relationship between students' performance and negative behavioural attributes usually associated with some students was also investigated. School heads were asked to indicate to what degree the following attributes were prevalent in their schools: arriving late at school, absence from school with no apparent reason, classroom disturbances, cheating, profanity, vandalism, theft, intimidation of other students, physical fights, and intimidation of teachers. The results were shown in Table 6.13.

It was generally accepted that students' behaviour at school was important for their achievement. Students from schools with well-behaved students usually performed well academically and in other school activities, including sports. Responses to questions about all the behaviour variables that were being investigated indicated that most students came from schools which reported that they had no problem or had a minor problem. The mean performance for these students was much higher than that for those students who came from schools which reported that they had a moderate problem or had a serious problem of these behaviours.

Method Used to Evaluate Teachers' Work

The researchers set out to establish the ways in which heads of schools evaluated and monitored their teachers' work in order to insure that they adhered to the schools' curriculum and principles. They noted that, although the basic monitoring and supervision of teachers was usually done by the school heads, it was important for those school heads to engage teachers themselves in what was usually known as peer review. In some instances, external inspectors were ideal for conducting such an exercise. . In most cases, the performance of the teachers was being measured on the basis of the students' performance. The relationship between these monitoring methods with students' achievements was explored in this section.

Table 6. 14: *Method of evaluating teachers' work and students' performance*

		n	%	Mean (SE)	SD	Diff
Observation by the principal or senior staff	Yes	4,168.00	99.25	417.15(3.85)	90.41	
	No	21.00	0.75	588.67(7.23)	52.58	1,2: -171.52*
Observation by inspectors or other persons external to the school	Yes	2,837.00	66.43	411.70(4.42)	87.51	1,2: -20.06
	No	1,352.00	33.57	431.76(10.12)	97.25	
Student achievement	Yes	4,091.00	98.49	418.52(4.18)	91.72	1,2: -
	No	69.00	1.51	422.83(52.69)	75.29	4.31
Teachers' peer review	Yes	2,951.00	71.24	422.03(5.55)	92.65	
	No	1,238.00	28.76	409.53(8.17)	87.56	1,2: 12.5

**Statistically significant at 5% level*

The findings carried in Table 6.14 above indicated that the commonly used methods for evaluating teachers in schools were through lesson observations by principals or senior staff (99.25%), and using student achievements as a guide (98.49%). Students who came from schools where teachers were assessed by the principal had a mean of 417.15 in performance, which was lower than that for when the method was not used, which stood at 588.67. In fact, the only effective method used was when teachers were assessed by their peers, because the mean performance when that method was used came to 422.03, which exceeded that of when the peer evaluation was not used, which stood at 409.53. But the difference between the two mean scores was not significant. The only significant difference was observed when the teachers were evaluated by the principal or senior staff, which suggested that the principal or senior teachers were probably not the best people to assess the teachers. This was so because the principals had many other school management responsibilities and so their input on teacher supervision was minimal.

School Leadership and Students' Performance

It was noted that school heads had the responsibility to guide the school on many issues relating to the school. They had to promote the school's educational vision or goals, develop the school's curricular and educational goals, monitor the teachers' implementation of the school's goals and curricular, formulate rules to govern the students and teachers, solve problems among teachers or students, etc. In this section, the heads were asked to indicate how often they did these activities. Their responses were then related to students' achievements.

Table 6. 15: *School leadership activities and students' performance*

	n	%	Mean (SE)	SD	Diff
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No time	27.00	0.75	411.50(6.30)	76.02	1,2: -13.00
Some time	1,510.00	37.93	424.50(9.10)	95.04	1,3: -2.93
A lot of time	2,595.00	61.32	414.43(5.09)	89.17	2,3: 10.07

**Statistically significant at 5% level*

On average, the heads of school claimed to spend a lot of time performing school leadership activities. Most (61.32%) students were from schools where school leadership activity was observed frequently. The school leadership activities usually undertaken by school principals were promoting the schools educational vision and goals, developing the schools' curricular and educational goals, monitoring students' learning progress, keeping an orderly atmosphere in the schools, and initiating discussions designed to help teachers who had problems. However, there were no significant differences in students' performance between students whose school heads performed these leadership activities frequently and those whose school heads never did so.

School Readiness and Students' Performance

The researchers noted that it was important for children to start school when they were already equipped with some basic skills, such as knowing how to write their names, knowing how to count from 1 to 10, etc. They further noted that, in most cases, our children started school without any such basic knowledge. This made it difficult for teachers to teach them. Some students tended to go as far as Standard 2, 3, or even 4 before they saw the light. In this section, school heads were requested to indicate the proportion of students who were ready for school at the beginning of Elementary School. Generally, children were regarded as being ready for school when they could demonstrate that they had a knowledge of the following: Recognising most of the letters of the alphabet, being able to read some words, reading sentences, writing letters of the alphabet, writing some words, counting up to 100, recognising all the numbers from 1 to 10, and writing all these numbers.

Most students came from schools which reported that less than 25% of their students admitted to their schools were indeed ready for school. Such students were expected to be able to recognise most of the letters of the alphabet, read some words, read some sentences, write letters of the alphabet, write some words, count up to 100 or higher, recognise all written numbers from 1 to 10, and to write all numbers from 1 to 10. But only a few of the students could manage to do all this at the beginning of their school career. The most affected areas were reading sentences, writing the alphabet, writing words, and counting up to 100 or higher.

The mean performance in reading at Standard 6 was influenced by the lack of readiness of students in reading at the beginning of school. Those schools with more students who were able to read scored a higher mean compared to the others.

Table 6. 16: *Students „school readiness and performance*

		n	%	Mean(SE)	SD	Diff
Recognising most of the letters of the alphabet	Less Than 25%	2,718.00	66.02	400.32(4.29)	85.88	1,2;-37.03*
	25-50%	701.00	15.85	437.35(6.30)	81.84	1,3;-36.44*
	51-75%	405.00	8.35	436.76(14.41)	85.82	1,4;-96.11*
	More Than 75%	331.00	9.79	496.44(20.39)	97.14	2,3:0.60 2,4;-59.08* 3,4;-59.68*
Reading some words	Less Than 25%	2,791.00	68.47	400.52(4.42)	84.82	1,2;-40.05*
	25-50%	775.00	17.98	440.58(9.46)	86.15	1,3;-44.31*
	51-75%	304.00	7.25	444.83(10.96)	82.63	1,4;-122.87*
	More Than 75%	188.00	6.29	523.39(26.79)	98.26	2,3;-4.26 2,4;-82.82* 3,4;-78.56*
Reading sentences	Less Than 25%	3,235.00	79.55	406.03(4.14)	86.29	1,2;-50.49*
	25-50%	523.00	13.00	456.53(15.39)	90.34	1,3;-71.02*
	51-75%	201.00	5.52	477.05(26.92)	101.10	1,4;-64.59 2,3;-20.53 2,4;-14.10
	More Than 75%	73.00	1.93	470.62(36.11)	117.85	3,4:6.43
Writing letters of the alphabet	Less Than 25%	2,815.00	68.38	400.81(4.34)	84.53	1,2;-41.45*
	25-50%	572.00	13.77	442.26(10.68)	86.13	1,3;-62.79*
	51-75%	538.00	12.69	463.60(14.39)	94.28	1,4;-83.09*
	More Than 75%	195.00	5.16	483.89(35.30)	105.60	2,3;-21.33 2,4;-41.63 3,4;-20.30
Writing some words	Less Than 25%	3,118.00	75.38	406.16(4.23)	86.50	1,2;-29.67*
	25-50%	625.00	13.62	435.84(8.50)	83.08	1,3;-64.51*
	51-75%	254.00	7.24	470.67(22.05)	101.88	1,4;-94.88*
	More Than 75%	134.00	3.77	501.04(44.10)	108.83	2,3;-34.83 2,4;-65.21 3,4;-30.38
Counting up to 100 or higher	Less Than 25%	3,065.00	74.13	403.94(4.34)	84.65	1,2;-44.79*
	25-50%	417.00	9.65	448.72(15.54)	93.92	1,3;-60.68*
	51-75%	401.00	9.77	464.62(16.98)	93.11	1,4;-66.05*
	More Than 75%	248.00	6.45	469.98(32.12)	108.06	2,3;-15.90 2,4;-21.26 3,4;-5.36
Recognising all written numbers from 1 to 10	Less Than 25%	2,474.00	59.58	401.03(4.57)	83.47	1,2;-26.84*
	25-50%	709.00	16.94	427.88(12.08)	92.36	1,3;-36.76*
	51-75%	357.00	8.27	437.80(8.93)	86.44	1,4;-65.88*
	More Than 75%	615.00	15.20	466.92(17.15)	101.53	2,3;-9.92 2,4;-39.04 3,4;-29.12
Writing all numbers from 1 to 10	Less Than 25%	2,558.00	61.59	400.59(4.56)	83.37	1,2;-33.39*
	25-50%	739.00	17.23	433.98(11.15)	91.42	1,3;-56.24*
	51-75%	403.00	9.85	456.83(15.89)	93.44	1,4;-59.65*
	More Than 75%	455.00	11.33	460.24(20.08)	103.08	2,3;-22.85 2,4;-26.26 3,4;-3.41

*Statistically significant at 5% level

Standards at Which Reading Skills and Strategies First Received Major Emphasis

It was noted that instilling reading skills and strategies in children when they were still young placed them at an advantage. This made it possible for them to confidently apply those skills and strategies in real life, unlike when they were taught them at an older age. In order to assess the effects of this variable on Botswana children, the various skills that were usually taught to students were combined to form an index and the head teachers were then asked when those skills were usually introduced to students in their schools. The results were presented in Table 6.17 below.

Table 6. 17: *Standards at which reading skills and strategies first receive major emphasis and students' performance at Standard 6*

		n	%	Mean(SE)	SD	Diff
Knowing letters of alphabet	First Standard or Earlier	4,023.00	96.82	417.61(4.26)	91.21	
	Second Standard	57.00	1.09	419.92(13.75)	80.00	1,2:-2.31 1,3:-41.62 2,3:-39.31
	Not in these Standards	82.00	2.09	459.23(34.35)	103.42	
Knowing letter- sound relationships	First Standard or Earlier	3,776.00	92.16	419.06(4.36)	91.50	1,2:23.09
	Second Standard	282.00	5.20	395.97(13.34)	81.41	1,3:34.54*
	Third Standard	30.00	0.55	384.52(6.64)	74.17	1,4:-39.73 2,3:11.45 2,4:-62.82
	Not in these Standards	74.00	2.10	458.79(35.80)	103.69	3,4:-74.27*
Reading Words	First Standard or Earlier	3,969.00	95.02	418.28(4.26)	91.33	1,2:21.48 1,3:22.05*
	Second Standard	101.00	2.55	396.80(27.82)	79.65	1,4:-40.51
	Third Standard	18.00	0.34	396.23(7.84)	79.05	2,3:0.57 2,4:-61.99
	Not in these Standards	74.00	2.10	458.79(35.80)	103.69	3,4:-62.56
Reading isolated sentences	First Standard or Earlier	3,543.00	85.31	415.05(4.39)	90.11	1,2:-28.10
	Second Standard	439.00	10.97	443.15(20.53)	95.61	1,3:23.92 1,4:-43.74
	Third Standard	87.00	1.62	391.13(14.90)	79.99	2,3:52.02 2,4:-52.02*
	Not in these Standards	74.00	2.10	458.79(35.80)	103.69	3,4:-67.66*
Reading connected text	First Grade or Earlier	3,001.00	73.55	417.87(4.42)	89.17	1,2:2.32 1,3:-7.48
	Second Standard	753.00	18.42	415.55(11.75)	93.40	1,4:38.31* 1,5:-132.59
	Third Standard	277.00	6.34	425.35(40.68)	107.74	2,3:-9.80 2,4:35.99 2,5:-134.91*
	Fourth Standard	49.00	0.93	379.56(14.10)	76.70	3,4:45.79
	Not in these Standards	20.00	0.77	550.46(7.18)	56.25	3,5:-125.11*

text						2,3:-20.90
						2,4:-13.81
						2,5:26.73*
						3,4:7.09
						3,5:47.63*
	Not in these Standards	195.00	4.79	381.45(7.61)	71.84	4,5:40.54*
Making	First Standard or Earlier	479.00	11.34	416.99(13.42)	91.52	1,2:-6.73
generalisations	Second Standard	728.00	17.71	400.26(6.49)	81.33	1,3:-9.45
and drawing	Third Standard	1,128.00	27.39	426.44(9.76)	91.34	1,4:-8.13
inferences						1,5:4.20
based on a text						2,3:-26.18*
	Fourth Standard	1,249.00	30.15	425.12(9.14)	95.01	2,4:-24.86*
						2,5:-12.53
						3,4:-1.32
						3,5:13.65
	Not in these Standards	578.00	13.41	412.79(14.30)	92.97	4,5:12.33
Describing the	First Grade or Earlier	412.00	9.64	419.80(15.23)	91.94	1,2:28.18
style or structure						1,3:-7.16
of a text	Second Standard	488.00	12.27	391.62(8.10)	85.52	1,4:-11.46
						1,5:18.08
						2,3:-35.34*
	Third Standard	1,133.00	27.74	426.96(9.51)	89.87	2,4:-39.64*
Determining the						2,5:-10.10
author's						3,4:-44.30
perspective or						3,5:25.24
intention						
	Fourth Standards	1,322.00	31.41	431.26(8.30)	92.69	4,5:29.54*
	Not in these Standards	807.00	18.94	401.72(10.62)	89.50	

**Statistically significant at 5% level*

Most students (43.14%) came from schools in which reading skills and strategies received first emphasis at Standard 4. The students' performance was the highest when reading skills and strategies were taught at that level compared to any other. There was a significant difference in the mean scores of students who first received reading skills and strategies emphasis in Standard 4 and those who receive it in Standard 6.

Summary

From the analysis of the school data above, the following conclusion was reached: that the size of student enrolment at Standard 6 did not have any significant effect on performance in reading. Students in schools with low enrolment figures did not necessarily do better in reading than those in schools with large populations of students.

There were significant differences in performance between students who came from schools with larger proportions of disadvantaged students and those with fewer disadvantaged students.

Students who were native speakers of English did better in reading than those who were not. This provided evidence for the view that students must be taught in their mother tongue so that their comprehension in reading could be improved.

The relationship between students' performance and the number of computers at home suggested that having many computers in schools did not necessarily enhance reading in Standard 6. Those schools with a few computers performed significantly better than those which had many.

A significant difference in mean scores was observed between students who belonged to schools which were situated in the urban and those which were situated in remote areas. This implied that the type of region in which a school was situated had a profound effect on students' performance. In addition, the income level of the area had a significant impact on students' performance.

The inadequacy of resources for reading in schools had not affected the performance of students much. A large proportion of students came from schools which reported that their inability to provide adequate resources had affected them somewhat or a lot. But the mean performance of students did not reflect the claim by those schools. Schools which claimed to have been affected a lot had a higher mean score compared to those which reported that they had been affected somewhat or a little.

Issues regarding teachers, students and parents were important for students' performance. A healthy working environment was related to the high performance of students and teachers. Low parental involvement in students' work resulted in lower performance.

