PIRLS 2016

GRADE 5 BENCHMARKING PARTICIPATION

PROGRESS IN INTERNATIONAL READING LITERACY STUDY 2016

South African Children's Reading Literacy Achievement

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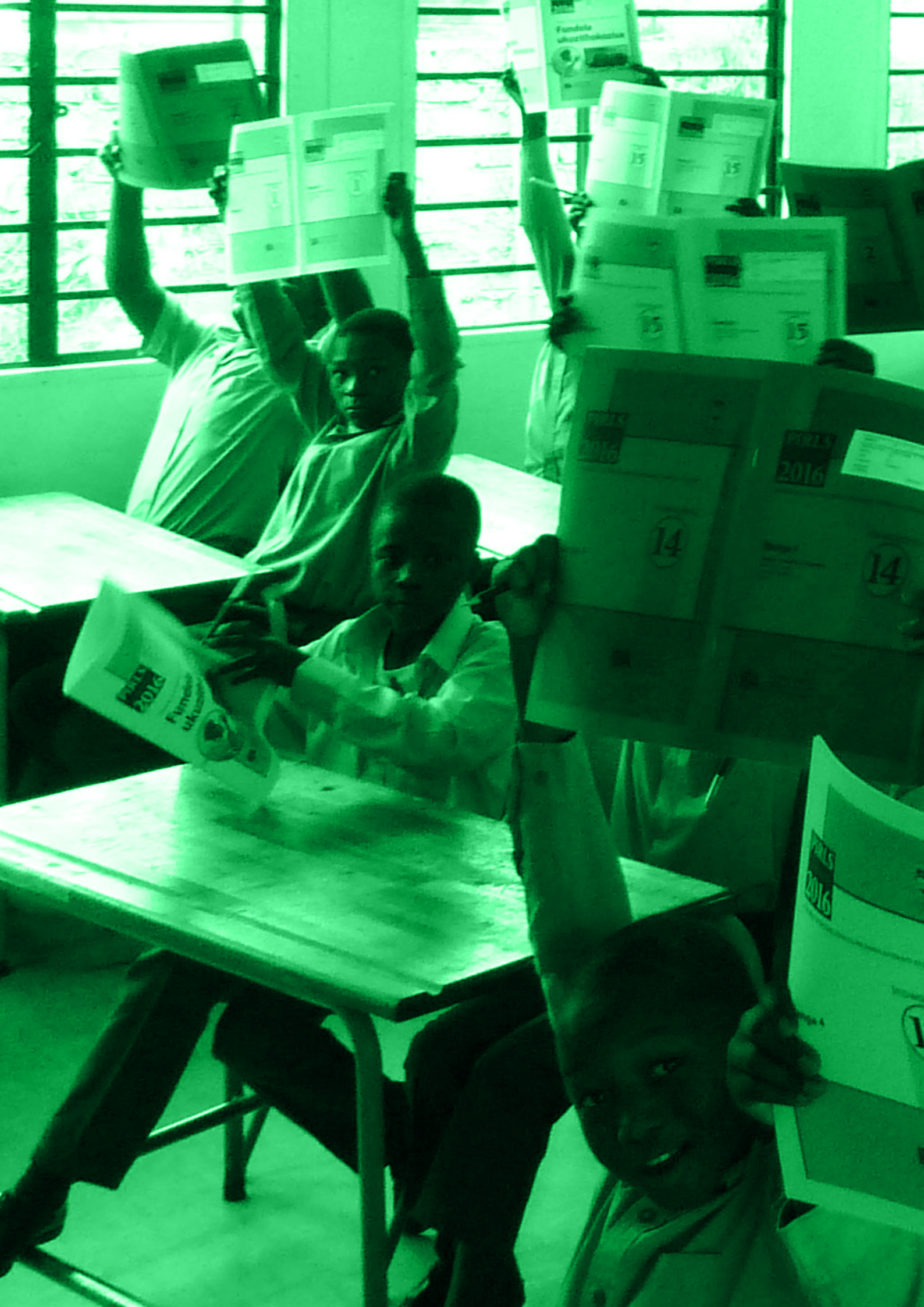
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PREFACE

The Progress in International Reading Literacy Study (PIRLS) 2016 is the fourth assessment in the current trend series. However, it is the third study for PIRLS in which South Africa has participated. The last three studies, PIRLS 2016, PIRLS 2011 and PIRLS 2006 were conducted in South Africa by the Centre for Evaluation and Assessment (CEA) at the University of Pretoria, under the auspices of the International Association for the Evaluation for Educational Achievement (IEA). The PIRLS 2006 study, conducted in 11 official languages, was the largest, most ambitious and complex national design within an international comparative study yet undertaken. The PIRLS 2011 was conducted at Grade 4 level in 11 languages, using the easier assessment known as prePIRLS (conducted solely in South Africa, Colombia and Botswana) and at Grade 5 level in Afrikaans or English only in the main PIRLS. Following on from 2011, PIRLS 2016 in South Africa included the Grade 4 learners taking the less difficult PIRLS Literacy (equivalent to prePIRLS 2011) and sub-populations of Grade 5 learners (learners writing in Afrikaans, English and isiZulu) participating in PIRLS as benchmarking participants. An innovative addition to PIRLS 2016 was the inclusion of ePIRLS, simulated online reading. The Grade 5 report on the PIRLS participation reveals the value of monitoring achievement over an extended period of time (10 years) and validates the decision to add an additional language for PIRLS 2016 back in 2013.

South African PIRLS 2016 met the high standards set by the IEA largely due to the input of various bodies:

- From the beginning of the project, the support of the Department of Basic Education was critical. The Minister of Basic Education, Angie Motshekga gave her consent at the outset of the project, reading literacy being one of her Department's priorities.
- Officials in the Department assisted the CEA in obtaining the latest information from the Education Management Information System (EMIS) in order for Statistics Canada to draw up the national samples. Furthermore, vital assistance was obtained from the unit responsible for examinations and assessment.
- The CEA is particularly indebted to Rufus Poliah, Qetelo Moloi and Mark Chetty for their support to facilitate data collection and during the project.
- The co-operation of all the participating schools, principals, teachers, Grades 4 and 5 learners in schools and their parents across the country was outstanding. This allowed the assessment to be conducted and enabled the data collection to be undertaken efficiently and effectively.

For the first time, the Department of Basic Education contributed financially to PIRLS 2016, although the DBE had been funding the Trends in Mathematics and Science Study {TIMSS) for some time. Unfortunately after the initiation of the project, the DBE budget was reduced by 10% due to economic realities and therefore ultimately, whilst more than half of the funds for PIRLS 2016 were obtained from the DBE, the CEA contributed the balance with the assistance of the

University of Pretoria. The CEA was very grateful for this financial support given the depressed donor support environment at that time. Furthermore, the CEA was appreciative of the ability to maintain its independence in the management, implementation and reporting of the PIRLS 2016, in light of the DBE financial support, and to retain the integrity of the PIRLS 2016 data.

The CEA's international partners were supportive from the inception of the project. The leadership of the IEA, Anne-Berit Kavli, Hans Wagemaker, Dirk Hastedt and Barbara Malak-Minkiewicz, Paula Korsnakova, Andrea Netten, David Ebbs and Roel Burgers offered advice and assistance throughout. The PIRLS Study Directors, Ina Mullis and Michael Martin, constantly encouraged the team, providing additional support when necessary and being available for advice and guidance, especially during the most difficult times. The CEA is grateful to them and their team, Pierre Fay, Ieva Johansone, Martin Hooper, Caroline Prendengast, and Shirley Gob for their expertise, guidance and support.

Statistics Canada and the IEA Data Processing Centre set very high standards for technical research support around the world, and were an integral part of this research. Marc Joncas, Sylvie LaRoche, Ahmed Almaskut, Juliane Barth, Oliver Neuschmidt, Milena Taneva, Duygu Savasci, Sebastian Meyer, Umut Atasever and Sabine Meinck are to be thanked for their accessibility and unwavering provision of knowledge and expertise.

Local participants were also involved in the research process:

The international quality assurance monitor, Margie Probyn and her assistants, visited schools and conducted quality assurance of the national study in South Africa.

Dilicom undertook co-ordination of the translations and completed one of the most difficult jobs in the study, translating 18 test instruments and two questionnaires into 10 languages, resulting in more than 200 different versions of the instruments. A team of primary school teachers in all languages assisted with the quality assurance of the language in the instruments for its appropriateness for primary school learners. Two other external companies assisted, namely: QUEST worked in the field collecting data and Consulta captured it.

The National PIRLS team received wonderful support, guidance and wisdom from the National Steering Committee, comprising the following representatives from NGOs, universities and the Department of Basic Education:

Carole Bloch, Masennya Dikotla, Rinelle Evans, Biki Lepotla, Janet Marx, Bertus Matthee, Devi Maistry, Jerry Mojalefa, Qetelo Moloi, Sarah Murray, Salome Muthambi, Lilli Pretorius, Margie Probyn, Mpuka Radinku, Molefe Ralenala, Surette van Staden, and Lisa Zimmerman (refer to Appendix A for details).

Colleagues from the University of Pretoria, Chika Sehoole, Irma Eloff, Max Braun, Gerrit Stols, supported this project, as did senior management of the University, Cheryl de La Rey, Norman Duncan and Stephanie Burton.