The mean performance in reading at Standard 6 was influenced by a lack of readiness to read on the part of students at the beginning of their school careers. Those schools with more students who were able to read and write at the beginning of their school life achieved higher mean scores compared to others. Students who were ready for school were expected to recognise most of the letters of the alphabet, read some words, read some sentences, write letters of the alphabet, write some words, count up to 100 or higher, recognise all written numbers from 1 to 10, and to write all numbers from 1 to 10.

The most effective method used to evaluate teachers at schools was when they were evaluated by their teacher colleagues in what was usually termed a peer review process. The students performed badly when teachers were evaluated by their principals and senior staff. Because of this, it was inferred that the process of evaluation had to be conducted in a friendly and pleasurable atmosphere, rather than a rigid or militant one, as might have been done by the principal or senior staff.

Recommendations

Based on the findings from the study, the following recommendations were made:

1. The students' socio-economic status had a direct impact on their performance. The schools with larger proportions of disadvantaged students tended to perform less well than those with a moderate proportion of such students. The government programmes which target socioeconomically disadvantaged should be evaluated with the view to improving them.

2. Students who were native speakers of English did better in reading than those who were not. It is recommended that students must be taught in their mother tongue so that their comprehension in reading could improve.
3. The rural areas had a larger proportion of students than other areas and the performance of students from there was not satisfactory. This was seen as an indication that most resources were clustered in the urban areas, where the performance of students was much better. The Ministry of Education and Skills Development provide incentives for teachers to teach in rural areas. Also teaching and learning resources in rural areas must be comparable to those in urban areas in order to address the imbalance.
4. Results have shown that students whose parents took an active interest in their children's school work tended to do well at school. It is recommended that schools should mobilise parental involvement in school activities. PTA's and school management must identify activities that translate to effective parental involvement in schools as well as in students' learning.
5. The majority of the students had started their primary school whilst they were still unable to count, read or write basic letters and/or numbers. It was suggested that this problem could be alleviated by encouraging the parents to introduce their children to pre-schools while they were still young. At pre-school, they would have the opportunity to grasp the elementary skills that would enable them to perform at a high level when they went to school. They would gain enough confidence to speak and write, and to read words that they needed to master at primary school level.

CHAPTER SEVEN

PARENTAL BACKGROUND VARIABLES AND PERFORMANCE OF STUDENTS

PIRLS studies since 1991 had found a strong positive relationship between students' reading achievement and home experiences that provided a conducive environment for literacy learning. In those studies, parents had been given a questionnaire (Learning to Read Survey) to be answered by Standard 6 students' parents or guardians. It sought information about the students' early home experiences with numeracy and literacy type activities, as well as information about the parents' occupation, experiences of and attitudes towards reading activities. This chapter covered the responses of the parents and how those responses related with students' achievement in reading.

Activities performed before the child started school

Three items on the questionnaire addressed the competences the child had acquired before starting school, namely non-formal pre-school activities, language spoken at home, and pre-school attendance.

Non-Formal Pre-School Activities

Parents or guardians were asked how often they participated in particular activities with their child before the child began formal schooling. The activities were:

Early numeracy activities: counting rhymes or singing counting songs, playing with number toys, counting different things, playing games involving shapes, playing with building blocks or construction toys, and playing board or card games.

An index was constructed to elicit information on the regularity with which the parents performed those activities with their children before they started school, namely "often", "sometimes", "never" or "almost never" Table 7.1 showed the results.

Table 7. 1: *Frequency of performing non-formal pre-school activities compared to reading achievement*

	n	%	Mean(SE)	SD	Diff
Often	382	10.37	472.43(9.14)	99.40	1,2: 50.02*
Sometimes	2 747	74.00	422.41(4.16)	88.99	2,3:34.02*
Never or almost never	557	15.63	388.39(5.46)	83.05	1,3:84.04*

**Statistically significant at 5% level*

A majority of the parents (74%) carried out the above activities *sometimes* with their children. Children whose parents *often* engaged them in these non-formal pre-school activities before schooling performed significantly better in reading than those who did the activities *sometimes* or *never* did so, in that order. Thus, engaging the children in non-formal pre-school activities was associated with good academic performance in later years.

Language Spoken at Home before Beginning School

It was noted that Botswana was a multilingual country but that Setswana was a national language used as a medium of instruction from Standard One, while English was the official language used from Standard Two onwards. Table 7.2 was constructed to show parents' responses and how students performed in relation to the language spoken at home.

Table 7. 2: *Performance by language spoken at home*

English	n	%	Mean(SE)	SD	Diff
Yes	927	26.02	457.66(7.01)	97.90	1,2: 47.42*
No	2 692	73.98	410.24(3.72)	86.05	
Setswana					
Yes	3 136	84.67	419.56(4.02)	89.28	1,2:-18.76*
No	529	15.33	438.32(11.96)	101.78	

****Statistically significant at 5% level**

A majority of the children (85%) spoke Setswana before beginning school. About 26% of the children spoke English before beginning school and they scored significantly higher than those who did not. Speaking English was positively associated with reading achievement. This was due to the fact that those tests were in English and those children who knew the language were at an advantage.

Pre-school Attendance

In Botswana pre-school was offered mostly by private individuals who charged a fee for their services. The curriculum followed was not standardised. Tables 7.3 and 7.4 showed parents' responses on attendance of pre-school, length of stay in pre-school, and students' performance.

Table 7. 3: *Pre-schooling and performance*

	n	%	Mean(SE)	SD	Diff
Yes	1 611	45.03	457.82(6.50)	95.42	1,2: 62.41*
No	1 986	54.97	395.41(3.56)	77.75	

***Statistically significant at 5% level**

About 45% of the children were reported to have attended pre-school. Such children performed significantly better than those who had not.

Table 7. 4: *Length of stay in pre-school and performance*

	n	%	Mean(SE)	SD	Diff
3 years or more	531	34.10	458.45(7.88)	98.16	1,2:-15.24 1,3:-10.70
Between 2 and 3 years	269	17.08	473.69(9.71)	100.63	1,4:2.39 1,5:15.86
2 years	375	24.44	469.15(7.86)	89.90	2,3:4.54 2,4:17.63
Between 1 and 2 years	147	9.36	456.06(7.03)	82.01	2,5:31.10* 3,4:13.09
1 year or less	234	15.02	442.59(8.21)	87.87	3,5:26.56* 4,5:13.47

**Statistically significant at 5% level*

About 34% of the children were reported to have spent a minimum of three years in pre-school. Children whose parents said their children had spent less than one year in pre-school performed significantly lower than those whose parents said they had spent between two and three years and two years in pre-school. Children whose parents reported that they had spent between one and two years in pre-school and more than three years performed at the same level. It was concluded from this data that this could be an indication that effectively, the curriculum was covered in three years, after which there was no learning. This was because after three years, performance in reading declined.

Age at Beginning of Schooling

The Revised National Policy on Education of 1994 stipulated that children should be six years by June of the year they started school. In this study, parents were asked to indicate the age of their children when they started school. Table 7.5 showed the age at which children started school and their performance.

Table 7. 5: *Age at Beginning of Schooling versus performance*

Age	n	%	Mean(SE)	SD	Diff
5 years old or younger	296	8.73	470.70(10.68)	100.64	1,2:36.76*
6 years old	1 303	36.86	433.94(6.08)	92.23	1,3:61.22* 1,4:86.34*
7 years old	1 748	48.00	409.48(3.57)	84.71	2,3:24.46* 2,4:49.58*
8 years old or older	231	6.41	384.36(8.19)	77.74	3,4:25.12*

**Statistically significant at 5% level*

Forty eight percent of the children were reported to have started school when they were seven years old. Children who started school at five years or younger performed significantly better than those who were older. This was worrisome, as these children made up less than 10% of the study population. This finding meant that the majority of the children started schooling when they were older than the stipulated age. Yet research had shown that starting schooling at an older age was negatively associated with performance.

Activities Performed before Beginning Primary School

Literacy competency before Schooling

The following were the activities the parents said their children could perform before starting primary school: recognising most of the letters of the alphabet, reading some words, reading sentences, writing letters of the alphabet, and writing some words. An index of the activities was created and classified into four categories, namely the activities could be done *very well*, *moderately well*, *not very well* and *not at all*. Table 7.6 showed the reading/writing ability index and performance.

Table 7. 6: *Literacy competency and performance*

	n	%	Mean(SE)	SD	Diff
Very well	1 126	30.07	449.59(4.98)	89.08	1,2:20.82*
Moderately well	1 512	40.93	428.77(5.25)	91.13	1,3:59.59*
Not very well	778	21.20	390.00(5.33)	84.78	1,4:77.46*
Not at all	267	7.80	372.13(6.55)	75.52	2,3:38.77*
					2,4:56.64*
					3,4:17.87*

**Statistically significant at 5% level*

About 70% of the parents reported that their children's ability to read and write ranged between moderately and very well before beginning primary school, and their children were performing significantly better than all other groups, in that order.

Arithmetic Ability before Schooling

The researchers noted that arithmetic was a branch of mathematics usually concerned with the four basic operations of addition, subtraction, multiplication and division. It also covered the concepts of counting, identifying numbers and recognising shapes. Therefore, parents were asked whether their children could count, recognise shapes, recognise numbers write numbers, and do simple addition and subtraction before they began school. The results were shown in Tables 7.7 to 7.8.

Counting up to 100

Table 7. 7: *Counting numbers versus performance*

	n	%	Mean(SE)	SD	Diff
Up to 100 or higher	1 047	28.57	451.47(7.64)	95.39	1,2:21.52*
Up to 20	1 387	37.23	429.95(4.26)	89.00	1,3:55.56*
Up to 10	1 025	28.62	395.91(4.21)	81.59	1,4:83.52*
Not at all	198	5.58	367.95(8.00)	74.87	2,3:34.04*
					2,4:62.00*
					3,4:27.96*

**Statistically significant at 5% level*

About 29% of the parents had children who could count up to 100 or higher when they began primary school, and these children performed significantly better than all the other groups. Only 6% of the parents had children who could not count at all, and these children obtained the lowest significant mean scores.

Recognising Different Shapes

Table 7. 8: *Recognising shapes versus performance*

	n	%	Mean(SE)	SD	Diff
More than 4 shapes	1 004	27.83	462.96(7.45)	94.50	1,2:31.89*
3-4 shapes	1 095	29.72	431.07(4.53)	88.52	1,3: 63.73*
1-2 shapes	901	24.54	399.23(4.33)	82.67	1,4:82.89*
None	641	17.92	380.07(4.04)	73.97	2,3:31.84*
					2,4:51.00*
					3,4:19.16*

**Statistically significant at 5% level*

About 28% of the parents indicated that their children could recognise more than four shapes and these children performed significantly better than all groups. Children whose parents reported that they could not recognise any shape had the lowest significant mean scores.

Recognising Written Numbers

Table 7. 9: *Recognising written numbers and performance*

	n	%	Mean(SE)	SD	Diff
All 10 numbers	2 566	70.19	436.93(5.11)	91.41	1,2:35.21*
5-9 numbers	385	10.46	401.72(6.19)	90.40	1,3:48.20*
1-4 numbers	390	10.86	388.73(5.60)	81.63	1,4:59.53*
None	286	8.48	377.40(7.07)	77.13	2,3:12.99*
					2,4:24.32*
					3,4:11.33*

**Statistically significant at 5% level*

The majority of the parents (70%) indicated that their children could recognise written numbers from 1 up to 10 and these children performed significantly better than all the other groups. Children whose parents reported that their children could recognise written numbers from 1- 4 and 5-9 performed at the same level. The same applied to those whose parents had said their children could recognise numbers between 1-4 and *none*.

Writing numbers

Table 7. 10: *Writing numbers and performance*

	n	%	Mean(SE)	SD	Diff
All 10 numbers	2 518	70.52	435.51(4.84)	91.41	1,2:29.49*
5-9 numbers	350	10.08	406.02(6.76)	92.67	1,3:42.09*
1-4 numbers	345	10.17	393.42(7.43)	83.31	1,4:52.18*
None	313	9.23	383.33(6.15)	78.28	2,3:12.60
					2,4:22.69*
					3,4:10.09

**Statistically significant at 5% level*

About 71% of the parents had children who could write all numbers up to 10 and these children performed significantly better than all the other groups. By contrast, less than 10% of the parents reported that their children could not write. Such children obtained the least scores. Children whose parents reported that they could write numbers from 1-4 and 5-9 performed at the same level. The same applied to those whose parents had said that their children could write 1-4 and *none*.

Addition and performanceTable 7. 11: *Simple addition and performance*

	n	%	Mean(SE)	SD	Diff
Yes	2 884	78.69	429.57(4.42)	91.76	1,2:31.59*
No	753	21.31	397.98(6.04)	86.71	

**Statistically significant at 5% level*

Table 7. 12: *Simple subtraction and performance*

	n	%	Mean(SE)	SD	Diff
Yes	2 427	67.35	433.31(4.65)	91.44	1,2:30.89*
No	1 158	32.65	402.42(4.99)	88.34	

**Statistically significant at 5% level*

About 79% and 67% of the parents reported that their children could perform simple addition and perform subtraction, respectively, before beginning school. The children of parents who indicated that their children could do simple addition and subtraction performed significantly better than those who could not do these operations, as shown in Tables 7.11 and 7.12 above.

The Child's School Work

The child's school work was covered in the earlier discussion of responses obtained from the questionnaire on the time spent on homework and home support for learning items.

Time Spent on Homework

The researchers noted that homework was the link between the school and the parents. For the teacher, it had a diagnostic function because it measured how well the child had mastered the topic. For the child, it facilitated independent learning. Table 7.13 showed the relationship between the time students spent on homework and performance.

Table 7. 13: *Time spent doing homework and performance*

	n	%	Mean(SE)	SD	Diff
My child does not have homework	236	6.40	379.18(8.03)	79.04	1,2:-25.77* 1,3:-55.29*
15 minutes or less	748	20.71	404.95(5.08)	84.73	1,4:-64.48* 1,5:-34.54*
16-30 minutes	1 34	37.01	434.47(4.89)	90.21	2,3:-29.52* 2,4:-38.71*
31-60 minutes	752	21.19	443.66(7.24)	95.18	2,5:-8.77 3,4:-9.19
More than 60 minutes	527	14.69	413.72(5.90)	90.92	3,5:20.75* 4,5:29.94*

**Statistically significant at 5% level*

About 6% of the parents had children who were not given homework and these children had the lowest significant mean scores compared to all the other groups. 21% of the children spent 31-

60 minutes on homework and had the highest mean scores, which were significantly better than those for children spending 15 minutes or less and more than an hour on homework.

Home Support for Learning

Parents were asked how often they helped their children in learning at home. An index requiring four types of responses was created, namely *every day or almost every day*, *once or twice a week*, *once or twice a month*, and *never or almost never*. Table 7.14 showed the results against performance.

Table 7. 14: *Home support rendered to students and performance*

	n	%	Mean(SE)	SD	Diff
Every day or almost every day	1 458	39.41	437.79(4.63)	89.27	1,2:16.20*
Once or twice a week	1 680	45.75	421.59(5.26)	92.07	1,3:45.56*
Once or twice a month	442	11.98	392.23(5.80)	87.75	1,4:78.00*
Never or almost never	101	2.86	359.79(11.13)	74.00	2,3:29.36*
					2,4:61.80*
					3,4:32.44*

**Statistically significant at 5% level*

Just over 39% of the parents reported that they helped their children *every day or almost every day* at home and their children performed significantly better than those in all the other groups. Children's performance improved as the frequency of support provided by the parent increased.

Perceptions about the Child's School

The research team recognised that the school was an environment where child interacted with their peers. For that reason, it was expected to provide an environment which was conducive for learning. Parents responded to questions on how they perceived their children's school. An index on which they were asked to give one of two possible answers was created, namely, agree or disagree. Agreeing with the statements was interpreted as indicating that the parents had a positive perception about the school, while disagreeing showed a negative perception. Table 7.15 showed the results linked to student performance.

Table 7. 15: *School perception and performance*

	n	%	Mean(SE)	SD	Diff
Agree	3 501	95.79	424.69(4.44)	91.45	1,2:54.71*
Disagree	156	4.21	369.98(10.22)	85.40	

**Statistically significant at 5% level*

A majority of the parents (96%) had a positive perception about their children's school and their children performed significantly better than those whose parents had a negative perception.

Literacy in the Home

The following items addressed the level of literacy in the home, namely, time spent in reading for self-development, frequency of reading for enjoyment, parents' perception about reading, number of books in the home, children's books in the home and language of communication at home.

There is a strong correlation between reading and academic success; reading and vocabulary of knowledge thus good readers widens their knowledge, comprehends text better leading to better achievement (Russ et al., 2007). Parents were asked to indicate the amount of time they spend reading for self-development and the results were related to performance as shown in Table 7.16.

Table 7. 16: *Time spent on reading for self-development and performance*

	n	%	Means(SE)	SD	Diff
Less than one hour a week	1 538	42.86	409.04(3.79)	84.50	1,2:-23.17* 1,3:-31.88* 1,4:-14.32*
1-5 hours a week	1 297	36.74	432.21(5.91)	93.43	2,3:-8.71
6-10 hours a week	355	10.08	440.92(8.64)	98.82	2,4:-1.10
More than 10 hours a week	367	10.31	442.31(7.48)	98.37	3,4:-1.39

**Statistically significant at 5% level*

About 43% of parents reported that they spent less than one hour a week on reading for self-development and their children obtained the lowest significant mean scores.

Reading for Enjoyment

Parents were asked to indicate how often they read for enjoyment and their responses were related to student performance, as shown in Table 7.17

Table 7. 17: *Time spent reading for enjoyment and children's performance*

	n	%	Mean(SE)	SD	Diff
Every day or almost every day	1 435	39.63	439.89(4.43)	91.85	1,2:15.77* 1,3:42.13* 1,4:77.52*
Once or twice a week	1 592	43.70	424.12(4.82)	87.98	2,3:26.36* 2,4:61.75*
Once or twice a month	309	8.60	397.76(8.20)	92.25	3,4:35.39*
Never or almost never	281	8.07	362.37(6.69)	77.80	

**Statistically significant at 5% level*

Almost forty percent of the parents reported that they read for enjoyment every day or almost every day, and their children performed significantly better than those in all the other groups. Children whose parents never read for enjoyment had the lowest mean scores. The parents' responses suggested that their reading for enjoyment was positively associated with their children's performance.

Perceptions about Reading and Children's Performance

Parents were asked various questions to determine their perceptions about reading. As their responses, they were required to give one of the following:

I read only if I have to.

I like talking about what I read with other people.

An index on which they were asked to indicate „agree“ or „disagree“ was created. Agreeing with the statements was interpreted as indicating that the parents had a positive perception about reading, while disagreeing showed a negative perception. Table 7.18 showed the results.

Table 7. 18: *Perception about reading and children’s performance*

	n	%	Mean(SE)	SD	Diff
Agree	1 377	38.90	450.99(5.22)	90.83	1,2:44.96*
Disagree	2 213	61.10	406.03(4.59)	88.15	

**Statistically significant at 5% level*

About 39% of the parents agreed with the statements on the importance of reading, and their children performed significantly better than those whose parents had a negative perception about reading.

Number of Books in the Home

Parents were requested to indicate the number of books which they had in the home, not including magazines and children’s books. Their responses were related to student performance. The results were then presented in Table 7.19.

Table 7. 19: *Number of books in the home and children’s performance*

	n	%	Mean(SE)	SD	Diff
0-10	1 922	52.78	400.84(3.52)	82.00	1,2:-29.65*
11-25	905	24.61	430.49(4.71)	88.78	1,3:-66.76*
26-100	541	15.28	467.60(8.91)	97.28	1,4:-62.30*
More than 100	265	7.33	463.14(11.05)	101.71	2,3:-37.11*
					2,4:-32.65*
					3,4:4.46

**Statistically significant at 5% level*

About 53% of the parents had less than ten books in their home and their children performed significantly lower than all the groups with more than ten. Children whose parents reported that they had 26-100 books had the highest significant scores compared to all groups with less than 26 books. From this finding, it was reasonable to conclude that as the number of books in the home increased, the performance of the children improved. However, it was noted that after a 100 books performance did not change.

Children’s Books in the Home

Parents were asked to indicate the number of children’s books in their homes, excluding children’s magazines and school books. They also had to indicate whether the books were in English or not. The results were related to their children’s performance, as shown in Tables 7.20 and 7.21.

Table 7. 20: *Children's books in the home and children's performance*

	n	%	Mean(SE)	SD	Diff
0-10	2 333	64.27	411.16(3.88)	86.52	1,2:-33.44* 1,3:-39.41*
11-25	773	21.37	444.60(6.68)	94.61	1,4:-25.62
26-50	335	9.13	450.57(9.39)	93.61	2,3:-5.97 2,4:7.82
More than 50	187	5.23	436.78(13.66)	106.21	3,4:3.79

**Statistically significant at 5% level*

About 64% of the parents reported that they had less than ten children's books at home and their children performed significantly lower than children whose parents reported that they had 11-50 books.

Table 7. 21: *Children's books in English and performance*

	n	%	Mean(SE)	SD	Diff
Yes	2 673	75.00	435.70(5.32)	93.16	1,2: 46.59*
No	897	25.00	389.11(3.74)	77.40	

**Statistically significant at 5% level*

A majority of the parents (75%) had children's books in English and their children performed significantly better than those whose books were not in English.

Language of Communication at Home

Parents were asked to indicate the language in which they communicated with their children and their responses were then related to their children's performance, as shown in Tables 7.22 and 7.23

Table 7. 22: *Father's language of communication with child and performance*

	n	%	Mean(SE)	SD	Diff
English	383	19.05	483.70(10.66)	97.75	1,2:65.17*
Setswana	1 741	80.95	418.53(4.50)	88.73	

**Statistically significant at 5% level*

Table 7. 23: *Mother's language of communication with child and performance*

	n	%	Mean(SE)	SD	Diff
English	332	14.60	472.44(11.84)	100.22	1,2:52.32*
Setswana	2 018	85.40	420.12(4.61)	89.43	

**Statistically significant at 5% level*

The responses indicated that a majority of parents communicated with their children in Setswana, fathers constituting 81% and mothers 85%. About 19% of the fathers and 15% of mothers communicated with their children in English. Children whose parents communicated with them in English performed significantly better than those whose parents did so in Setswana.

Additional Information

The parents were asked to provide information on their educational background, their expectations of their children's education, employment status, and occupation. The responses were then related to students' performance. These were then displayed in Tables 7.24 and 7.25 below.

Table 7. 24: *Highest level of education of the father and the child's performance*

	n	%	Mean(SE)	SD	Diff
At most Junior Secondary Education	873	46.50	398.29(4.95)	79.88	1,2:-40.27*
Completed Senior Secondary Education	495	25.62	438.56(5.10)	87.76	1,3:-96.93*
Completed Tertiary Education	318	17.49	495.22(9.71)	88.31	1,4:-127.03*
First Degree and Beyond	183	10.39	525.32(12.65)	83.51	2,3:-56.66*
					2,4:-86.76*
					3,4:-13.10

**Statistically significant at 5% level*

The parents' responses in the category „Did not go to school“, „Some Primary“ or „Junior „Secondary Education“ and „Completed Junior Secondary Education“ were collapsed into „At most Junior education“, while „Completed Vocational/Technical Certificate“, „Completed Diploma“ were collapsed into „Completed Tertiary Education“, „Completed First Degree“, „Master's Degree or higher into First degree and beyond.

A majority of the fathers (47%) had at most a junior secondary school education, while 10% had first degree education and beyond. Children whose fathers' education level fell in the latter category performed significantly better than all those fathers were in the other groups. The exceptions were those children whose fathers had completed tertiary education, who were performing at the same level. The fathers' educational attainment was positively associated with students' performance.

A majority of the mothers (44%) had at most junior education, while 7% had a first degree and beyond. Children whose mothers reported that they had a first degree and beyond performed significantly better than those in other groups. The exceptions were those children whose mothers had completed tertiary education, who were performing at the same level. The mothers' educational attainment was also positively associated with student performance.

Table 7. 25: *Highest level of education of the mother and the child's performance*

	n	%	Mean(SE)	SD	Diff
At most Junior Education	1 019	43.66	387.36(4.44)	77.36	1,2:-43.61*
Completed Senior Secondary Education	817	34.26	430.97(4.46)	83.40	1,3:-124.11*
Completed Tertiary Education	350	15.48	511.47(6.18)	79.02	1,4:-146.99*
First Degree and Beyond	139	6.60	534.35(14.26)	81.64	2,3:-80.50*
					2,4:-103.38*
					3,4:-22.88

**Statistically significant at 5% level*

Expectations of Child's Education

The research team noted that children were the future leaders. Therefore each and every parent had an expectation of their children getting educated and becoming productive citizens in society. This partly translated to the children taking care of their parents as they got older. Table 7.26 showed the responses to questions about parental expectations of their children's education and student performance.

Table 7. 26: *Parental expectations of children's education and child's performance*

	n	%	Mean(SE)	SD	Diff
Finish Senior Secondary	519	14.45	377.13(4.03)	73.03	1,2:-18.96*
Finish Technical Certificate/Diploma	691	19.16	396.09(4.79)	80.27	1,3:-65.49*
Finished First Degree and beyond	2 316	66.40	442.62(5.61)	92.76	2,3:-46.53*

**Statistically significant at 5% level*

A majority of the parents (66%) indicated that they expected their children to finish first degree studies and beyond. Children whose parents expected them to finish their first degree and beyond performed significantly better than all those in the other groups. The results showed a positive correlation between the parents' expectations of their child's education and the child's performance.

Employment Status of the Child's Parents

Parents were asked to indicate their employment status and their responses were then related to their children's performance, as was shown in Tables 7.27 and 7.28 for fathers and mothers, respectively.

About 65% of the fathers were employed full time. Their children performed significantly better than those whose fathers were employed part-time or not working for pay. It was noted that fathers who were not working for pay might not have been able to cater for their children's educational needs, which might have negatively affected performance.

Table 7. 27: *Employment status of the father and the child's performance*

	n	%	Mean(SE)	SD	Diff
Full-time Work for Pay	1 289	65.01	459.47(6.52)	93.88	1,2:50.55* 1,3:73.20*
Working part-time for Pay	311	15.51	408.92(6.59)	86.46	1,4:15.00
Not working for Pay	227	11.71	386.27(7.73)	79.76	2,3:22.65* 2,4:-35.55*
Other	152	7.78	444.47(12.26)	95.98	3,4:-58.20*

**Statistically significant at 5% level*

Table 7. 28: *Employment status of the mother and the child's performance*

	n	%	Mean(SE)	SD	Diff
Full-time Work for Pay	1 090	47.85	466.58(6.24)	93.31	1,2:60.99*
Working Part-time for pay	500	21.48	405.59(5.40)	84.84	1,3:73.61*
Not Working for Pay	448	20.03	392.97(6.90)	82.17	1,4:27.75*
Other	240	10.64	438.83(8.75)	93.20	2,3:12.62 2,4:-33.24* 3,4:-45.86*

**Statistically significant at 5% level*

About 48% of the mothers were employed full time. Their children performed significantly better than those whose mothers were employed part- time or not working for pay. It was noted that such mothers might not have been able to cater for their children's educational needs, which might have negatively affected performance.

Parents' Employment

Parents were asked to indicate the type of job they were doing, and the results were then shown in Table 7.29.

Table 7. 29: *Parents' employment type*

	Father		Mother	
	n	%	n	%
Never Worked for Pay	174	11.06	369	19.25
Small Business Owner	164	9.48	309	15.20
Clerk	4	2.49	166	8.17
Service/Sales Worker	163	9.65	220	10.72
Skilled Agricultural/Fishery Work	148	8.20	102	4.76
Craft/Trade Worker	243	14.11	42	1.89
Plant/Machine Operator	140	7.97	19	0.94
General Labourer	193	11.40	414	20.58
Senior Official	133	8.07	86	4.44
professional	193	11.52	210	11.17
technical/associate professional	94	6.05	57	2.88

**Statistically significant at 5% level*

The parents' type of work varied from small business owner, plant operator to professional. About 21% of the mothers were general labourers, 15% small business owners, while 19% never worked, compared to the fathers' percentages of 11%, 9% and 11%, in that order. The category of professionals had almost the same scores for the two groups.

Summary

A number of variables were found to impact on students' performance: The study showed that 74% of parents engaged children in non-formal pre-school activities, such as numeracy and literacy activities. Such children performed better in the later years of their schooling careers. Children who had higher literacy and numeracy skills before schooling performed significantly better than those whose skills were low.

About 9% of the students started school when they were five years of age or younger, and they performed significantly better than the majority (48%) who started school at seven years old. Performance further declined for students who started school when they were eight years or older.

About forty five percent of the parents had children who had attended pre-school. Such children performed significantly better in reading than those who had not. Sending children to pre-school was viewed as a commitment on the part of the parents concerned because it did not come cheap.

Speaking English at home was positively associated with reading achievement, because children who did so performed significantly better than those who did not.

About 6% of the parents reported that their children were not given homework. This group of children had the lowest mean scores. By contrast, 21% of the children spent 31 to 60minutes on homework and had the highest mean scores. It was therefore concluded that giving children some homework should be encouraged as it allowed for further learning at home. This thinking was supported by 39% of the parents who reported that they helped their children in learning every day.

Recommendations

1. Pupils who attended pre-primary education and those who were taught informally at homes performed better than those who did not have formal pre-primary or informal one. MoESD should formalise pre-primary education in Botswana, and should be made free and compulsory. The initial cost of a project of such magnitude will be huge, but in the long run, the benefits will outweigh the capital investment. Pupils who attend pre-primary schools get accustomed to learning early, and make learning part of their culture.
2. Instruction in government schools is done in English from Standard 2 as such pupils who come to school already speaking English understand the language of instruction well and learn better and faster. Schools should have English speaking policies so that pupils get an opportunity to frequently speak in English for those who do not speak English at home.
3. Younger pupils were found to perform better than those who were older. Thus a policy on early age enrolment i.e. 5 years should be formulated so that pupils can start learning at an early age.
4. Although repetition is meant to give pupils a chance to prove themselves, it could also act against the intended objective. Remedial teaching could be better options to ensure that almost all, if not all, pupils attain promotion to another level.
5. Pupils who are given homework frequently perform higher than those who get less frequent homework. Since learning takes place anywhere anytime, schools should therefore give reasonable amount of homework almost every day (or most frequently). In

fact some pupils learn better at home than at school. The MoESD should come up with homework policy which will accommodate the participation of parents. Schools should also monitor pupils' homework.