Special thanks are due to former Dean, Jonathan Jansen, whose vision led to the establishment of the Centre for Evaluation and Assessment (CEA) and supported the initiation of PIRLS 2006. The CEA is fortunate to have a great and extended team to draw upon consisting of:

Research support staff, Thembi Matlou, Nangamso Mtsatse, Gabriel Mokoena, and Mahon Raharinjatavo and the office manager and PA, Rose Loots, whose support was invaluable.

Scorers led by Nelladee McLeod Palane and assisted by Gabriel Mokoena and Karen Roux, under great time constraints, managed to do a very important job as did the more than 50 packers, who for six weeks, packed almost 60 000 instruments, each with their own specific identification label containing a learner's name.

The core PIRLS team, Celeste Combrinck (Project Manager), who undertook much of the project management related to data collection, Mishack Tshele (Data Manager), Mahon Raharinjatavo (Data Assistant), Nelladee McLeod Palane (achievement instrument development and scoring), Nangamso Mtsatse, and Thembi Matlou (instrument logistics), Gabriel Mokoena (fieldwork co-ordination, scoring, communications), Karen Roux (questionnaire contextualisation and development), are thanked for their exceptional commitment and dedication in conducting such a significant international comparative study under challenging circumstances.

There were highs and lows in the lead up to the PIRLS 2016. Just a few months before the data collection, the CEA was privileged to host the IEA's 6th International Research Conference held in June 2015 in Cape Town. Its success proved to be a high point of that year and provided much stimulation for the SA PIRLS team. Later that year, a week before the data collection was due to start, the "Fees must fall" campaign disrupted the planning and implementation of PIRLS as the university closed for three weeks preventing the printing, packing and distribution of the instruments. This combined with the Annual National Assessment unexpectedly implemented nationally without warning in December, prevented PIRLS 2016 from completing its data collection in 2015 and as a result, this had to be finalised in 2016; however, not before the "Fees must Fall" campaign once again shut down the university at the beginning of the following year. Whilst this was an exceptionally difficult round of PIRLS to implement given the socio-political conditions, the team was very resilient and managed despite all the problems to complete the study, and for this I have enormous gratitude and admiration.

I would like to thank the Dean, Chika Sehoole in particular, for allowing me to continue and fulfil my role as the PIRLS 2016 National Research Coordinator even after I had left the University of Pretoria, permitting me to complete the task of the first analysis and reporting of the PIRLS 2016 project. In this regard, I would also like to acknowledge my employer Stellenbosch University for providing me with the space to do this. Finally, I would also like to express my sincere appreciation to Celeste Combrinck not only for her pivotal role in PIRLS 2016, but also in her role as Acting Director of the CEA, allowing me to finish off my activities for PIRLS 2016 and the gracious manner in which she permitted my continued leadership of the PIRLS

2016 project in its reporting and dissemination. I feel privileged to have led three PIRLS teams over the past 10 years and to have been part of such a special international project. PIRLS is a project that requires extensive collaboration and dedication of all concerned nationally and internationally. It has been an unforgettable experience and in the words of our former President Nelson Mandela, “It seems impossible until it is done” and that description certainly describes the South African experience for PIRLS 2016.

It gives me pleasure to present this report for the South African PIRLS 2016 study.

Sarah Howie

National Research Co-ordinator: PIRLS 2016

5 February 2018

CHAPTER 1: INTRODUCTION TO PIRLS 2016

Sarah Howie

1.1 Background to the Progress in International Reading Literacy Study

The aim of this report is to describe and provide contextual information for the results and findings of the International Association for Educational Achievement's (IEA) Progress in International Reading Literacy Study (PIRLS) 2016 conducted by the Centre for Evaluation and Assessment at the University of Pretoria for the implementation in South Africa.

The World Development Report 2018 (World Bank, 2017) claims that education is in a "learning crisis", as many countries are failing to provide learning for all. Across societies, those already disadvantaged learn the least, with education widening social gaps instead of narrowing them. Poor service delivery allows poor-quality schooling to persist. Currently, the World Bank claims "Learning outcomes are poor: Low levels, high inequality, slow progress" (World Bank, 2017, p.4). Nonetheless, the recent international expansion in education is regarded as impressive but may be contributing to the challenges experienced with quality in many systems. However, there are claims that schools are failing learners as struggling education systems lack key "school-level ingredients for learning: prepared learners, effective teaching, learning focused inputs, and the skilled management and governance that pulls them all together'' (World Bank 2018, p.9). However, there is some progress in Sub-Saharan Africa as the region "reduced the number of out-of-school children by 27 percent from 47 million in 1996 (the peak) to 34 million in 2014, despite 59 percent growth in the primary school-age population over that period" (World Bank, 2017, p.21).

Reading Literacy is at the heart of the "learning crisis". The latest figures from UNESCO, with the release of the latest Global Education Monitoring report 2017, reveal that more than 100 million young people still cannot read, despite that the number of youth with no literacy skills has fallen by 27%. Of concern is that the adult literacy rate is below 60% in low income countries[1].

About 56% of 387 million children of primary schooling do not reach the minimum proficiency required for reading. During 2010-2015, completion rates were just 83% for primary education. By 2015, 264 million primary and secondary age children and youth were out of school. In Sub Saharan Africa, which has the highest out-of-school rates in the world, 20.5% of children of primary school-going age are out of school (UNESCO, 2017b). This phenomenon occurs in the international context where only one of five countries guarantee 12 years free and compulsory schooling (UNESCO, 2017a).

[1] South Africa is classified as an upper middle income country and is part of the G20 (World Development Indicators Report, 2017)

Increasingly, Early Childhood Development (ECD) is seen as a means to reduce some inequity in later schooling. Based on figures published in 2015, 68% of children were estimated to participate in organised learning at pre-primary or primary, one year before official primary entry age. However, the most affluent children were five times more likely to attend organised learning as the poorest (UNESCO, 2017). This has important ramifications for a country like South Africa. The Government's White Paper 5 sets the goal for full coverage of Grade R by 2010 (DBE, 2014), as part of UNESCO's Education for All (EFA) initiative. The National Development Plan (NDP) 2030 recognises that ECD is vital for later success and stipulated that there should be universal access to ECD for all children (SA Government, 2012). Although there is still much to be done to reach the EFA goal (Howie, 2011), South Africa was one of seven African countries to achieve 80% or more of their learners in pre-primary education. However, no countries in Sub-Saharan Africa were able to reach global education goals by 2015 (UNESCO, 2016). Interestingly just 17% of countries internationally legally stipulated at least one year of free and compulsory Early Childhood Education, indicating the long road ahead for many countries, including South Africa.

The contents of this report directly address the United Nations Sustainable Development Goal (SDG) 4, which aims to ensure inclusive, equitable, good-quality education and lifelong learning for all by 2030 (UNESCO, 2017, p.3) and contributes to monitoring the implementation and achievement of SDG 4 in South Africa.

This chapter provides some insight into the South Africa's participation in the IEA PIRLS studies and decisions taken that affected the PIRLS studies, and PIRLS 2016 in particular and their emergence as a significant contributor to monitoring the quality of education nationally and internationally over the past decade. Firstly, the entities behind the organisation of PIRLS in South Africa and internationally are described and thereafter, the functions of large-scale international assessments are discussed. This is followed by the background to South Africa's entry into international large-scale assessments (1.2). An overview of PIRLS is provided in 1.3. The context for the study is described in 1.4, The South African Education Landscape. The conclusion is presented in 1.5 with the structure of the report in 1.6.

1.1.1 Centre for Evaluation and Assessment, University of Pretoria

The Centre for Evaluation and Assessment (CEA) was established within the Faculty of Education at the University of Pretoria in 2002 by the founding Director, Professor Sarah Howie, following the vision of former Dean, Professor Jonathan Jansen. The Reading Literacy Programme was launched in 2004 and included PIRLS 2006. The CEA subsequently became the National Research Centre for PIRLS 2006, PIRLS 2011, PIRLS 2016 as well as another study managed under the auspices of the International Association for the Evaluation of Educational Achievement (IEA), the Second International Technology in Education Study (SITES) 2006. The CEA has undertaken and completed more than 70 research and development projects to date. It has also been an incubator for postgraduates with about 40 (mostly PhD graduates) in Assessment and Quality Assurance with several undertaking studies related to the PIRLS studies (Labuschagne, 2014; McLeod Palane, in press; Roux, 2014; van Staden, 2011; Zimmerman, 2011, amongst others).

1.1.2 The International Association for Educational Achievement

The IEA is an international non-government organisation founded about 50 years ago to undertake international studies in education. Its mission is to contribute enhancing the quality of education through its studies. The membership of the IEA has grown from the initial 12 to the current list of 62 educational research institutes, ranging from universities to ministries of education, each representing their country. The IEA has evolved from and remains a unique network of scholars, researchers and policymakers collaborating and conducting studies on educational achievement worldwide (refer to: http://www.iea.nl/brief_history_of_iea.html).

PIRLS 2016 was undertaken in South Africa and internationally in 2015 and 2016. However, international large-scale assessments and comparative studies of educational achievement date back to the early 1960s. The expansion and development of these types of studies was made possible by methodological developments over the past three decades (Howie, in press). The studies also involve extensive collaboration, funding and negotiation between participants, organisers and funders (Plomp, Howie & McGaw, 2003).

1.1.3 Functions of International Large-Scale Assessments

International large-scale assessments have a variety of purposes, which include: to compare levels of national achievement between countries; to identify the major determinants of national achievement, country by country; to examine to what extent they are the same or differ across countries; and to identify factors that affect differences between countries (Postlethwaite, 1999, p. 12). Plomp (1998) summarises these functions as description (mirror), benchmarking, monitoring, enlightenment, understanding and cross-national research (see also Plomp, Howie & McGaw, 2003). In the late 1980s and early 1990s, the international large-scale assessment studies served another very important purpose, namely the integration of formerly excluded and isolated education systems (for example, countries in the former Soviet Bloc and South Africa). The studies allowed these countries to break away from their previously isolated positions, join the international debates through their participation in projects such as the Third International Mathematics and Science Study (TIMSS) due to the financial sponsorship by the World Bank and training administered by the IEA (Plomp, Howie & McGaw, 2003).

Increasingly the purpose of monitoring education systems is to evaluate achievement progress across subjects in schooling in response to global calls for improving quality of education for all (Howie 2013, UNESCO, 2012). The most recent report by UNESCO on Global Monitoring 2017 (UNESCO, 2017a) stresses the importance of effective, responsible and appropriate accountability measures to be in place. It highlights the challenges for government to design and implement cost effective and scientifically credible assessments systems which have different purposes (Greaney & Kellaghan, 2012) to cross-national large-scale assessments such as PIRLS.

1.2 South Africa's entry into International Large-Scale Studies

PIRLS 2016 was implemented just over 20 years after South Africa's first IEA large-scale study, the then Third International Mathematics and Science Study (TIMSS) 1995. The results of that study caused much concern about the state of South Africa's mathematics and science education and led to a follow-up study, Trends in Mathematics and Science Study (TIMSS) 1999. However, in TIMSS 1999, the research team included a national survey of English language proficiency given that the TIMSS 1995 and 1999 reports highlighted the very poor language skills evident in the written responses that had been written in English (and Afrikaans as the then languages of instruction). The results of the English Language proficiency test revealed that learners struggled to formulate their answers in English (Howie, 2001; Howie & Hughes, 1998), and the secondary analyses (see Howie, 2002; Howie, 2003) showed a strong relationship of the effect of language on the mathematics achievement at Grade 8 with learners with poor proficiency in English achieving lower results in mathematics.

The interest in the language question grew as it was hypothesised that, in addition to the learners' difficulty in writing their answers to the mathematics questions, they could also have been struggling to comprehend the questions given that about 80% of the learners were learning in an additional language (Howie, 2002). This resulted in the launch of the Reading Research Programme in 2004 at the newly established Centre for Evaluation and Assessment the University of Pretoria, initially funded by the Royal Netherlands Embassy. Part of that programme included the implementation of PIRLS 2006.

The results of PIRLS 2006, testing Grade 4 and 51earners in all 11 official languages, confirmed the hypothesis that learners were struggling with reading comprehension (mostly written in their home language) (see Chapter 6). However, funding was an issue for PIRLS 2011 as the Royal Netherlands Embassy withdrew its funding of education research from South Africa, but the CEA was fortunate to secure funding from the Zenex Foundation, the National Research Foundation and the South African Netherlands Development Programme, maintaining the study's independence. However, the funds were not sufficient to duplicate the PIRLS 2006 design and therefore, in 2011 it was not possible to compare provinces as in 2006, but only languages (see Chapter 3 for details).

The decision to continue with the PIRLS studies in 2016 was partly also informed by the fact that there were few external studies of educational quality on the same scale and that other national indicators were either unable to measure progress over time or were showing a lack of improvement in language and reading literacy, in particular. Furthermore, Umalusi reported that the National Senior Certificate examinations were revealing concerning evidence of learners at Grade 12 level being unable to comprehend questions, formulate even short responses to questions and that the quality of writing in extended response questions and essays was poor (DBE, 2014).

1.3 Overview of PIRLS

The Progress in International Reading Literacy Study (PIRLS) has recurred every five years since 2001, and is one of the IEA's larger projects. PIRLS 2016, currently underway, is the fifth in a series of trend studies. The first Reading Literacy Study was conducted in 1990 and was the first comparative study of its kind in Reading Literacy (Postlethwaite & Ross, 1992). This was followed 10 years later by the Progress in International Reading Literacy Study 2001 (PIRLS 2001), in which 35 countries participated (Mullis, Martin, Gonzalez & Kennedy, 2003). PIRLS is directed internationally by the TIMSS and PIRLS International Study Centre at Boston College in co-operation with the IEA Amsterdam, IEA Hamburg and Statistics Canada. Most of the participating countries were European, in addition to the USA and Canada, with only two countries in Asia and South America and one in Africa participating. PIRLS 2006 was conducted in 2005 and 2006 with 40 countries participating (Mullis, Martin, Kennedy & Foy, 2007). PIRLS 2011 was conducted in more than 50 educational systems as several provinces and regions participated for benchmarking purposes, in addition to whole countries (Mullis, Martin, Foy & Drucker, 2012). PIRLS 2016 had 61[2] participating systems (listed below) around the world (50 countries and 11 benchmarking entities; for example, regions of countries, additional grades or language groups from participating countries) (Mullis, Martin, Goh & Prendergast, 2017), and was the largest reading Literacy Study to date.

- Australia
- Austria
- Azerbaijan
- Bahrain
- Belgium (Flemish)
- Belgium (French)
- Bulgaria
- Canada
- Chile
- Chinese Taipei
- Czech Republic
- Denmark
- Egypt
- England
- Finland
- France
- Georgia
- Germany
- Hong Kong SAR
- Hungary
- Iran, Islamic Rep. of
- Ireland
- Israel
- Italy
- Kazakhstan
- Kuwait
- Latvia
- Lithuania
- Macao SAR
- Malta
- Morocco
- Netherlands
- New Zealand
- Northern Ireland
- Norway (5)
- Oman
- Poland
- Portugal
- Qatar
- Russian Federation
- Saudi Arabia
- Singapore
- Slovak Republic
- Slovenia
- South Africa
- Spain
- Sweden
- Trinidad and Tobago
- United Arab Emirates
- United States

Benchmarking Participants

- Buenos Aires, Argentina
- Ontario, Canada
- Quebec, Canada
- Denmark (3)
- Norway (4)
- Moscow City, Russian Federation
- Eng/Afr/Zulu - RSA (5)
- Andalusia, Spain
- Madrid, Spain
- Abu Dhabi, UAE
- Dubai, UAE

[2] Note: Norway chose to assess the fifth grade to obtain better comparisons with Sweden and Finland but also collected benchmark data at the fourth grade to maintain previous trends. The Republic of South Africa (RSA) benchmarked at the fifth grade with schools where students have instruction in English, Afrikaans, or Zulu.

The PIRLS studies are conceptualised (Campbell, Kelly, Mullis, Martin & Sainsbury, 2001) within a similar systems-related model to previous IEA studies, although for these trend studies, the role of the home is conceptualised as having a more direct bearing on the interaction between the home and classroom and home and school. The role of the curriculum (intended, implemented and attained) is also evident in the conceptualisation of the studies.

More than 340 000 learners, 330 000 parents, 16 000 teachers and 12 000 schools participated in total. The PIRLS 2016 assessment is based upon PIRLS 2016 Assessment Framework, developed with participating countries, and based on two overarching Purposes for Reading, namely: the literary experience and to acquire and use information. Four Comprehension Processes are assessed: focus on and retrieve explicitly stated information, make straightforward interferences interpret and integrate ideas and information and evaluate contribute content and textual elements.

In PIRLS 2011, an innovation, prePIRLS, was initiated. This was followed by PIRLS Literacy 2016. Its design is similar to PIRLS; however, it includes some less difficult passages and items. Its results are reported on the PIRLS Scale (see Chapter 3) and are directly comparable to PIRLS. PIRLS and PIRLS Literacy Assessments have 12 passages (6 Literary and 6 Information) and approximately 180 items. Not all learners take all passages and items but rather PIRLS uses a rotated tested design allowing each learner to answer only 13-15 items based upon two passages.

ePIRLS 2016 was also implemented as a computer-based assessment of online reading and provides data on how well students have developed 21st Century online reading skills. South Africa only managed to assess nine schools in Gauteng in English due to insufficient numbers of primary schools having (adequate) ICT facilities and capacity. Of more than 300 schools reportedly having the necessary resources on the government database, the reality was quite different upon visitation prior the fieldwork. Therefore, the number of schools tested did not meet the required number of schools and learners to be included in the international report.

PIRLS aims to provide the “best policy relevant information about how to improve Teaching and Learning and to help young students become accomplished and self-sufficient readers” (see http://timssandpirls.bc.edu/pirls2016/international-results/pirls/about-pirls-2016/). To achieve this goal, PIRLS includes questionnaires for learners, teachers, parents and principals (to be able to describe home, school and classroom contexts) in the assessment information. The PIRLS Encyclopaedia provides further information cross-countries based upon the PIRLS *Curriculum Questionnaire* (see Mullis, Martin, Goh & Prendergast, 2017). PIRLS has a rigorous quality assurance process implemented by the international study centre, Statistics Canada, IEA Hamburg, IEA Amsterdam. Chapter 3 provides more details about the design and methods utilised in PIRLS 2016 and Chapter 6 describes the trends on reading achievement emerging from the South Africa data for 2016 compared to previous cycles.