Schools should provide relevant children's books in the library to complement what the parents provided at home thereby creating an enabling reading environment at school.

CHAPTER EIGHT

IMPACT OF READING ABILITY ON TIMSS MATHEMATICS AND SCIENCE ACHIEVEMENT

This chapter presents findings on the impact of reading on performance in mathematics and science. The unique opportunity of TIMSS and PIRLS coinciding in 2011 stimulated IEA to further investigate the reading demands in the Mathematics and Science items. This meant that there was availability of data on achievement scores for the same students who wrote Reading, Mathematics and Science. The investigation was carried out on countries which participated in both studies and the results are reported holistically per country.

The role that language plays in teaching, learning and assessment is of great interest internationally and in Botswana. The purpose of the study was to determine the extent to which reading ability influences performance in science and mathematics.

Hypotheses

The following were the hypotheses for the investigation:

1. Students with high reading ability would not be impacted by the level of reading demand in the items. That is, the best readers would score similarly on TIMSS items regardless of the degree of reading demands.
2. Students with lower reading ability would perform relatively better on items with less reading demand. That is, poorer readers would score better on the items with the lowest reading demands than on the items with the highest reading demands.

Based on the hypotheses it was expected that countries where students demonstrate high levels of reading comprehension could be expected to perform similarly on high, medium, and low TIMSS reading demand items, whereas countries with lower levels of reading comprehension might perform relatively better on the low-demand items and poorly on the high-demand items. Within each country, students with high reading achievement could be expected to perform relatively better on high reading demand items than those with lower reading achievement. A total of 35 countries which participated in TIMSS and PIRLS at same standard in APPENDIX B

Methodology

The study was conducted by relating reading ability to reading demands in the Mathematics and Science items.

The first step was to classify the Mathematics items into three categories, holistically according to their reading demand (high, medium and low). Similarly Science items were also separated

into three relatively equal categories. This was done by the staff of TIMSS and PIRLS International Study Center and validated by National Research Coordinators' meetings.

The reading demand level was determined by extent to which items had the following attributes:

- 1) The number of words in the item
- 2) The number of different symbols (e.g., numerals, operators)
- 3) The number of different specialised vocabulary terms
- 4) The number and complexity of visual displays (e.g., pictures, graphs, tables)

Countries which do not use English in testing also carried the same classification in their languages and it was found that the reading demands matching analysis were similar across languages.

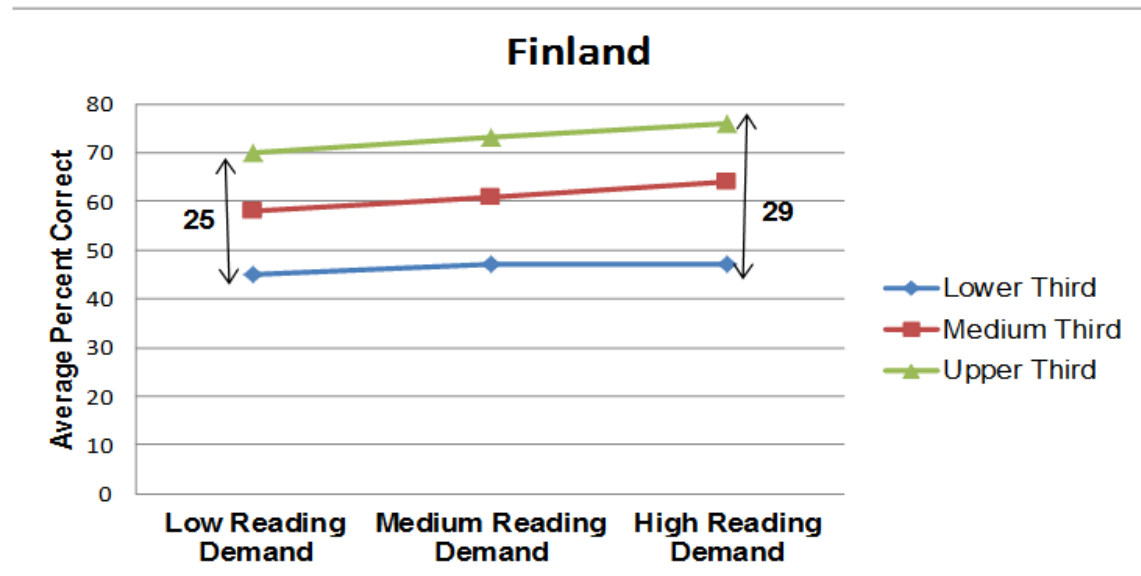
Secondly, the PIRLS scores were also categorised into three levels based on distribution terciles namely; the good readers, medium readers and low readers.

The relationship between the level of reading demand and reading achievement was examined by computing the average percent correct for the Mathematics and Science items in each of the three levels of reading demand (low, medium, and high) for students with three levels of reading achievement (upper tercile, medium tercile and lower tercile).

Results

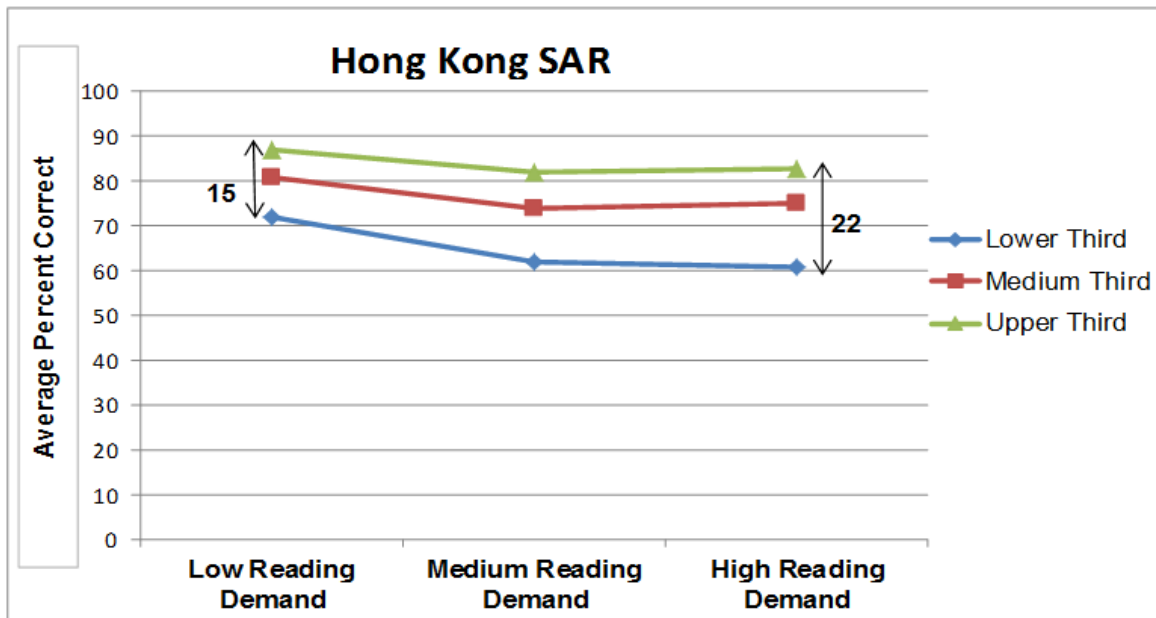
Figures 8.1 to 8.6 for (Mathematics) and in Figures 8.7 to 8.12 for (Science) present the results on the impact of reading on performance on Science and Mathematics items. For detailed results of each country refer to the IEA website

The following Figures, 8.1 to Figures 8.6 illustrate the gap between good and low readers in Mathematics for countries indicated. The gap between the low and good readers for low demanding items is narrower than the gap between the low and good readers for high demanding items. For example, in Figure. 8.1 the gap between the low readers and good readers in low demanding Mathematics is 25 whilst it is 29 for high demanding Mathematics items in Finland. Likewise for Botswana as shown in Figure 8.5 the gap between the low and good readers at low demanding items is 26 whereas it is 32 for high demanding items. For all the countries for Mathematics good readers always perform better than low readers.



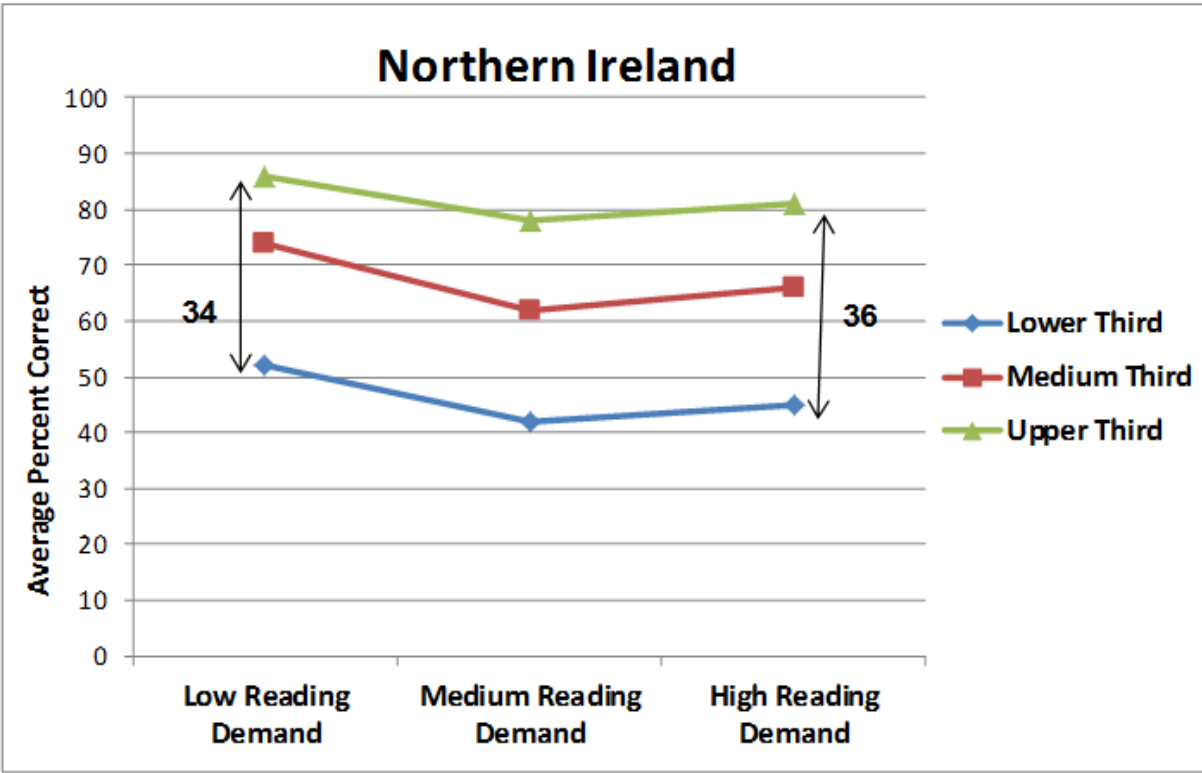
Finland	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	45	47	47
Medium Third	58	61	64
Upper Third	70	73	76

Figure 8. 1: Finland: Gap between good and low readers in Mathematics



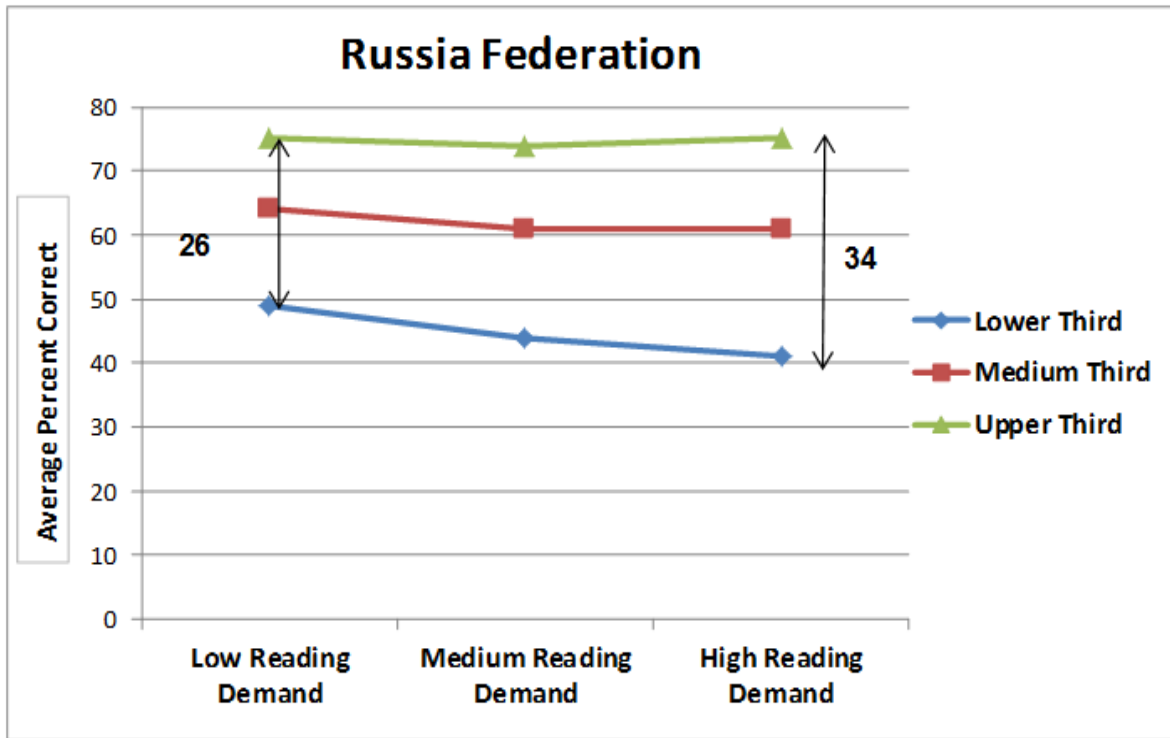
Hong Kong SAR	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	72	62	61
Medium Third	81	74	75
Upper Third	87	82	83