1.4 The South African Education Landscape

The major focus of South Africa's education system in the past twenty years has been to reconstruct, expand and transform structurally and substantively. In 2015 when PIRLS 2016 was implemented in South Africa, the population had grown to more than 50 million people (Statistics South Africa, 2012). Nationally, there are nearly 19.4 million learners mostly attending public schools, of whom 8.9 million are in primary schools (Statistics South Africa, 2016). Approximately just over two million of these were in Grade 4 and 5 at approximately 17 000 primary schools.

South Africa was classified by the United Nations Development Programme as being a Medium country on the Human Development Index (Very high, High, Medium and Low) and ranked 118 out of 188 countries in 2016. However, with equity and access being at the top of the Government's priority list, access has improved to the extent that primary education is almost universal (see Table 1.1). At this stage, South Africa's access and participation rates exceed those of Sub-Saharan Africa. They also exceed two of the upper-income group indicators. Unfortunately, at this stage there are no data to report on the Net Enrolment indicators which are more informative on enrolment at school level, as this relates to the age appropriate cohort for that education level in school.

Table 1.1 Access and Participation in Pre-Primary Education and Primary Education

Country and world comparison	Participation in Pre-Primary		Access to and participation in Primary Education			
	Total enrolment in Pre-Primary education 2015[3]	Gross enrolment ratio Pre-Primary education and early childhood educational development %	Total enrolment in primary education (female)	Gross enrolment in primary education (%)	Primary education adjusted net enrolment ratio %	Pupil:teacher ratio for primary school
South Africa	50	34[4,5]	49	100[6]	No data	32
Sub-Saharan Africa	50[7]	20	48	99	79	43
Upper-income countries	47	48[8]	47	106	96	*[9]

Source: Compiled from Global Education Monitoring 2017 report Pp 314-333. (UNESCO, 2017a) and the Human Development Report 2016, pp230-233 (UNDP, 2016)

[3] School year ending 2015
[4] Data are for the school year 2014
[5] In the Human Development report, average percentage for the period for only Preprimary for the Percentage of preschool age children 2010-2015
[6] Data are for the school year 2014
[7] Sums and weights averages: partial imputation due to incomplete country coverage (between 33% and 60% of population for the region or other country grouping
[8] Sums and weights averages: partial imputation due to incomplete country coverage (between 33% and 60% of population for the region or other country grouping
[9] No comparable data for upper-income countries but comparable figure is given for Medium Human Development category where South Africa is included and that is 29 (pupil:teacher ratio) somewhat lower than South Africa with a better pupil to teacher ratio for primary school.

In 2015 when PIRLS 2016 data was being collected, Gross Enrolment in primary education was 100%, higher than the Sub-Saharan African average. The total enrolment of girls in primary education was 49% higher than Sub-Saharan Africa and the average of the upper-income group. However, in a local report published in South Africa in 2016 by Statistics South Africa with data compiled from the General Household Survey in 2015, Gross Enrolment Rates (GER) for Primary were said to be 123% in 2015 (Statistics South Africa, 2016). These figures vary considerably across provinces with the lowest GER being in Gauteng at 116% and the largest in the Eastern Cape at 137% followed by Limpopo (128%). This is worthy of noting given the results presented in Chapters 4 and 5. Of those attending preschool, 68.9% were at public institutions and 31% at private institutions. At primary school level, however, 93% of learners attended public institutions and about seven percent attended independent schools.

Relative to the Sub-Saharan region and other Upper-Middle countries, South Africa spends a considerable amount on education (see Table 1.2).

Table 1.2: South African Government Expenditure on Pre-Primary and Primary Education compared to Sub-Saharan and Upper Middle Income Countries

			Pre-Primary Education		Primary Education	
Country and world comparison	**Government expenditure on education as % of GDP 2015**	**Government expenditure on education as % of total government expenditure 2015**	Government expenditure per pupil in constant 2014 PPP U$ 2015	Government expenditure per as % of GDP per capita 2015	Government expenditure per pupil in constant 2014 PPP U$ 2015	Government expenditure per pupil as % of GDP per capita 2015
South Africa	6.0	19.1	771	6.0	2 271	17.6
Sub-Saharan Africa	4.1	16.9	51	3.0	246	10.5
Upper Income countries	4.2	14.0	No data available	No data available	No data available	No data available

Source: Global Education Monitoring Report 2017 (UNESCO, 2017a, pp 402-404)

In 2015, in total, South Africa spent about six percent of its Gross Domestic Product (GDP) on education and 19% of its total government expenditure on education annually (UNESCO, 2017a), which is high compared to other developing countries. Spending on education has been consistently high in South Africa relative to other countries. This is very important given that South Africa has one of the highest inequality rates in the world perpetuating both inequality and exclusion with a Gini coefficient of .65 in 2014 (World Bank, 2017).

Education in South Africa is compulsory for Grades 1 to 9, and non-compulsory for Grades 10 to 12.

Table 1.3: Structure of Compulsory Education in South Africa, up to 2017

Phase	Grades	Ages	Status of Education	School Level
PrePrimary	000, 00, Grade R (Reception)	4-6	Not compulsory (2018)	Pre-Primary
Foundation	1-3	7-9	Compulsory	Primary
Intermediate	4-6	10-12	Compulsory	Primary
Senior	7-9	13-15	Compulsory	Primary (to Grade 7) Secondary (Grades 8 and 9)

Currently 87% of public schools are non-fee paying schools containing more than 70% of the learners in the country. South Africa has both Government (public) and private (independent) schools within its education system with about 6% of the schools being private.

A considerable proportion of schools in South Africa still suffer serious shortcomings, ranging from poor access to water, telephones and electricity, to the poor condition of many school buildings despite significant investments in infrastructure. Currently more than 20% of schools do not have very basic facilities and do not meet basic safety norms (DBE, 2014). However, in the latest Global Monitoring Report 2017, it is reported that 97% of South African schools (in 2014) have basic drinking water and 100% have basic sanitation or toilets. Unfortunately, and pertinent to the ePIRLS study, no information was provided on the Information Communication and Technology (ICT) data and therefore, there are no figures for electricity, internet use for pedagogical purposes nor computers used for pedagogical uses, although the majority of countries did not appear to have this data. This makes the data collected in PIRLS Literacy and PIRLS 2016 particularly valuable (see Chapters 7 and 8). Demand for schooling, as evidenced in the significant growth in enrolments, has put pressure on the provisioning of educational facilities and supplies. One example directly relevant to reading literacy is that few schools have well equipped libraries and many communities are without community libraries. This leaves the majority of people with little access to reading materials as books are unaffordable for most people and the majority of homes have few books and other reading materials.

Most teachers in the system in general still have a 3- or 4-year teaching diploma from a teacher training college, This is despite the closure of teacher training colleges almost 20 years ago. The teaching force is ageing (See Chapter 8) and there is concern that insufficient numbers of younger, qualified people are entering the teaching profession (Howie et al., 2012). Since 1997, teacher training has been offered either as a four-year degree or as a one year postgraduate qualification after a *Bachelor's Degree*.

Apart from provisioning challenges, there has also been the almost continuous change in the curriculum with curriculum reform having undergone three iterations in the past 20 years, leading to curriculum change fatigue which has impacted teacher morale (see Howie, Combrinck & Roux, 2017 in Mullis, Martin, Goh & Prendergast, 2017 and Chapter 2 in this report). The current Curriculum and Assessment Policy Statement (CAPS) provides for an Intermediate Phase (which includes Grades 4 and 5) which has six subjects - Home Language, First Additional Language, Mathematics, Natural Science and Technology, Social Sciences

and Life Skills. Furthermore, for instance with Home Language, CAPS specifies instructional time per language skill - Listening and Speaking, Reading and Viewing, Writing and Presenting as well as Language Structures and Conventions (see Chapter 2 for details)

The Constitution of 1996 specifies that all children in South Africa have the right to be educated in their own language. However, the multilingual nature of South Africa presents challenges to the curriculum and teachers in the implementation of the curriculum (see Chapter 2 for details). Whilst there have been changes in the official language profiles, the pattern has remained where isiZulu, isiXhosa and Afrikaans are spoken most widely whilst there has been growth mainly in the English language since the 1996 Census from 8% (Statistics South Africa, 2001) to 10% by 2016 (see Chapter 2).

1.5 Major Findings and Impact of previous PIRLS Studies

As mentioned previously, South Africa participated in two earlier cycles of PIRLS, in 2006 and again in 2011. Some of the main findings are listed below, but for more details see the previous national reports (Howie, Venter, Van Staden et al., 2009; Howie, van Staden, Tshele et al., 2012). PIRLS 2006 provides an important baseline for the PIRLS 2016 data, and the trend data provided by the benchmark participation is based upon this data.