Figure 8. 2: Hong Kong SAR: Gap between good and low readers in Mathematics



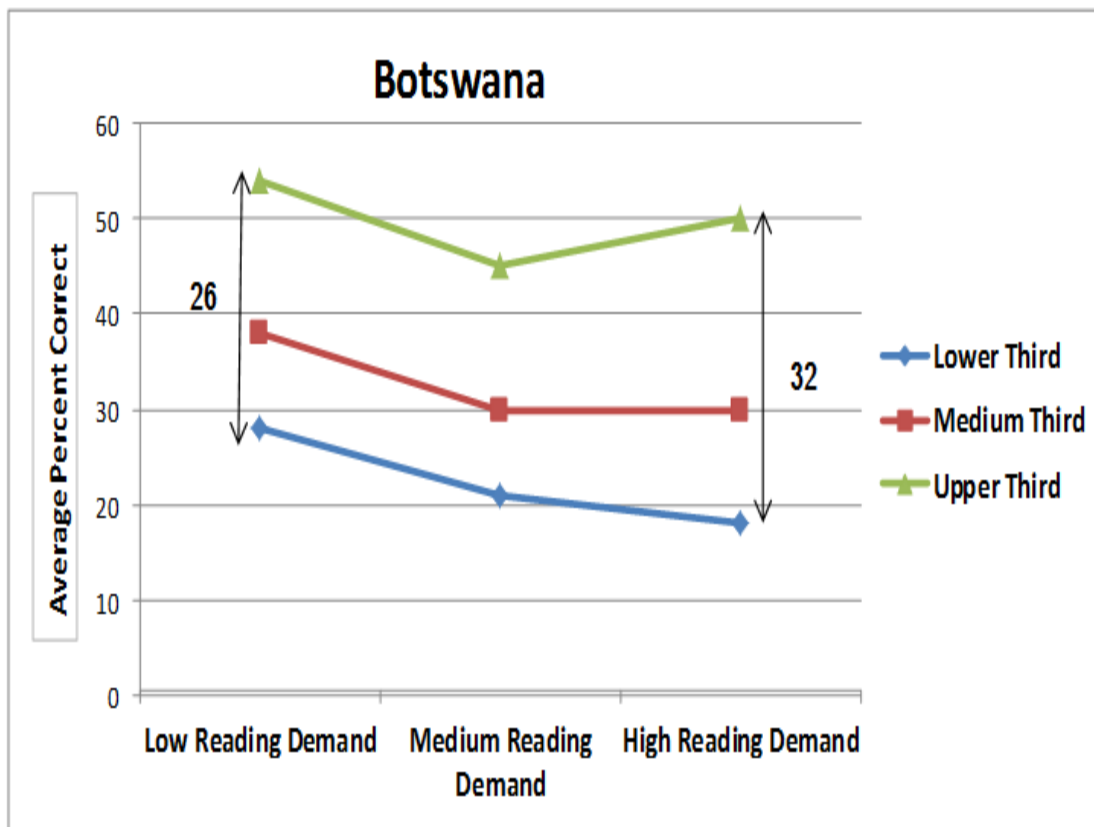
Northern Ireland	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	52	42	45
Medium Third	74	62	66
Upper Third	86	78	81

Figure 8. 3: Northern Ireland: Gap between good and low readers in Mathematics



Russia Federation	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	49	44	41
Medium Third	64	61	61
Upper Third	75	74	75

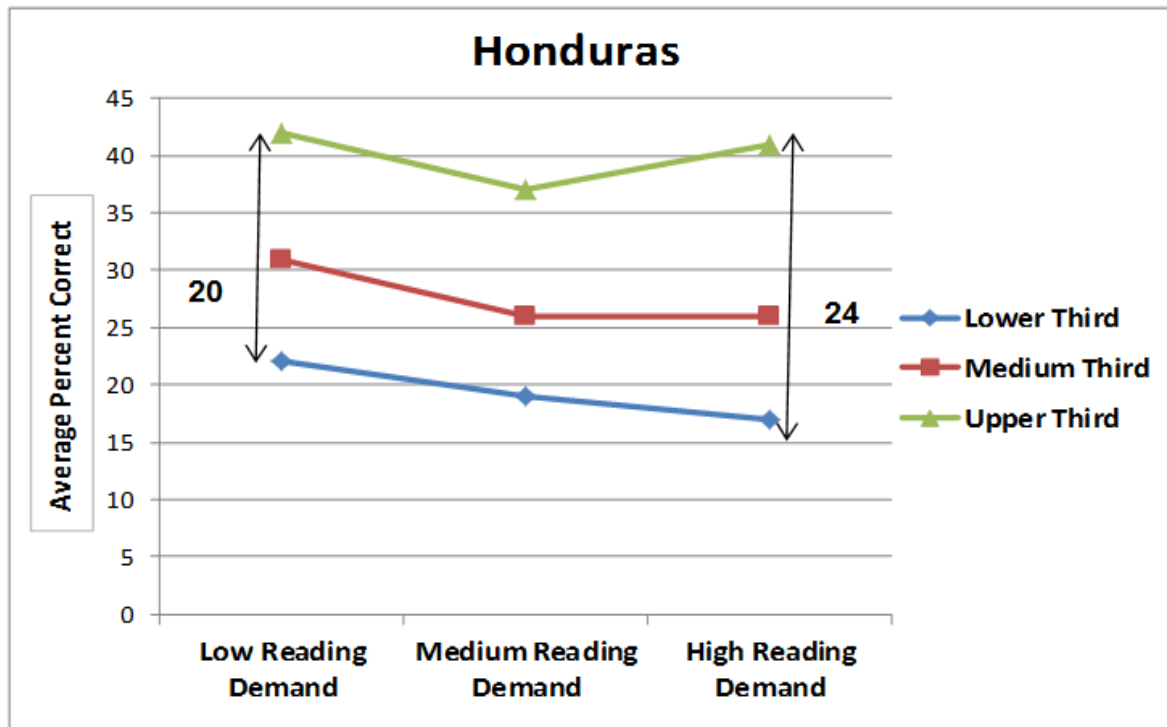
Figure 8. 4: Russia Federation: Gap between good and low readers in Mathematics



Botswana	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	28	21	18
Medium Third	38	30	30
Upper Third	54	45	50

Figure 8. 5: Botswana: Gap between good and low readers in Mathematics

Mathematics

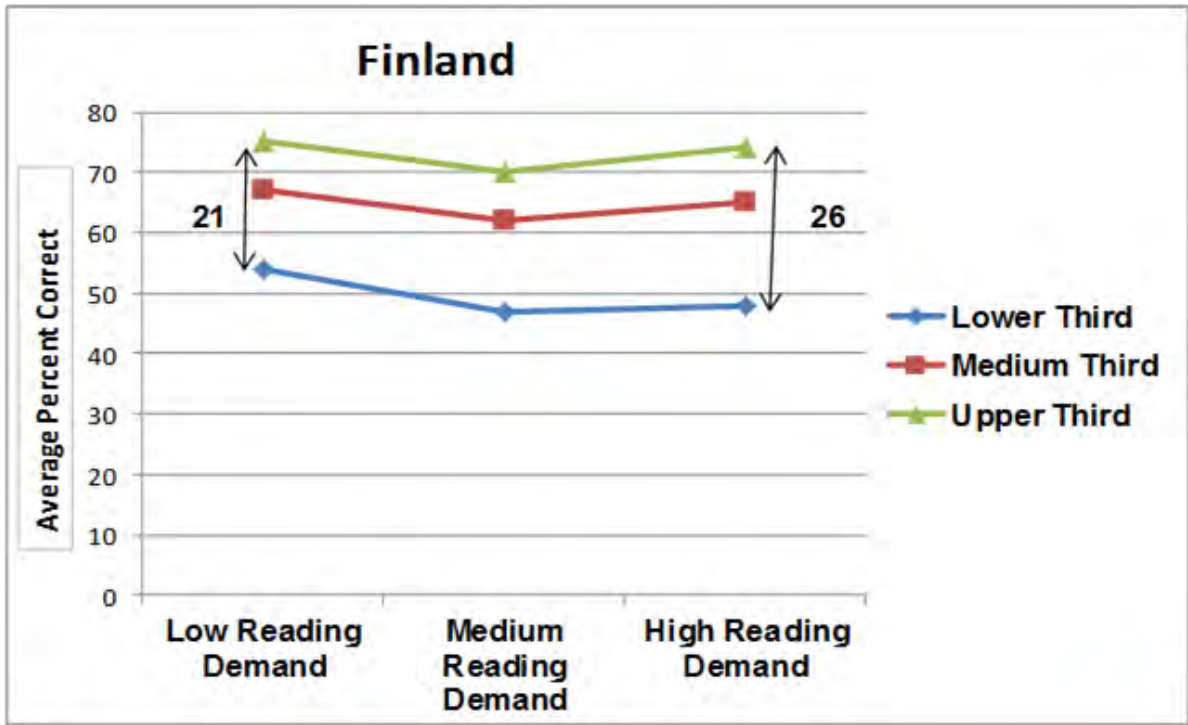


Honduras	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	22	19	17
Medium Third	31	26	26
Upper Third	42	37	41

Figure 8. 6: Honduras: Gap between good and low readers in Mathematics

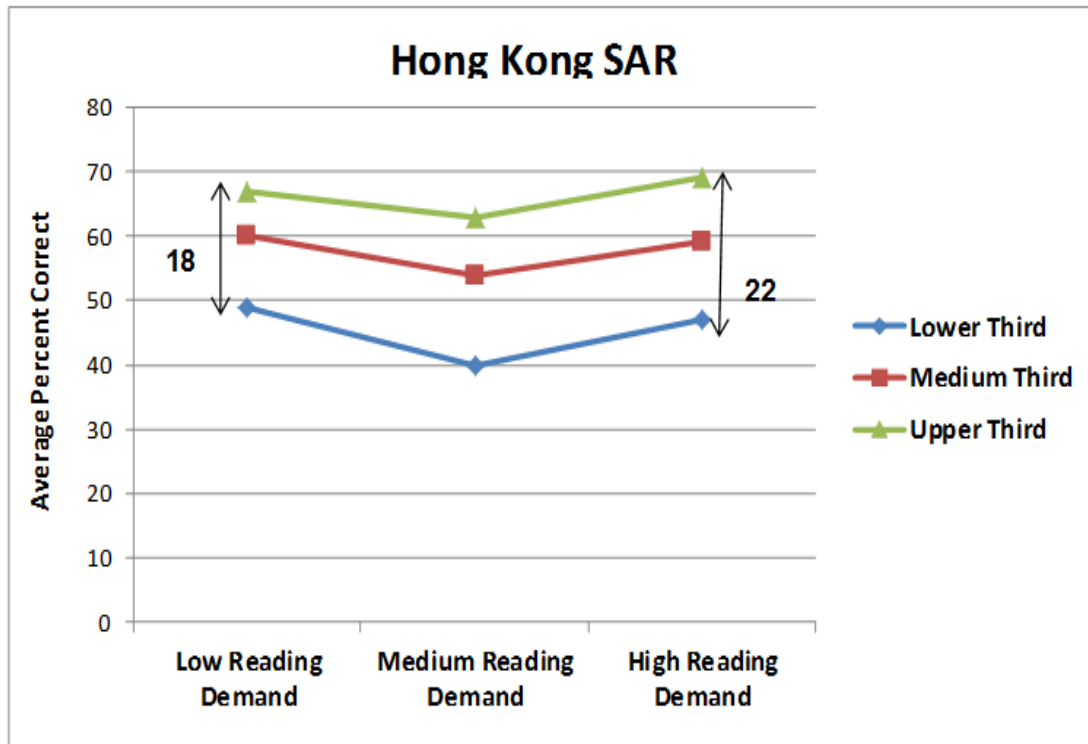
Science

Figure 8.7 to 8.12 illustrate the gap between good and low readers for Science for countries indicated. For Finland the, the gap between the low and good readers for low Reading demand items is 21 whilst it 26 at the high demanding items. For Botswana students the gap between the low and good readers for low reading demand items is 32. However, the gap between the low and good readers is 25 at the high reading demand level. The difference between the gaps produces a negative figure showing that even good readers are finding the high demanding Science items difficult.



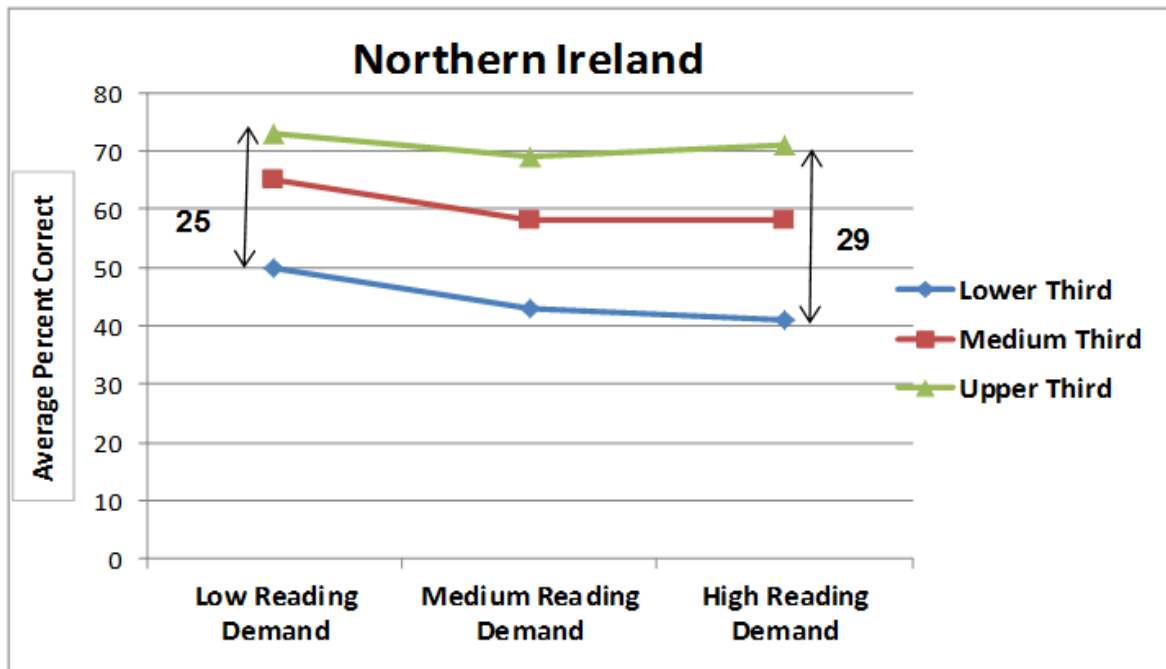
Finland	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	54	47	48
Medium Third	67	62	65
Upper Third	75	70	74

Figure 8. 7: Finland: Gap between good and low readers in Science



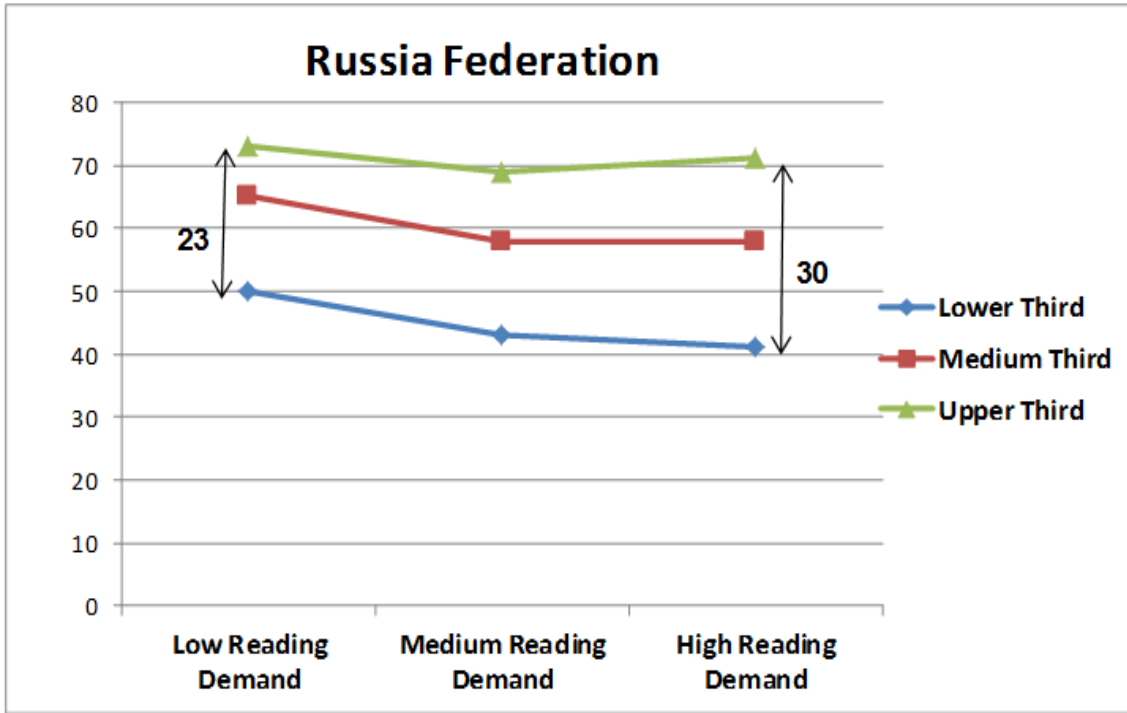
Hong Kong SAR	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	49	40	47
Medium Third	60	54	59
Upper Third	67	63	69

Figure 8. 8: Hong Kong SAR: Gap between good and low readers in Science



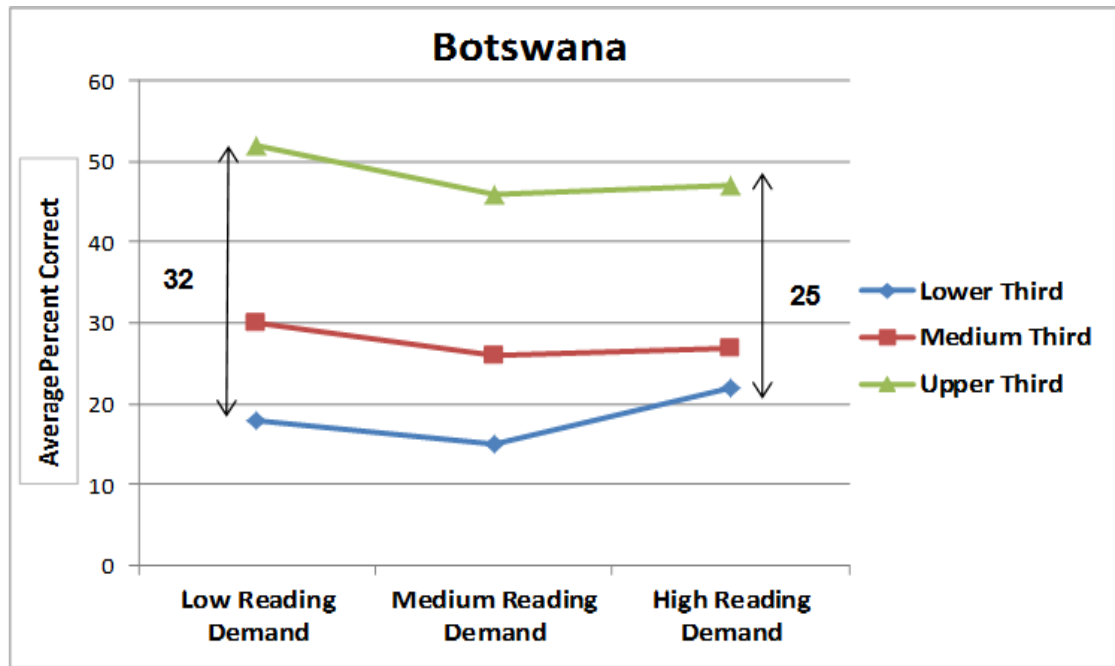
Northern Ireland	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	43	35	35
Medium Third	57	48	52
Upper Third	68	60	64

Figure 8. 9: Northern Ireland: Gap between good and low readers in Science



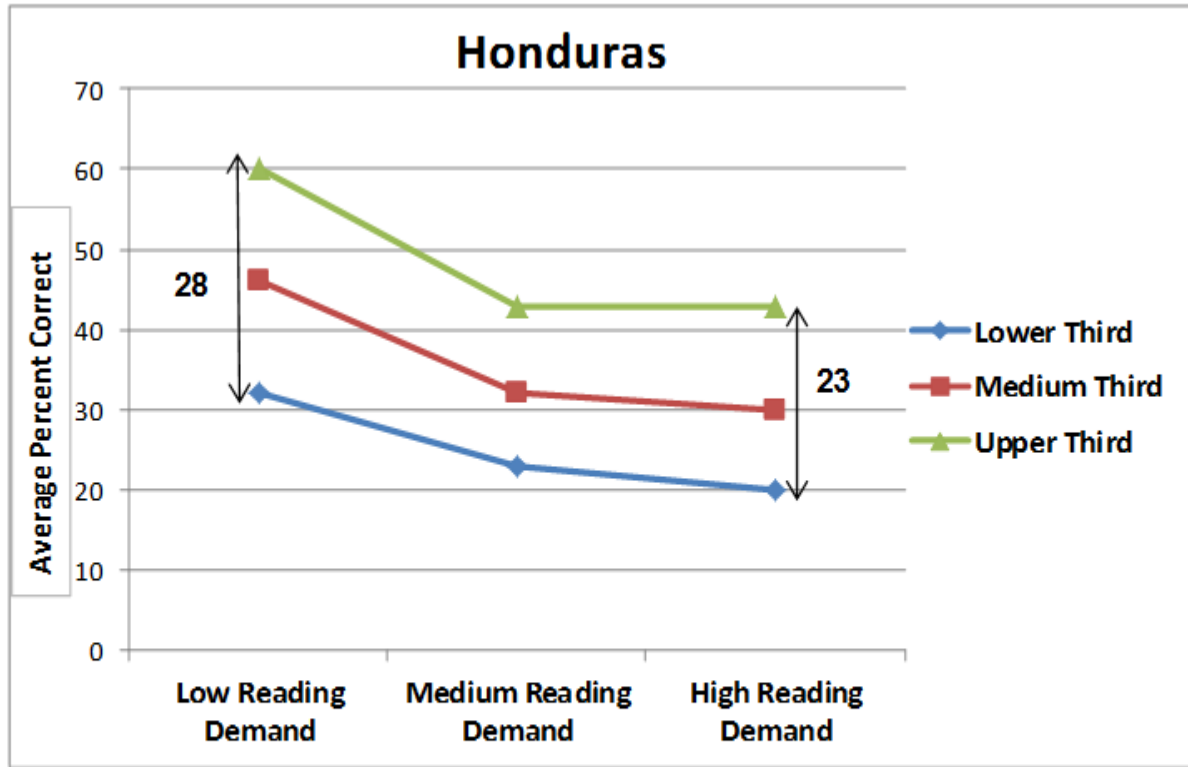
Russia Federation	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	50	43	41
Medium Third	65	58	58
Upper Third	73	69	71

Figure 8. 10: Russian Federation: Gap between good and low readers in Science



Botswana	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	18	15	22
Medium Third	30	26	27
Upper Third	52	46	47

Figure 8. 11: Botswana: Gap between good and low readers in Science



Honduras	Low Reading Demand	Medium Reading Demand	High Reading Demand
Lower Third	32	23	20
Medium Third	46	32	30
Upper Third	60	43	43

Figure 8. 12: Honduras: Gap between good and low readers in Science

Summary

Reading demands make the TIMSS items more challenging for weaker readers. The results varied considerably from country to country and even between Mathematics and Science within countries.

For Mathematics for all countries the difference between poor and good readers was larger on the high reading demands demand items than on the low reading demand items. For Science the difference in average achievement between poor and good readers was larger on the high reading demanding items than on low reading demand items in about two thirds of the countries which participated in the study.

It should be noted that there are a number of factors in addition to reading demands that contribute to item difficulty, such as the curriculum coverage of the topics and the complexity of the cognitive demands, and the impact of these factors can vary across countries.

CHAPTER NINE

SUMMARY

Although Botswana students participated in the PIRLS 2011 cycle at Standard 6 rather than at Standard 4, their overall performance was lower than the international average mark of 500. Comparing their performance in purposes of reading they performed higher in the acquisition of information than in literary purposes. Overall, girls performed better than boys in all the reading dimensions. However, only 44% of the students reached the low benchmark whereas 99% reached that level in Singapore.

Only the teachers' age and experience influenced performance in reading compared to other teachers' demographic variables. A majority of the students were taught by teachers who were had less than 20 years' experience. Students taught by older teachers with more experience performed better. Teachers' qualification impacted on performance with those taught by teachers with degrees performing higher than the rest. About 80% of the students had teachers who had a diploma. Only about 50% of the students had teachers who had English emphasised during their training and they performed higher than those whose teachers had other areas emphasised.

Higher levels of teacher job satisfaction and perceptions about ability to complete syllabuses positively influenced reading performance. More than half of the students had teachers who were satisfied with their jobs. Lack of parental involvement by parents adversely affected achievement for a majority of students. Overcrowding of classrooms, too many teaching hours and inadequate materials were the only teacher working conditions that affected performance in reading. About 38% and 54% of the students were affected by the two conditions respectively.

About 40%-60% of the student had attributes that affected learning achievement including lack of prerequisite knowledge, inadequate nutrition, sleep, interest, indiscipline, and with special needs. Amongst other class organizational settings individualized and organizing students by ability groups positively affected achievement in reading. The frequency with which teachers collaborated for many purposes in teaching was relatively high for 35%-40% of the students, although this did not have any influence on reading achievement. Summarising lessons, using questions and bringing interesting things to class more frequently was associated with higher performance for 70%-90% of the students.

About 50% to 57% of the students never had computers used for learning and those whose teachers used computers more frequently performed better. More than 80% of the students used class sets and the frequency with which students were made to read them was associated with higher performance.

Higher frequencies of the discussion and monitoring of completion of homework enhanced performance for 46% of the students. Only 7% of the students who had difficulties in reading were referred to a specialised professional, whilst 85% had their teachers spend more time with them individually.

About 48% of the students had teachers who rarely attended professional development activities and it was only when teachers read students' books for professional development when the performance of students was higher.

Students who attended schools with a majority of disadvantaged students performed lower than those whose schools had lower proportions of disadvantages students. Approximately 90% of the students were in schools where less than 25% were native speakers of English. Students whose native language was English performed higher than who did not. School location adversely affected the performance of only 26% of the students who were in remote areas.

The number of computers and the availability of libraries in the school were associated with real differences in the performance in reading among the students. About 74% were in school with less than 50 computers whilst about 50% were in schools with libraries. Performance was higher for students with a library in schools whilst computers did not have a discernible effect.

Students' problematic behaviours affected the performance of 39%-50% of the students with theft being the most prevalent. Various levels of misbehaviour with the exception of classroom disturbance affected performance.

About 45% of the students attended pre-school and they performed better than those who had not. A majority of the students were assigned at least half an hour to an hour of homework and their performance was higher compared to those who were assigned less time.

CHAPTER 10

RECOMMENDATIONS

Based on the findings of the study the following recommendations are proposed.

1. Overall Performance in reading by Botswana students

- 1.1. Botswana students were assessed at Standard 6 and at age levels higher compared to the international cohort. However, their performance was generally below the international average. The Department of Curriculum Development should consider alignment of the local curriculum with the international and current trends with regards to what students are expected to know and do at particular levels and ages. MoESD has to create an enabling environment for the implementation of this recommendation.
- 1.2. In order to raise proportions of Botswana students attaining higher levels of reading skills teaching of the purpose of literary experience in reading should be emphasised in pre and in-service teacher training. Classroom instruction should be monitored by teacher supervisors i.e. school heads, with the intension of ensuring that the purpose of literary experience is taught effectively.

2. Student Related Factors

2.1. Students' Gender and Performance

The decline in the performance of boys needs to be addressed. Government had initiatives to empower women and the girl child through the adoption of the Millennium Development Goals (MDGs) and the Revised National Policy on Education of 1994. However, there might be a need to revisit such policies in order to empower both boys and girls.

2.2. Bullying

Of serious concern is the finding that 90% of the students experienced some bullying at low to high frequencies. All forms of bullying should be identified. Policies and frameworks to deal with bullying should be developed by the stakeholders including PTA's, school management and students leadership structures.

2.3. Students' desire to learn

There was a higher proportion of students, at 77%, whose teachers stated that their desire to do well in school was medium to low. The performance of the students was lower than that of students with a higher level of the desire to do well. The importance of education and higher achievement at school has to be emphasised amongst students by the teachers and parents. Also, teacher education programmes need to emphasise techniques for the motivation of students. The guidance and counselling programmes in schools should be strengthened to address students' various needs.

2.4. Students' problematic behaviour

The performance of students was affected by problematic behaviour of students that included among others arriving late at school, absenteeism, physical fights, vandalism and intimidation and verbal abuse of students and teachers. Such behaviours should not be tolerated in schools. PTAs and school management must draw up policies and guidelines for dealing with misconduct in schools.

3. Pedagogical Factors

3.1. Teacher Qualification

About 81% and 17% of the students who were taught by teachers with at least a diploma or degree respectively, performed significantly higher than students whose teachers had at least secondary education. The international average for teachers with a diploma and degree is 15% and 53% respectively. The percentage of teachers with a degree in Botswana is far less than the international average whilst the percentage of teachers with diploma is much higher in Botswana. The MoESD should upgrade teachers to higher degree and higher qualification so that achievement in reading improves in Botswana.

3.2. Teacher Job Satisfaction

The proportion of students who were taught by teachers who perceived their job satisfaction to be high was at 41%, and the learners performed higher than the 55% whose teachers perceived their job satisfaction to be between medium and low. The teacher job satisfaction has to be sustained to raise it to higher levels for a great majority of teachers. The Ministry of Education and Skills Development should improve teachers' job satisfaction by continuously engaging teachers in consultative dialogue about their professional and welfare needs.

3.3. Instructional Approaches

3.3.1. Higher frequencies in summarising lessons and the use of questions during instruction influenced performance, with students whose teachers less frequently summarised lessons and rarely posed questions in class performing lower. More frequent use of the techniques should be emphasised in pre-service teacher education and professional development.

3.3.2. The results also indicated that the very high frequencies with which interesting reading materials were brought to the class was related to higher performance among learners compared to when teachers did that for half or for some of the lessons. Bringing interesting reading materials to the classroom everyday has to be emphasised in teacher education and teacher professional development programmes.

- 3.3.3. About 44% of the students were taught by teachers who indicated that students with disabilities limited how they taught their classes to some extent, compared to 32% whose teachers said limitation to their teaching by such students did not apply. Teacher education programmes must infuse techniques for the teaching of learners with special needs.
- 3.3.4. Students who were taught by teachers who used more frequent same ability groupings and individualised instruction performed higher than those whose teachers used less frequent activities in those groupings. More frequent same ability and individualised groupings should be used by teachers to improve performance in reading.
- 3.3.5. More frequent discussion and monitoring if homework was completed had an impact on performance in reading. Schools must develop policy on homework which will ensure that teachers increase the frequency of discussion and monitoring to improve reading. The policy should also accommodate the participation of parents.