1.5.1 PIRLS 2006

South Africa participated at the Grade 4 and Grade 5 level with full nationally representative samples, stratified for both province and language. The reason for including Grade 5 (originally as a national option) initially, was based upon apprehension about the South African Grade 4 learners being able to cope with the demands of the assessment and particularly given the fact that Grade 4 is an important and demanding transition year for many moving into LoLT in a second language. This decision proved to be more significant for the next decade of research than previously envisaged as the Grade 4 South African learners fell far short of the international reading levels tested in PIRLS 2006 and the data for the majority of Grade 4 learners was so poor that the IEA requested that the South African Grade 5 data be used, due to the technical (measurement) difficulties for the overall international data caused by the low Grade 4 performance.

1.5.1.1 Reading Achievement

South African Grade 5 learners achieved the lowest score compared to Grade 4 children in the 39 participating countries. They achieved approximately 200 points below the international average score of 500. There was, however, a significant difference in achievement between Grade 4 learners and Grade 5 learners in South Africa indicating a significant progression in reading achievement across all languages from Grade 4 to Grade 5. Three-quarters of South African learners were not able to reach the lowest international benchmarks and only two percent could reach the highest international benchmark compared to only seven percent of children internationally and one-fifth of children in the Russian Federation and Singapore, who attained this level.

Performance across all 11 languages was below the international mean. Learners tested in all African languages achieved very low scores with 86% to 96% not reaching the lowest international benchmark, compared to half of the learners writing in English and Afrikaans. Children writing the test in Afrikaans achieved the highest average score, although children whose home language was English (and who wrote the test in English), achieved the highest score overall. Despite low achievement, South African learners had generally high reading self-concepts and positive attitudes to reading.

1.5.1.2 Home Background

South African households had very few books in the home with half of the houses having fewer than 10 books. Few children had been exposed to early reading literacy activities with their families. The parents' levels of education (as mediated through the numbers of books in the home and cultural communication with children) were strongly correlated with reading achievement. South African parents (and guardians) demonstrated relatively low levels of involvement with schools and participation in the education of their children. This was taken into context with the number of many child-headed households or children who live with guardians or other family members. South African children had one of the highest levels of bilingualism in the study, reflected by the large percentage of two-parent homes and speaking more than one language at home.

1.5.1.3 Classroom Factors

In most schools, insufficient time is spent on reading activities or formal reading instruction. This is in contrast to top performing schools and more frequent reading instruction, which is related to higher achievement of South African learners. South African teachers read less often in their spare time compared to those in the highest achieving countries in PIRLS 2006. Teaching of more complex reading skills is introduced at a much later stage for South African learners than internationally, where these are initiated much earlier. There are problems with the provisioning of textbooks and learning materials. Only half of the South African schools have adequate resources in terms of instructional materials. Further investigation is needed in terms of the type and quality of textbooks used in classrooms and their availability in African languages.

1.5.1.4 School Environment

Three-quarters of the principals reported that half of their pupils or more were from economically disadvantaged homes. Nearly two-thirds of the schools had about 10% of their learners who spoke a different language to the language of the test. One in five learners attended a school where the inadequacy of the resources was reported to be hampering teaching and learning. However, there were countries where significantly more learners were negatively affected and where almost four out of five learners were affected in this way. More than half of South African primary schools did not have a library and the same percentage do not have classroom libraries either. Whilst two-thirds of parents felt that the school environment was safe, this did not concur with the perceptions of the principals nor the learners. Learners in particular, did not feel safe in general, and about one out of four Grade 5 children felt very safe at school and only one-third of principals felt that their schools are very safe. Two-thirds of teachers were satisfied with their teaching career but this feeling of satisfaction did not correlate with higher achievement.

1.5.2 PIRLS 2011

As explained earlier, the design of PIRLS 2011 was different to the earlier study based upon the experiences of PIRLS 2006. South African Grade 4 learners wrote the less difficult prePIRLS assessment whilst learners writing in Afrikaans and English at Grade 5 level participated in PIRLS 2011 as benchmarking participants to maintain some trend data. A summary of the main findings is presented below.

1.5.2.1 South African Grade 4 prePIRLS Achievement

South African Grade 4 learners, particularly those tested in African languages, achieved well below the international centre point despite having written an easier assessment. They were still performing at a low level overall on an easier assessment compared to their counterparts internationally. There was a significant gender gap in achievement, with Grade 4 girls outperforming boys in South Africa schools. Learners tested in Afrikaans and English performed relatively well and above the international centre point. However, those tested in all African languages, despite most writing in their home language, achieved very low, and learners tested in Sepedi and Tshivenda were especially low. Few South African learners (6%) were able to read at an advanced level, although 71% were able to reach a rudimentary level of reading and attain the Low International Benchmark. More than half the learners tested in Sepedi and Tshivenda could not read at a fundamental level.

1.5.2.2 South Africa PIRLS Grade 5 Achievement

There was no difference in the overall achievement for South African learners in 2011 compared to 2006. Grade 5 learners tested in Afrikaans or English were still performing below the international centre point by approximately 80 points, which is below the international average score of 500 fixed for the reading literacy of Grade 4 learners internationally. They achieved a level similar to learners in Saudi Arabia, Indonesia, Qatar and Botswana (Grade 6) and well above learners in Oman and Morocco, bearing in mind these countries' samples tested their entire population and South Africa only tested part of its population. There was a significant gender gap in achievement, with Grade 5 girls outperforming boys in South African schools. Forty-three percent of South African learners tested in Afrikaans or English were unable to reach the Low International Benchmark and only four percent could reach the High International Benchmark. More learners tested in Afrikaans attained the Low International Benchmark than did those writing in English.

1.5.2.3 Home Environment

South African households had, on average, *Few Resources* compared to many countries in PIRLS 2011 and learners from homes that are well resourced in education terms, achieved higher reading achievement scores. Grades 4 and 5 learners, who liked reading, were motivated to do so and were confident readers, achieving higher scores than those who did not like reading, were not motivated to read and were *Not Confident* in their reading. Children of parents who liked reading achieved on average higher scores than those whose parents did not like reading. South African parents have exceptionally high aspirations for their children's education levels and aspire to their undertaking postgraduate education.

1.5.2.4 Classroom and Teacher Factors

Most Grade 4 and Grade 5 teachers are quite experienced with on average 17 years of teaching experience. Almost all teachers regarded their work as important, although half reported being more enthusiastic about teaching at the onset of their careers. The majority of teachers of Grade 4 and 5 learners held formal qualifications in Education, namely post-secondary college or university degrees and specifically Foundation Phase teaching. Almost a third of teachers reportedly spent less than six hours in in-service training that dealt with reading and teaching reading, specifically in the past year. The average prePIRLS 2011 class size was 40. Large average class sizes (>40) are found for learners who are taught in African languages, with only Afrikaans and English classes below the national average of 40. No relationship was found between instructional time and achievement in reading, possibly indicating a lack of effective teaching and learning. There is considerable variation across languages in terms of time on task for language and reading; however, on average learners spent no more than 5 hours per week on reading and language. Teachers spent most of their instructional time on basic reading skills and strategies and less time on more inferential types of skills. Teaching of more complex reading skills (such as making generalisations, describing text style and structure, and determining the author's perspective) was introduced at a much later stage for South African learners than internationally, especially for learners tested in isiNdebele and Xitsonga. Learners exposed at an earlier grade tended to achieve higher scores in reading. Reading homework was assigned to only one-third of the learners in Grade 4 on a daily basis and to Grade 5 learners weekly.

Learners engaged in reading, tended to achieve higher scores. Learners' lack of prerequisite skills and knowledge negatively affected instruction to *Some* extent in most schools and was reported particularly in schools where Afrikaans and English were tested. Teachers were still experiencing problems with the provision of textbooks and learning materials and teachers reported being hampered by lack of resources. About 30% of learners were in classrooms with no classroom library or reading corner and a further 40% were in classes where there are very few books in the existing classroom library. With some exceptions, textbooks remain the dominant resource for both Grade 4 and Grade 5 teachers and few teachers use a variety of children's books as a basis for instruction.

1.5.2.5 School Factors

Almost half of the Grade 4 learners came from schools in remote rural areas and achieved more than 100 points less than their urban peers. However, learners in schools in which a *Very High Emphasis* was placed on academic expectations by the principals and teachers achieved much higher scores than those in schools with lower expectations. More than half of the schools in the Grade 4 sample came from schools with no school libraries and these schools achieved, on average, 155 points less than schools with well-resourced libraries. One in five learners attended a school where the inadequacy of the resources was reported to be hampering teaching and learning. However, there were countries where significantly more learners were negatively affected and where almost four out of five learners were affected in this way. Learners in schools, where teaching and learning is negatively affected by shortages of reading resources, achieved over 100 points less than schools that were not affected by

shortages. Almost half of the learners were in schools where there were moderate problems with teachers' working conditions. Learners in schools where teachers had *Hardly Any Problems* with their conditions, achieved between 60-95 points more than those learners whose teachers had moderate problems.

More than half of the learners in Grade 4 experienced being bullied weekly, which is substantially different from all the other countries in the study. These children on average tended to achieve more than 50 points less than learners who were not bullied as often.

1.6 Conclusion

Five years after PIRLS 2011, PIRLS 2016 in South Africa has completed another milestone in education research in South Africa with its 10-year trend data for benchmarking participants reported in this report, its innovative case studies on ePIRLS and a five-year trend data for Grade 4 learners in all 11 languages in South Africa. No other country has faced the extensive challenge of preparing and implementing a research study such as the South African study conducted in 11 languages.

This report on PIRLS 2016 provides empirical evidence on the status of reading literacy comprehension levels currently in South Africa and permits the investigation of those on provincial level as well as for the three selected languages (Afrikaans, English and isiZulu).. Furthermore, due to the measurement models applied, achievement data can be tracked over five and 10 year periods measuring progress over time and the extent to which changes are occurring within South African schools, classrooms and homes. The benchmark data, reported in Chapter 5, are particularly important in highlighting not only what children cannot do, as made clear in Chapter 4, but also what they are able to do at this critical developmental age in terms of reading comprehension. Chapters 4-6 provide a description and deeper analysis of South African Grade 5 children's reading literacy achievement for learners writing in Afrikaans, English and isiZuu. The extent to which it compares internationally and to what extent they have difficulty in attaining higher order reading levels are all reflected in higher benchmarks, Chapters 7-9 which provides valuable contextual data. This permits for a deeper reflection on policies and practices within South African education. Chapters 1-3 present essential background, policy and methodological information to enable the reader to better understand the PIRLS Study.

PIRLS 2016 was implemented not for the sake of implementing an assessment but rather towards growing the knowledge base and assisting the government and society in general in monitoring its progress in a critical area of education more than 20 years after democracy and the integration of 17 different departments of education into a single department. The study aims to provide feedback on the progress made to date, amongst others through its ability to measure trends over time. Furthermore, the study through its report provides evidence for the need for ongoing independent monitoring, evaluation and assessment of (public) primary education towards effective accountability and achieving quality education for all children in South Africa. Independent monitoring is essential in a free, democratic state to gain public trust and support as well as providing added reassurance to society about its achievement

of specific goals. Given South Africa's history, it is important that the broader community is convinced that reports on the quality of education in the public schooling sector, in particular, are based upon valid and reliable data that is both available and able to be widely disseminated following a research agenda. One of the largest stumbling blocks in Africa is the absence of available, recent, and credible data for planning purposes and decision making. Noteworthy in reporting this study was the noticeable increase in suspicion and resistance experienced by the research team in gaining the agreement of schools to participate in this cycle and reports of assessment and curriculum change fatigue that became evident in conversations with principals and staff at schools. This will have to be a consideration for other research of this nature in the future. Some discussion follows in Chapter 10, highlighting some enabling conditions at school, within classrooms and homes. The obvious need for communities to take collective responsibility for education is evident in the conclusions. Whilst the teachers in the classrooms are key to changes and improvements in education, a supportive environment where teachers, their peers, the leadership of the school, policymakers, parents as well as the learners each play their part and take responsibility for it, can no longer be overlooked. Whilst it is tempting for some to blame teachers for the achievement results in PIRLS and other studies, this is disingenuous and ignorant of the complex realities within which education takes place. Hence responsibility needs to be shared in order to make progress and create the necessary supportive environment in the future.

1.7 The Structure of the Report

The rest of this report focuses on the context, design, conduct, and findings of PIRLS 2016. Chapter 2 provides the context in terms of language and literacy internationally and the policy context locally. In Chapter 3, the research design and methods are explained and argued in terms of the international study as well as the implementation and adaptations made in the South African context and the reasons.

In Chapter 4, the results for the achievement tests are described and interpreted. The overall international results are summarised and the South African results are analysed for each of the three test languages, for the nine provinces, by gender, location, reading comprehension purposes and processes.

Chapter 5 follows with a description and explanation of the international benchmarks providing a qualitative description of the quantitative results at four performance levels. The benchmarks are analysed comparatively internationally, by test language, province, gender and location.

Chapter 6 describes the trends in achievement between three PIRLS cycles and provides the results overall, by language and benchmarks.

In Chapter 7, contextual data derived from the *School Questionnaire* is described and analysed. Issues related to the environment and climate of the school are presented based upon the questionnaires received from the school principals. The profile of the learners, school facilities and resources, academic ethos, school discipline and safety are described and discussed.

In Chapter 8, the findings based upon the *Teacher Questionnaire* are presented. These focus primarily on the profile of the teacher (age, experience and qualification), the classroom environment, resources, instructional strategies and teacher attitudes and are based upon information derived from the home language teachers of the Grade 4 learners who were tested.

Chapter 9 provides a description of the learners and their home environment. In particular attitudes, motivation and confidence from the learner perspective. The home environment is described in terms of the home resources, parents' involvement with their children regarding early literacy and observations about their children's skills and homework from school. Parental education and occupations are seen as part of the resources available to the learners and this is also included. The findings reported in this chapter are based upon the questionnaire data received from the learners tested and their parents. It is important to note that the study was sensitive to the complexities of households in South Africa and therefore care was given to be inclusive of the households with varying profiles of "parenthood" in the home/guardians, caregivers, single parents and child-headed households.

Finally, Chapter 10 summarises the PIRLS 2016, its results and findings. The conclusions and recommendations are discussed in this chapter.

CHAPTER 2: LANGUAGE AND LITERACY IN SOUTH AFRICA

Nelladee McLeod Palane and Sarah Howie

2.1 Introduction

In this section, language-in-education complexities are explored (2.2) and the reading theory undergirding the large-scale PIRLS assessment is outlined (2.3). The approach to language and reading instruction in the South African curriculum (CAPS) is described (2.4). Lastly, in Section 2.5, the cognitive processes (levels) that form the basis of the PIRLS assessment are explained and discussed in terms of how they relate to South Africa's assessment requirements for the different language proficiency levels.

2.2 Language in South Africa

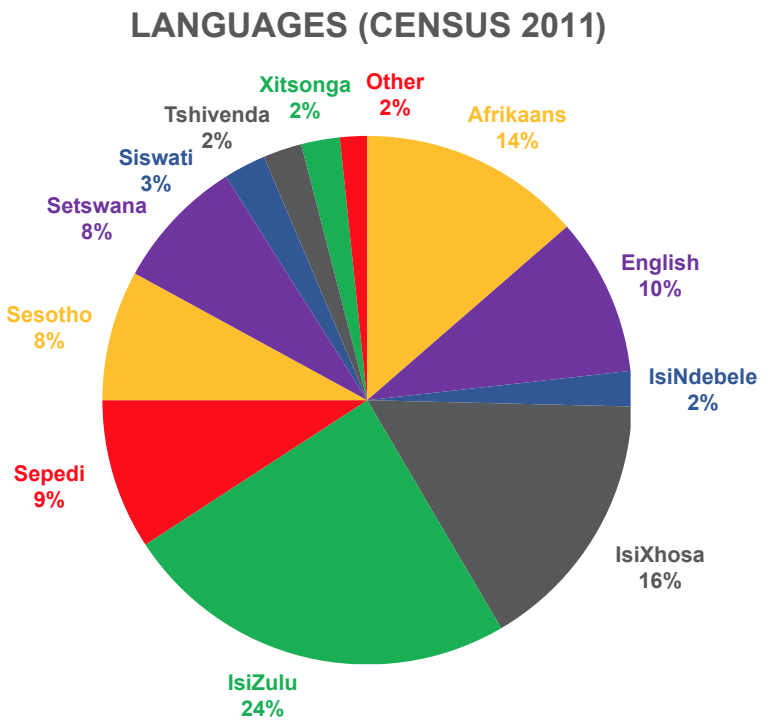
The decolonisation of Africa has left in its wake a complex and emotive debate on language-in-education. Wading into a part of this debate, van der Walt and Evans ask the question "Is English the Lingua Franca of South Africa?" (van der Walt & Evans, 2017). Underscoring the fact that South Africa is a multilingual country, van der Walt and Evans (2017) explain that according to international visitors and most of the middle class, English is the language of prestige, but is arguably not worthy of the title 'lingua franca' since it is the mother tongue of less than 10% of the population. Nonetheless, when one examines its prevalent use in Government departments, the courts and the media (van der Walt & Evans, 2017), a contradiction emerges. The low level of reading achievement observed relative to other countries in the previous PIRLS large-scale assessments has often been attributed to the complexity of South Africa's language-in-education policies. However, contextual factors such as access to educational resources and schooling conditions (Howie, McLeod Palane, Roux, Combrinck & Tshele, 2017) weigh in on straightforward explanations that erroneously seek to exclusively blame the language-in-education problem for the low level of achievement.

By way of an interesting comparison, the case of the Russian Federation, which was the highest performing country grouping in this round of PIRLS could be considered and, like South Africa, faces complexities with regard to language. The Russian Federation, however, has one official state language, namely Russian. According to the PIRLS 2016 Encyclopaedia, all the republics of the Federation have the right to have their own official language (and there are 37 official languages in these republics); however, it is stipulated that teaching and learning the official languages of the republics should not be done at the expense of teaching and learning the official language of the Russian Federation. Russia's population speaks 239 languages and dialects. The citizens of the Russian Federation have the right to receive preschool, elementary and secondary education in their native language if it qualifies as one of the languages of the people of the Russian Federation. However, as in South Africa, the delimitation of this freedom is that this right be balanced by the capacity of the national education system to deliver

education in the desired languages. Notably, according to the PIRLS 2016 Encyclopaedia, the number of schools with instruction in one of the native languages of the Federation has grown significantly in some regions of Russia in recent years. This is an interesting development when viewed from the seeming impasse that South African education has reached with regard to the language of instruction.