3.4. Teacher Understanding of School curricular goals and implementation

About 25% and 39% of the students had teachers with medium to low understanding of the curricular goals and its implementation respectively. Their performance was lower than that of students whose teachers highly understood the curriculum goals and implementation. Understanding curriculum goals and its implementation should be addressed at pre-service and in-service training.

4. School Factors

4.1. Condition of Buildings and Working Space for teachers

Only 12% of the students were taught by teachers who indicated that the conditions of buildings in the school were not a problem and they needed no repair. The performance of the learners was higher than that of the 88% of learners whose teachers indicated that the conditions of the buildings ranged from being a minor to being a serious problem. In addition to the conditions of the buildings, the adequacy of workspace for teachers influenced performance, with the 28% of the students whose teachers stated that they had adequate space performing higher than those who said otherwise. MoESD should address conditions of buildings needing serious repair and provide adequate workspace for teachers.

4.2. Instructional materials

Only 9% of the learners were taught by teachers who indicated that the inadequacy of the instructional materials was not a problem. Their students performed higher than that of the 91% whose teachers stated that the inadequacy of the instructional materials ranged from being a minor to being a serious problem. To improve the reading skills, substantial investment has to be made by the MoESD towards the improvement of the adequacy of the instructional materials.

4.3. Provide schools with Libraries

Half of the students were in schools which did not have libraries and their performance was lower than that of students in schools with libraries. MoESD should provide libraries to those schools without libraries.

4.4. Computers for Instructional Purposes

The proportion of learners whose teachers used computers for instructional purposes was 10%, and those learners performed higher than those whose teachers did not use computers. Also, less than 10% of the students had teachers who felt comfortable with and were using computers for preparation and administration. Since instruction nowadays should prepare learners for the 21st century information age, there is a need to consider a major investment in teacher training, especially in the use of computers for instructional purposes. Examples of the benefits of this include Singapore, where a phased programme was used to implement the use of digital instruction, which resulted in huge benefits in learner achievement.

4.5. Pre-school should be formalised

About 45% of the students who attended pre-school performed higher than those who did not. Also those who had done pre-literacy and pre-numeracy activities before schooling performed well. MoESD should provide pre-school education in all primary schools in Botswana.

4.6. School Age Entry

About 9% of the students who entered primary school at age 5 or younger performed better than those who entered at 6 or older. REC 16 of the RNPE should be reformed to allow children in both private and public schools to enter school at age 5.

5. Parental Involvement

At least 89% of the students were taught by teachers who thought parental support and involvement was medium to low. The performance of those students was lower than that for the 11% whose teachers perceived parental involvement and support to be high. Programmes have to be designed and implemented by PTA's and school management to ensure that parents support and get involved in the education of their children.

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APPENDIX A

Exhibit 2.5: Intermediate International Benchmark – Example Item 2

Country	Percent Full Credit
² Singapore	87 (1.1) ⬆
Ireland	86 (1.4) ⬆
² Denmark	84 (1.2) ⬆
Sweden	84 (1.4) ⬆
² Canada	83 (1.0) ⬆
² United States	83 (0.9) ⬆
Chinese Taipei	82 (1.5) ⬆
[†] Northern Ireland	81 (1.8) ⬆
³ Hong Kong SAR	81 (1.4) ⬆
Portugal	80 (1.9) ⬆
New Zealand	79 (1.4) ⬆
¹ Georgia	79 (1.6) ⬆
Czech Republic	79 (2.2) ⬆
² Croatia	78 (1.5) ⬆
[†] Netherlands	78 (1.5) ⬆
Australia	77 (1.9) ⬆
Russian Federation	77 (1.7) ⬆
Poland	76 (1.6) ⬆
³ Israel	76 (1.5) ⬆
Germany	75 (1.6) ⬆
Finland	75 (1.9) ⬆
Italy	74 (1.7) ⬆
Slovak Republic	74 (1.6) ⬆
Slovenia	74 (1.9) ⬆
[†] England	73 (1.8) ⬆
France	72 (1.6) ⬆
² Azerbaijan	71 (2.0) ⬆
Hungary	71 (1.9) ⬆
International Avg.	70 (0.3)
Austria	69 (1.7) ⬆
² [†] Belgium (French)	68 (1.9) ⬆
Spain	68 (1.6) ⬆
¹ ² Lithuania	65 (2.0) ⬇
Bulgaria	64 (2.3) ⬇
Romania	63 (2.2) ⬇
[†] Norway	63 (2.4) ⬇
Trinidad and Tobago	62 (2.4) ⬇
Malta	59 (1.8) ⬇
Colombia	59 (2.4) ⬇
Saudi Arabia	56 (2.2) ⬇
² Qatar	52 (1.9) ⬇
Iran, Islamic Rep. of	52 (1.9) ⬇
United Arab Emirates	51 (1.3) ⬇
Indonesia	45 (2.0) ⬇
Oman	43 (1.5) ⬇
Morocco	42 (1.5) ⬇

Purpose: Literary Experience

Process: Make Straightforward Inferences

Description: Make a straightforward inference about a character's reaction to a situation

2. At the beginning of the story, why did Tom think Jeremy was his enemy?

① He thought Jeremy was his enemy because Jeremy had a party and Tom wasn't invited, but his best friend was

The answer shown illustrates the type of student response that was given 1 of 1 points.

Country	Percent Full Credit
Sixth Grade Participants	
Morocco	74 (1.8)
Honduras	52 (3.0) ⬇
¹ [†] Kuwait	51 (2.3) ⬇
Botswana	29 (2.1) ⬇

Country	Percent Full Credit
Benchmarking Participants[⊖]	
¹ ³ Florida, US	87 (1.5) ⬆
² Ontario, Canada	83 (1.7) ⬆
² Alberta, Canada	82 (1.7) ⬆
Quebec, Canada	81 (1.9) ⬆
Andalusia, Spain	70 (2.0)
Dubai, UAE	60 (1.5) ⬇
Abu Dhabi, UAE	47 (2.4) ⬇
Eng/Afr (5) - RSA	43 (2.7) ⬇
Maltese - Malta	41 (1.7) ⬇

[⊖] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEAs Progress in International Reading Literacy Study – PIRLS 2011

Country	Percent Correct
Chinese Taipei	92 (1.1) ⬆
Russian Federation	91 (0.9) ⬆
† Netherlands	91 (1.0) ⬆
³ Hong Kong SAR	91 (1.0) ⬆
² Croatia	90 (1.2) ⬆
² Denmark	90 (1.2) ⬆
Finland	89 (1.2) ⬆
² United States	87 (0.7) ⬆
Germany	87 (1.4) ⬆
² Singapore	86 (1.1) ⬆
Portugal	85 (1.6) ⬆
† England	84 (1.7) ⬆
† Northern Ireland	84 (1.7) ⬆
Australia	84 (1.6) ⬆
^{1 2} Lithuania	83 (1.4) ⬆
Ireland	83 (1.5) ⬆
Sweden	83 (1.9) ⬆
Iran, Islamic Rep. of	83 (1.4) ⬆
² Canada	82 (0.8) ⬆
Bulgaria	81 (1.6) ⬆
Austria	80 (1.4) ⬆
New Zealand	80 (1.6) ⬆
³ Israel	80 (1.5) ⬆
International Avg.	76 (0.3)
Slovak Republic	76 (1.9)
Poland	76 (1.5)
Spain	75 (1.8)
Italy	75 (1.8)
^{2 †} Belgium (French)	75 (2.1)
France	73 (1.9)
¹ Georgia	73 (2.3)
² Azerbaijan	72 (2.5)
Malta	71 (1.8) ⬇
Czech Republic	71 (2.2) ⬇
‡ Norway	71 (2.3) ⬇
Romania	69 (2.0) ⬇
Slovenia	69 (2.2) ⬇
Hungary	68 (1.9) ⬇
Trinidad and Tobago	64 (2.1) ⬇
Indonesia	60 (2.1) ⬇
United Arab Emirates	58 (1.3) ⬇
² Qatar	58 (3.2) ⬇
Colombia	57 (2.0) ⬇
Oman	49 (1.5) ⬇
Saudi Arabia	48 (2.4) ⬇
Morocco	47 (1.9) ⬇

Purpose: Acquire and Use Information

Process: Make Straightforward Inferences

Description: Recognize the main message of a brochure

1. What is the **main** message the leaflet gave you about hiking?

A It is expensive and dangerous.

B It is the best way to see animals.

C It is healthy and fun.

D It is only for experts.

Country	Percent Correct
Sixth Grade Participants	
Morocco	63 (1.5) ⬇
^{1 †} Kuwait	59 (2.7) ⬇
Honduras	55 (2.8) ⬇
Botswana	52 (2.0) ⬇

Country	Percent Correct
Benchmarking Participants^o	
^{1 3} Florida, US	89 (1.4) ⬆
² Alberta, Canada	83 (1.9) ⬆
² Ontario, Canada	82 (1.4) ⬆
Quebec, Canada	79 (1.8)
Maltese - Malta	78 (1.4)
Andalusia, Spain	75 (1.5)
Dubai, UAE	67 (1.6) ⬇
Abu Dhabi, UAE	56 (2.3) ⬇
Eng/Afr (5) - RSA	54 (3.2) ⬇

^o Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 2.7: High International Benchmark – Example Item 4

Country	Percent Full Credit
Russian Federation	75 (1.8) ⬆
³ Hong Kong SAR	73 (1.6) ⬆
Finland	71 (1.9) ⬆
Chinese Taipei	69 (1.7) ⬆
Germany	64 (1.8) ⬆
² United States	63 (1.2) ⬆
Sweden	63 (1.9) ⬆
Italy	62 (2.0) ⬆
[†] Northern Ireland	62 (2.4) ⬆
Hungary	62 (1.8) ⬆
Poland	62 (1.9) ⬆
² Croatia	61 (1.7) ⬆
² Canada	61 (1.4) ⬆
Ireland	61 (2.1) ⬆
² Denmark	60 (1.8) ⬆
[†] Netherlands	59 (1.6) ⬆
[†] England	59 (1.8) ⬆
Portugal	58 (2.1) ⬆
³ Israel	58 (1.9) ⬆
Bulgaria	57 (2.3) ⬆
Slovak Republic	57 (2.0) ⬆
² Singapore	57 (1.6) ⬆
Slovenia	56 (2.0) ⬆
New Zealand	56 (1.8) ⬆
Czech Republic	56 (2.5) ⬆
Spain	55 (2.0) ⬆
Australia	53 (2.1)
Romania	52 (2.5)
¹ Georgia	50 (2.0)
International Avg.	50 (0.3)
Austria	49 (2.0)
^{1 2} Lithuania	47 (2.2)
France	46 (2.4)
^{2 †} Belgium (French)	46 (2.1)
Iran, Islamic Rep. of	45 (1.6) ⬇
[‡] Norway	43 (2.0) ⬇
² Azerbaijan	36 (2.4) ⬇
Trinidad and Tobago	31 (2.1) ⬇
Malta	29 (1.6) ⬇
² Qatar	25 (1.7) ⬇
Colombia	25 (2.2) ⬇
United Arab Emirates	22 (1.0) ⬇
Saudi Arabia	15 (2.2) ⬇
Indonesia	12 (1.3) ⬇
Oman	10 (0.8) ⬇
Morocco	4 (0.6) ⬇

Purpose: Literary Experience
Process: Interpret and Integrate Ideas and Information
Description: Integrate evidence to show understanding of a character's intention

14. Use what you have read to explain why Tom's dad really made Enemy Pie.

A handwritten student response in black ink on lined paper. The text reads: "To make them spend the day with each other to become friends". The response is written in a cursive-like style and is underlined. A small circle with the number '1' is written to the left of the first line.

The answer shown illustrates the type of student response that was given 1 of 1 points.

Country	Percent Full Credit
Sixth Grade Participants	
Honduras	27 (2.3) ⬇
^{1 ‡} Kuwait	20 (1.7) ⬇
Morocco	19 (1.4) ⬇
Botswana	16 (1.7) ⬇

Country	Percent Full Credit
Benchmarking Participants[⊖]	
^{1 3} Florida, US	67 (2.3) ⬆
² Alberta, Canada	66 (2.1) ⬆
² Ontario, Canada	62 (2.4) ⬆
Andalusia, Spain	52 (2.0)
Quebec, Canada	51 (2.0)
Dubai, UAE	33 (2.1) ⬇
Maltese - Malta	28 (1.7) ⬇
Eng/Afr (5) - RSA	28 (2.6) ⬇
Abu Dhabi, UAE	18 (1.9) ⬇

[⊖] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Country	Percent Correct	
Russian Federation	79 (2.3)	⬤
Portugal	77 (2.0)	⬤
Finland	74 (1.8)	⬤
² United States	73 (1.1)	⬤
Ireland	72 (2.1)	⬤
[†] Northern Ireland	72 (1.8)	⬤
Sweden	71 (2.1)	⬤
³ Hong Kong SAR	68 (2.0)	⬤
Italy	68 (1.8)	⬤
^{1 2} Lithuania	67 (2.1)	⬤
Hungary	66 (2.0)	⬤
[†] England	66 (2.2)	⬤
Slovak Republic	66 (1.8)	⬤
³ Israel	65 (2.0)	⬤
Bulgaria	65 (2.4)	⬤
Romania	65 (2.2)	⬤
Czech Republic	65 (2.1)	⬤
² Denmark	65 (1.7)	⬤
² Singapore	64 (1.7)	⬤
Poland	63 (1.8)	⬤
[†] Netherlands	63 (1.8)	⬤
² Canada	63 (1.2)	⬤
² Azerbaijan	62 (2.2)	⬤
Australia	62 (1.7)	⬤
Slovenia	62 (2.1)	⬤
New Zealand	60 (1.8)	⬤
² Croatia	58 (1.8)	⬤
¹ Georgia	58 (2.3)	⬤
Spain	57 (1.7)	⬤
International Avg.	57 (0.3)	
Germany	55 (1.8)	⬤
France	54 (1.7)	⬤
Austria	53 (1.9)	⬇
Malta	53 (2.2)	⬇
^{2 †} Belgium (French)	51 (2.7)	⬇
Trinidad and Tobago	51 (2.1)	⬇
United Arab Emirates	44 (1.4)	⬇
Chinese Taipei	44 (1.9)	⬇
Colombia	37 (2.4)	⬇
Indonesia	34 (2.6)	⬇
² Qatar	34 (2.0)	⬇
[‡] Norway	33 (3.0)	⬇
Iran, Islamic Rep. of	29 (1.5)	⬇
Saudi Arabia	25 (1.7)	⬇
Morocco	23 (1.5)	⬇
Oman	23 (1.1)	⬇

Purpose: Literary Experience
Process: Examine and Evaluate Content, Language, and Textual Elements
Description: Evaluate the significance of an event

11. Why was the rising sun important to the story?

A It awakened the eagle's instinct to fly.

B It reigned in the heavens.

C It warmed the eagle's feathers.

D It provided light on the mountain paths.