Making it a prerequisite that all South African learners from urban to rural settlements receive adequate and the same high quality instruction of English (McLeod Palane, in press) whether as a Home Language or a First Additional Language (FAL) across the board from the beginning of school regardless of the language that they select as their language of instruction, might make a good starting point in the prioritisation of access and internationalisation. It seems evident that learners will need to embrace the goal of being a 'global citizen' if they are to benefit fully from the twenty-first century skill set. Along with this is the need to standardise and improve the Home Language and FAL curriculum offering across all the African languages. Of utmost importance is the need to provide text in the form of educational resources for the learners in all the languages since access to text has been shown to provide even low socio-economic learners with a significant advantage (McLeod Palane, in press) and to successfully encourage learners to engage with the available text. Russia is well-known for its plethora of classical literature and is arguably viewed as a reading nation. Using their example, the first step may be to give all South African learners the same opportunity to access resources and a global national language whilst teaching learners to identify the cultural bias hidden in literature and empower them to challenge the dominant cultural discourse. Nonetheless, this first step is just scaffolding – a link in the chain to ensuring the realisation of a multilingual country with a multicultural literary richness that cultivates critical thought in classrooms, which is a central tenet of twenty-first century skills.

South Africa's Constitution recognises eleven official spoken languages (prior to 1993, English and Afrikaans were the only two official languages in the country). Based on the 2011 Census (see Statistics South Africa, 2012), there are 51.7 million South African citizens of which the largest group (24%) speak isiZulu followed by isiXhosa (16%) and Afrikaans (14%). English, although by many considered the main language of business and government, is spoken by only 10% of the population.



Source: Census, 2011

Figure 2.1: Distribution of South African Languages in the Population

The remaining seven languages (isiNdebele, Sepedi, Sesotho, Setswana, siSwati, Tshivenda and Xitsonga) are spoken by fewer than 10% of population, In addition to the eleven official spoken languages, sign language, Tsotsitaal, Fanagalo and the languages associated with the Khoisan population, such as !Xun and Kwedam, are recognised. International languages such as Arabic, Italian, Spanish, Gujarati, Hindi, Tamil, Telegu, French, German, Hebrew, Portuguese, Serbian and Urdu are also found and learnt across the country and also are examined nationally in secondary school exit examinations, as is Latin.

The Constitution of 1996 specifies that all children in South Africa have the right to be educated in their own language. In 1997, The Department of Education's Language-in-Education Policy (LiEP), guided by the Constitution and the South African Schools Act, recommended that the learners' first language be used for teaching and learning where possible, especially in the Foundation Phase (Grades R–3).

Higher-order learning as stipulated in the curriculum will be possible when adequate resources are available in the classroom that broaden the thinking of the learner and develop their grasp of the language and their ability to convey their thinking in writing. Language (in the home and in the classroom) and contextual factors (in the home and at school) in education have an interactive effect on learner development of higher-order cognition for reading achievement (McLeod Palane, in press). The more learners are exposed to good resources, the more they will have an opportunity to develop their literacy, as well as their language competence. According to Vygotsky (1978) the socio-cultural context and access to mediation in, for example, the form

of text develops learners' higher-order thinking, which includes metacognitive processes and critical thinking, and are recognised as 21st century skills.

2.3 Reading Theory in PIRLS

The PIRLS 2016 Assessment Framework (Mullis & Martin, 2013) states that readers construct meaning in different ways and reading literacy is viewed as a constructive and interactive process (Chall, 1983, Kintsch, 2013, Rumelhart, 1975) where meaning is constructed through the interaction between reader and text (Snow, 2002). During the process of actively constructing meaning, the reader draws on a repertoire of effective reading strategies and reflects on the reading experience (Afflerbach & Cho, 2009). In addition, the prior experience and background knowledge that a learner brings to a text plays an important role in their understanding of the text (Klapwijk, 2011).

PIRLS assesses four broad-based cognitive processes of comprehension typically used by fourth grade readers. These processes are further undergirded by the metacognitive processes and strategies that allow readers to evaluate their understanding and regulate their use of reading strategies. The use of reading strategies aids higher-order reading comprehension in the learner. Reading strategies can be separated into cognitive reading strategies and metacognitive reading strategies (Keer, 2004). Cognitive strategies are mental and behavioural activities. During cognitive strategies, learners use existing knowledge, make use of re-reading, and alter reading speed to aid comprehension. Metacognitive strategies are self-monitoring and self-regulating activities (Flavell, 1976; Keer, 2004; Simons, 1994) and metacognition generally refers to the awareness, monitoring and self-regulating of cognitive strategies. Metacognitive strategies are evident when a learner is aware of applying a certain cognitive strategy and of their own cognitive abilities (Keer, 2004).

2.4 Curriculum and Assessment Policy

The Curriculum and Assessment Policy Statement (CAPS), which is the national curriculum, emphasises the importance of student proficiency in at least two languages and being able to communicate in others. The language-specific curricula follows an additive approach to multilingualism, namely, all students learn a language on a "home language" level (which for most would be their home language) and at least one additional official language, and become competent in their additional language on a second-language level, while the home language is maintained and developed. A relatively new development is that schools, not offering an African language as the Language of Learning and Teaching (LoLT), should introduce an African language in Grade 1. The incremental introduction of African Languages in South African Schools draft policy of 2013 stipulates that an African language be introduced from Grade 1 onwards as second First Additional Language. One of the main goals of the policy is to "promote and strengthen the use of African languages" (DBE, 2013, p.5). The policy was piloted in 2014 across eight provinces and in 228 schools. At this stage the pilot has not grown to scale nationally.

The language subject area includes all (11) official languages as home languages, first additional languages, and second additional languages (e.g. French, Arabic or Greek amongst others used primarily for interpersonal and societal purposes). Whilst CAPS states that the learners' home languages should be used for learning and teaching, the reality in practice is that about 80% of learners have to change to a language that is not their home language in Grade 4. Seven hours per week is allocated to *Language Instruction*, four and a half hours is dedicated to phonics, shared reading and group reading. The curriculum recognises that all learners must be taught strategies that help them to decode written text and to read with understanding. Learners should also learn to interpret pictures and other graphics to make sense of visual and multimedia texts. They should know how to locate and use information, follow a process or argument, summarise, develop their own understanding, and adapt and demonstrate what they learn from their reading. These skills are similarly reflected in the PIRLS assessment items. The curriculum also recommends that classroom be a "print rich" environment (DBE, 2011). In the current environment of under-resourcing, this goal falls short as is seen in Chapter 8 on the classroom environment.

The curriculum aims to produce learners who are able to do the following: collect, analyse, organise, and critically evaluate information and communicate effectively using visual, symbolic, and language skills in various modes. The National Curriculum Statement Grades R-12 "gives expression to the knowledge, skills, and values worth learning in South African schools" (Department of Basic Education, CAPS, p.4). Language learning includes all the official languages. In Grade 4, these languages are offered either at Home Language or First Additional Language levels. The curricula for Home Language and First Additional language differentiate the proficiency level at which the language is offered. Emphasis is placed on the teaching of listening, speaking, reading and writing skills appropriate to either level. CAPS states that at the First Additional Language level, the "curriculum provides strong support for those learners who will use their first additional language as a language of learning and teaching" (Department of Basic Education, CAPS, p.8). The First Additional Language CAPS take advantage of learners' literacy skills in their home language. "For example, activities such as guided reading that are introduced in the Home Language CAPS in Grade 1 are introduced in the First Additional Language CAPS in Grade 2" (Department of Basic Education, CAPS, p.9). In this way, the curriculum embraces -'additive bilingualism' by aiming to develop a strong literacy foundation in the Home Language and building First Additional Language literacy onto this foundation.

In South Africa, many children start using their additional language, English, as the language of learning in Grade 4, which means that they need to reach a high level of competence in reading and writing English by the end of Grade 3. The Grades 4-6 or Intermediate Phase provides learners with literary, aesthetic, and imaginative competencies that will enable them to recreate, imagine, and empower their understandings of the world in which they live. Listening, speaking, and language usage skills are further developed and refined but with an emphasis on reading and writing skills, which are considered central to successful learning across the curriculum (DoE, 2010). The curriculum expectations of the Intermediate Phase (Grades 4 -7) are congruent with the assessment items found in PIRLS in that during the Intermediate Phase,

learners are expected to further develop their proficiency in reading and viewing both literary and non-literary texts, including visual ones, and learners must be able to recognise genre, and reflect on the purpose, audience and context of texts. Through classroom and independent reading, learners in this phase learn to become critical and creative thinkers. Listening and speaking receive less emphasis than reading and writing skills from Grade 7 onwards.

CAPS places the responsibility on teachers to differentiate reading levels and to select appropriate reading materials that will effectively support learners. Course readers are considered important for reading instruction, while authentic reading material (library books and other real-life texts) are used to develop higher levels of reading (i.e., independent reading). CAPS is also specific in providing teachers with instructional plans that contain the minimum content to be covered over two-week blocks.