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Country	Percent Correct
Sixth Grade Participants	
Honduras	43 (2.4) ⬇
^{1 †} Kuwait	37 (1.6) ⬇
Botswana	37 (1.8) ⬇
Morocco	29 (2.1) ⬇

Country	Percent Correct
Benchmarking Participants[⊖]	
^{1 3} Florida, US	78 (2.2) ⬤
² Alberta, Canada	70 (1.9) ⬤
² Ontario, Canada	65 (2.4) ⬤
Andalusia, Spain	57 (2.1) ⬤
Quebec, Canada	56 (1.9) ⬤
Dubai, UAE	51 (1.6) ⬇
Maltese - Malta	48 (1.9) ⬇
Abu Dhabi, UAE	43 (2.5) ⬇
Eng/Afr (S) - RSA	41 (2.4) ⬇

[⊖] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬤ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 2.9: High International Benchmark – Example Item 6

Country	Percent At Least 1 Point
² Denmark	86 (1.1) ⬆
² United States	83 (0.9) ⬆
[†] England	83 (1.6) ⬆
[†] Northern Ireland	82 (1.6) ⬆
[†] Netherlands	81 (1.7) ⬆
Portugal	79 (1.8) ⬆
³ Hong Kong SAR	78 (2.0) ⬆
² Canada	75 (1.4) ⬆
Chinese Taipei	74 (1.5) ⬆
Ireland	73 (2.0) ⬆
New Zealand	73 (1.4) ⬆
[‡] Norway	72 (2.2) ⬆
Russian Federation	71 (1.9) ⬆
Czech Republic	71 (2.0) ⬆
² Singapore	70 (1.7) ⬆
³ Israel	70 (1.9) ⬆
Germany	69 (1.7) ⬆
Sweden	68 (2.1) ⬆
Finland	66 (1.9) ⬆
Slovak Republic	66 (1.7) ⬆
^{1 2} Lithuania	64 (2.2) ⬆
Poland	64 (2.1) ⬆
Italy	63 (2.0) ⬆
Australia	62 (2.0) ⬆
Slovenia	62 (2.2) ⬆
Hungary	62 (1.6) ⬆
France	61 (1.9) ⬆
International Avg.	59 (0.3)
Spain	59 (1.6) ⬆
Malta	58 (2.1) ⬆
Austria	54 (1.8) ⬇
Bulgaria	52 (2.5) ⬇
^{2 †} Belgium (French)	51 (2.4) ⬇
Trinidad and Tobago	49 (2.4) ⬇
² Croatia	49 (1.6) ⬇
Romania	47 (2.6) ⬇
¹ Georgia	43 (2.2) ⬇
United Arab Emirates	43 (1.3) ⬇
Saudi Arabia	43 (2.6) ⬇
² Qatar	41 (1.8) ⬇
Indonesia	33 (2.1) ⬇
Oman	32 (1.6) ⬇
² Azerbaijan	30 (2.3) ⬇
Colombia	27 (2.2) ⬇
Iran, Islamic Rep. of	17 (1.3) ⬇
Morocco	14 (1.2) ⬇

Purpose: Acquire and Use Information
Process: Examine and Evaluate Content, Language, and Textual Elements
Description: Examine a specified table of information and show understanding of 1 (of 2) use of the information

11. What are **two** things you can learn by studying the map key?

① 1. frog creek is 3 hours long

① 2.

The answer shown illustrates the type of student response that was given 1 of 2 points.

Country	Percent At Least 1 Point
Sixth Grade Participants	
Botswana	49 (1.9) ⬇
^{1 †} Kuwait	43 (2.7) ⬇
Honduras	39 (2.5) ⬇
Morocco	34 (2.0) ⬇

Country	Percent At Least 1 Point
Benchmarking Participants^o	
^{1 3} Florida, US	87 (1.6) ⬆
² Ontario, Canada	81 (1.7) ⬆
² Alberta, Canada	79 (2.0) ⬆
Andalusia, Spain	62 (1.9) ⬆
Quebec, Canada	59 (2.5) ⬆
Dubai, UAE	48 (2.1) ⬇
Abu Dhabi, UAE	42 (2.1) ⬇
Maltese - Malta	23 (1.5) ⬇
Eng/Afr (5) - RSA	--

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
 A dash (–) indicates comparable data not available.

^o Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

Country	Percent Correct	
³ Hong Kong SAR	80 (1.7)	⬤
Chinese Taipei	79 (1.6)	⬤
² Singapore	75 (1.5)	⬤
Italy	74 (1.4)	⬤
Finland	73 (1.8)	⬤
Russian Federation	72 (1.4)	⬤
Sweden	69 (1.9)	⬤
Portugal	67 (2.0)	⬤
Czech Republic	66 (2.2)	⬤
Ireland	66 (2.3)	⬤
Slovenia	65 (2.1)	⬤
† England	64 (2.1)	⬤
† Northern Ireland	64 (2.3)	⬤
^{1 2} Lithuania	64 (1.9)	⬤
³ Israel	63 (1.9)	⬤
Slovak Republic	63 (1.8)	⬤
France	63 (1.6)	⬤
² Croatia	63 (1.7)	⬤
Hungary	62 (1.5)	⬤
Spain	61 (2.0)	⬤
Germany	61 (1.9)	⬤
² United States	61 (1.2)	⬤
Austria	61 (2.0)	⬤
² † Belgium (French)	60 (2.1)	⬤
² Canada	60 (1.4)	⬤
Bulgaria	58 (1.9)	⬤
² Denmark	58 (2.0)	⬤
International Avg.	58 (0.3)	
Romania	56 (2.3)	⬤
Australia	55 (1.9)	⬤
† Netherlands	55 (2.0)	⬤
² Azerbaijan	54 (2.7)	⬤
‡ Norway	52 (2.5)	⬥
New Zealand	52 (1.6)	⬥
Malta	52 (1.8)	⬥
Poland	51 (1.8)	⬥
¹ Georgia	51 (2.1)	⬥
Trinidad and Tobago	47 (1.8)	⬥
Iran, Islamic Rep. of	46 (1.8)	⬥
United Arab Emirates	46 (1.2)	⬥
² Qatar	43 (2.4)	⬥
Saudi Arabia	42 (2.4)	⬥
Colombia	36 (2.4)	⬥
Indonesia	35 (2.1)	⬥
Oman	31 (1.6)	⬥
Morocco	26 (1.5)	⬥

Purpose: Acquire and Use Information

Process: Make Straightforward Inferences

Description: Infer a scientist's purpose from a series of statements

9. Why did Gideon Mantell take the tooth to a museum?

(A) to ask if the fossil belonged to the museum

(B) to prove that he was a fossil expert

(C) to hear what scientists thought of his idea

(D) to compare the tooth with others in the museum

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Country	Percent Correct	
Sixth Grade Participants		
Botswana	51 (1.8)	⬥
¹ ‡ Kuwait	43 (2.5)	⬥
Honduras	43 (2.6)	⬥
Morocco	38 (1.6)	⬥

Country	Percent Correct	
Benchmarking Participants[⊖]		
^{1 3} Florida, US	64 (2.5)	⬤
Andalusia, Spain	64 (2.0)	⬤
Quebec, Canada	63 (2.1)	⬤
² Ontario, Canada	59 (2.4)	⬤
² Alberta, Canada	54 (2.1)	⬤
Dubai, UAE	54 (2.0)	⬥
Abu Dhabi, UAE	43 (2.0)	⬥
Eng/Afr (5) - RSA	41 (2.3)	⬥
Maltese - Malta	41 (1.9)	⬥

[⊖] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬤ Percent significantly higher than international average
- ⬥ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 2.11: Advanced International Benchmark – Example Item 8

Country	Percent Full Credit
³ Hong Kong SAR	59 (2.2) ⬆
Chinese Taipei	55 (2.2) ⬆
³ Israel	50 (2.2) ⬆
Russian Federation	50 (2.7) ⬆
² Singapore	48 (1.9) ⬆
Ireland	46 (2.1) ⬆
² Croatia	45 (1.8) ⬆
Italy	45 (2.4) ⬆
† England	44 (1.9) ⬆
Austria	44 (2.1) ⬆
† Northern Ireland	43 (2.3) ⬆
Czech Republic	42 (2.2) ⬆
² United States	42 (1.2) ⬆
Slovak Republic	41 (1.9) ⬆
Sweden	40 (2.1) ⬆
Bulgaria	39 (2.2) ⬆
Portugal	38 (2.1) ⬆
² Canada	38 (1.4) ⬆
^{1 2} Lithuania	38 (1.9) ⬆
Finland	38 (2.0) ⬆
² Denmark	37 (1.6) ⬆
Hungary	35 (1.9) ⬆
International Avg.	29 (0.3)
Poland	28 (1.8) ⬇
Australia	25 (1.8) ⬇
Romania	25 (2.0) ⬇
¹ Georgia	24 (1.7) ⬇
New Zealand	23 (1.6) ⬇
Spain	21 (1.5) ⬇
† Netherlands	20 (1.5) ⬇
Colombia	19 (1.7) ⬇
^{2 †} Belgium (French)	19 (1.6) ⬇
Malta	18 (1.1) ⬇
Iran, Islamic Rep. of	18 (1.2) ⬇
Trinidad and Tobago	18 (1.4) ⬇
France	17 (1.0) ⬇
‡ Norway	15 (1.5) ⬇
Germany	14 (1.2) ⬇
United Arab Emirates	14 (0.8) ⬇
Slovenia	13 (1.5) ⬇
² Qatar	12 (1.5) ⬇
Oman	7 (0.9) ⬇
² Azerbaijan	7 (1.5) ⬇
Saudi Arabia	4 (0.8) ⬇
Indonesia	3 (0.6) ⬇
Morocco	1 (0.3) ⬇

Purpose: Literary Experience
Process: Interpret and Integrate Ideas and Information
Description: Interpret a character's actions to provide a description of a character trait with a supporting example

12. You learn what the farmer's friend was like from the things he did.
 Describe what the friend was like and give an example of what he did that shows this.

the friend was stubborn because he came back and tested the eagle again

The answer shown illustrates the type of student response that was given 2 of 2 points.

Country	Percent Full Credit
Sixth Grade Participants	
Honduras	13 (1.7) ⬇
^{1 ‡} Kuwait	11 (1.4) ⬇
Morocco	8 (1.0) ⬇
Botswana	7 (1.2) ⬇

Country	Percent Full Credit
Benchmarking Participants[⊖]	
² Ontario, Canada	47 (2.3) ⬆
^{1 3} Florida, US	42 (1.7) ⬆
² Alberta, Canada	34 (2.1) ⬆
Quebec, Canada	31 (1.8)
Andalusia, Spain	30 (2.1)
Dubai, UAE	20 (1.4) ⬇
Maltese - Malta	17 (1.2) ⬇
Abu Dhabi, UAE	12 (1.5) ⬇
Eng/Afr (5) - RSA	11 (1.5) ⬇

[⊖] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Country	Percent Full Credit
³ Hong Kong SAR	62 (2.3) ⬆
² Singapore	57 (1.7) ⬆
Chinese Taipei	53 (1.8) ⬆
Finland	48 (1.9) ⬆
Russian Federation	47 (2.1) ⬆
† England	46 (2.2) ⬆
Sweden	44 (2.4) ⬆
† Northern Ireland	44 (2.6) ⬆
² Denmark	44 (1.8) ⬆
² United States	44 (1.3) ⬆
Ireland	44 (2.2) ⬆
² Croatia	42 (1.7) ⬆
Portugal	42 (2.2) ⬆
² Canada	42 (1.4) ⬆
† Netherlands	42 (2.1) ⬆
Hungary	41 (1.8) ⬆
New Zealand	40 (1.6) ⬆
Italy	40 (1.9) ⬆
Australia	40 (2.0) ⬆
Czech Republic	39 (2.1) ⬆
Germany	38 (1.7) ⬆
Bulgaria	37 (2.2) ⬆
³ Israel	36 (2.1)
Slovenia	33 (1.8)
^{1 2} Lithuania	32 (1.8)
International Avg.	32 (0.3)
Austria	31 (2.0)
France	31 (1.8)
Slovak Republic	30 (1.7)
² † Belgium (French)	29 (2.8)
Romania	27 (2.1) ⬇
Poland	26 (1.8) ⬇
Spain	26 (1.6) ⬇
‡ Norway	23 (2.0) ⬇
Malta	22 (1.4) ⬇
¹ Georgia	17 (1.6) ⬇
² Qatar	15 (1.4) ⬇
United Arab Emirates	14 (0.7) ⬇
Trinidad and Tobago	13 (1.5) ⬇
Saudi Arabia	10 (1.6) ⬇
Oman	8 (0.9) ⬇
Indonesia	7 (1.1) ⬇
Iran, Islamic Rep. of	7 (0.8) ⬇
² Azerbaijan	6 (1.4) ⬇
Colombia	6 (1.0) ⬇
Morocco	2 (0.5) ⬇

Purpose: Acquire and Use Information

Process: Interpret and Integrate Ideas and Information

Description: Interpret and integrate textual and visual information to make 3 contrasts

13. Later discoveries proved that Gideon Mantell was wrong about what the *Iguanodon* looked like. Fill in the blanks to complete the table.

	What Gideon Mantell thought the <i>Iguanodon</i> looked like	What scientists today think the <i>Iguanodon</i> looked like
①	The <i>Iguanodon</i> walked on four legs.	The <i>Iguanodon</i> walks on 2 legs
①	The <i>Iguanodon</i> had a spike on his nose	The <i>Iguanodon</i> had a spike on its thumb.
①	The <i>Iguanodon</i> was 100 feet long.	The <i>Iguanodon</i> was 30 feet long

The answer shown illustrates the type of student response that was given 3 of 3 points.

Country	Percent Full Credit
Sixth Grade Participants	
Botswana	11 (1.4) ⬇
Morocco	7 (0.8) ⬇
¹ ‡ Kuwait	7 (0.9) ⬇
Honduras	6 (1.5) ⬇

Country	Percent Full Credit
Benchmarking Participants[∘]	
^{1 3} Florida, US	47 (2.2) ⬆
Quebec, Canada	42 (1.9) ⬆
² Ontario, Canada	42 (2.3) ⬆
² Alberta, Canada	40 (1.9) ⬆
Andalusia, Spain	25 (1.8) ⬇
Dubai, UAE	22 (1.4) ⬇
Maltese - Malta	14 (1.2) ⬇
Abu Dhabi, UAE	12 (1.4) ⬇
Eng/Afr (S) - RSA	10 (1.3) ⬇

[∘] Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

- ⬆ Percent significantly higher than international average
- ⬇ Percent significantly lower than international average

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

APPENDIX B

Countries which participated in TIMSS and PIRLS at same standard

1. Australia	19. Poland
2. Austria	20. Portugal
3. Botswana	21. Norway
4. Canada	22. Oman
5. Chinese Taipei	23. Qatar
6. Croatia	24. Romania
7. Czech Republic	25. Russian Federation
8. Finland	26. Saudi Arabia
9. Georgia	27. Singapore
10. Germany	28. Slovak Republic
11. Hong Kong SAR	29. Slovenia
12. Hungary	30. Spain Sweden
13. Iran, Islamic Rep. of	31. United Arab Emirates
14. Ireland	32. Honduras
15. Italy	33. Quebec
16. Lithuania	34. Abu Dhabi, UAE
17. Malta	35. Dubai, UAE
18. Northern Ireland	