CAPS provides teacher guidelines on the development of a language lesson. It suggests that pre-reading activities should be used to prepare learners for reading. Typical pre-reading activities include discussion of the text title, predictions about story content, and using keywords from the text to engage learners even before starting to read. The curriculum encourages teachers to interrupt reading sessions by looking back at the text in order to verify whether predictions were accurate, or to discuss why things did not develop in the way learners had predicted. At the same time, further predictions could be made about the story. Teachers are advised to engage learners in reflection following reading. Literal questions could be asked, leading to more complex and abstract answers based on inferences made from the text. Learners could be asked to re-tell, dramatise, or critically discuss the text by focusing on values, messages, or cultural or moral issues conveyed in the text. Other activities include comparing the current text to other texts they have read independently, or showing differences and similarities between texts.

2.5 Assessment of Cognitive Levels for Comprehension in CAPS and PIRLS

In CAPS Grades 1-3 (Foundation Phase) and Grades 4-6 (Intermediate Phase) at Home Language level, both lower order and higher order cognitive levels of reading comprehension are emphasised. The Additional Language curriculum for the Foundation Phase suggests that an important way of developing children's reading comprehension is by asking questions that enable learners to engage with the text. The teacher begins with simple questions and gradually (as learners get used to question forms and develop the language necessary to answer them) asks more complex questions with the requirement being that by the time learners are in Grade 3 they should be able to answer 'Why…?' questions. Conversely, the Home Language curriculum for the Foundation Phase makes more complex cognitive demands and requires instruction in reading comprehension that provides the learners with the opportunity to engage in a range of levels of thinking and questioning across the lower and higher order comprehension skills, including the cognitive levels of literal comprehension, reorganisation, inferential, evaluation and appreciation. Teachers are also guided to work on metacognitive skills to teach learners to monitor themselves when reading.

In the Intermediate Phase, the percentage assessment requirements allocated to lower and higher order cognitive levels is the same for both the Home language and Additional Language levels. Literal (cognitive level 1) and reorganisation (cognitive level 2) are required to make up 40% of a reading comprehension task, inference (cognitive level 3) should make up a further 40% of comprehension task with evaluation (cognitive level 4) and appreciation (cognitive level 5) making up the last 20% of a comprehension assessment.

A similar structure that facilitates the process of moving from lower order (retrieval of information or cognitive levels 1 and 2) to higher order (making inferences, integrating information and evaluating text or cognitive levels 3, 4 and 5) questioning is observed in the PIRLS assessments. The two reading purposes and four comprehension processes form the basis for assessing PIRLS and PIRLS Literacy; however, there are some differences in emphases across the assessments. Note that the assessments used for the Grade 5 learners included PIRLS Literacy passages to link the two types of assessments. Table 2.1 from Mullis and Martin (2013, p.16) below shows the percentage spread of purpose and processes for the two studies.

Table 2.1: Percentages of Items assessing different Purposes for Reading and Processes of Comprehension

	PIRLS	PIRLS LITERACY
Purposes for Reading		
Literary Experience	50%	50%
Acquire and Use Information	50%	50%
Processes of Comprehension		
Focus on and Retrieve Explicitly Stated Information	20%	50%
Make Straightforward Inferences	30%	25%
Interpret and Integrate Ideas and Information	30%	25%
Evaluate and Critique Content and Textual Elements	20%	

In the PIRLS assessments, the four comprehension processes are used as a foundation for developing the comprehension questions which are based on each reading passage. For each assessment, the questions are varied in order to measure the range of comprehension processes. The length and complexity of a text also has bearing on the complexity of the comprehension process. It is important to note that although locating and extracting explicitly stated information appears to be less difficult than making interpretations across an entire text, all texts are not equal and can vary with regard to length, syntactic complexity, abstractness of ideas, and organisational structure which impacts the difficulty of the question asked across the four types of comprehension processes (Mullis & Martin, 2013).

2.5.1 Focus on and Retrieve Explicitly Stated Information

In focusing on and retrieving explicitly stated information, readers use various ways to locate and understand content that is relevant to the question. Items testing this process require the reader to focus on the text at the word, phrase and sentence level for the purpose of constructing meaning. The process may also require the reader to focus on and retrieve pieces of information from across the text (Mullis & Martin, 2013).

The PIRLS 2016 Assessment Framework outlines the range of the focus on and retrieve process as follows:

- Identifying information that is relevant to the specific goal of reading;
- Looking for specific ideas;
- Searching for definitions of words and phrases;
- Identifying the setting of a story (e.g., time and place); and
- Finding the topic sentence or main idea (when explicitly stated) (Mullis & Martin, 2013, p. 21).

2.5.2 Make Straightforward Inferences

The ability to 'make straightforward inferences' that are not explicitly stated allows readers to move beyond the surface of texts and to resolve gaps in meaning. Some of these inferences are straightforward in that they are based primarily on information that is contained in the text and readers must connect two or more ideas. The ideas themselves may be explicitly stated, but the connection between them is not, and must, therefore, be inferred. However, despite the inference not being explicitly stated in the text, the meaning of the text is understood. Skilled readers will connect two or more pieces of information and recognise the relationship even though it is not stated in the text (Mullis & Martin, 2013).

As stated in the PIRLS 2016 Assessment framework, with this type of processing, the focus may be on local meaning residing within one part of the text, the focus may also be on a more global meaning, representing the whole text. Reading tasks that may exemplify this type of text processing include the following:

- 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; and
- Describing the relationship between two characters (Mullis & Martin, 2013, p.22).

This is an excerpt from a limited use PIRLS passage named 'Macy and the Red Hen' by Prue Anderson:

> Macy unclipped the cage door. She pulled it open and she smiled as a cloud of hens exploded into the yard. With much feather shaking and squaking they settled down to eat the dinner Macy scraps Macy had scattered for them.
>
> What is Macy doing at the start of the story?
> a) Catching a hen
> b) Feeding the hens
> c) Looking for eggs
> d) Collecting feathers

2.5.3 Interpret and Integrate Ideas and Information

As with the more straightforward inferences, readers who are engaged in interpreting and integrating ideas and information in text may focus on local or global meanings. As readers interpret and integrate they construct meaning by integrating personal knowledge and experience with meaning that resides within the text. In this way, readers draw on their understanding of the world, as well as their background knowledge and experiences, more than they do for straightforward inferences and make connections that are not only implicit, but that may be open to some interpretation based on their own perspective (Mullis & Martin, 2013).

The PIRLS 2016 Assessment framework describes these reading tasks as: 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; and
- Interpreting a real-world application of text information (Mullis & Martin, 2013, p.23).

The question below is an example of an interpret and integrate type question from a PIRLS passage named 'Flowers on the roof':

> Who is telling the story?
> a) Granny
> b) A child
> c) A doctor
> d) A farmer
>
> The reader has to infer who is telling the story by integrating different clues from the story.

2.5.4 Evaluate and Examine Content, Language and Textual Elements

According to Mullis and Martin (2013), as readers evaluate the content and elements of a text, the focus shifts from constructing meaning to critically considering the text itself. Readers engaged in this process step back from a text in order to examine and critique it.

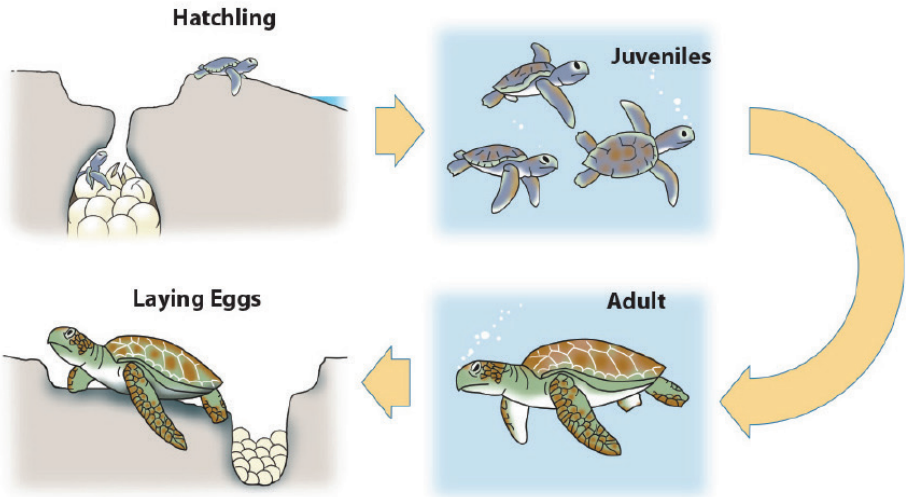
In evaluating and critiquing elements of text structure and language, readers draw upon their knowledge of language usage to reflect on and judge the author's language choices and devices for conveying meaning. Using past reading experience and familiarity with the language and text structure, readers evaluate the visual and textual features used to organise the text (Mullis & Martin, 2013).

- The tasks encapsulating this process are outlined in the PIRLS 2016 Assessment Framework: Judging the completeness or clarity of information in the text;
- Evaluating the likelihood that the events described could really happen;
- Evaluating how likely an author's argument would be to change what people think and do; Describing the effect of language features, such as metaphors or tone; and
- Determining an author's perspective on the central topic (Mullis & Martin, 2013, p.24).

The exerpt below is from a limited use PIRLS passage named 'Green Sea Turle' and is an example of an evaluative question:

14. A diagram from the article is shown below.

What does this diagram help you to understand?



1 what all the parts of the life cycle are

2.6 Conclusion

Taking into account the purposes and processes of comprehension required by the PIRLS assessments, teachers need to consider the implications this has for teaching according to CAPS in the classroom. The PIRLS reading comprehension processes can be used as guidelines for teaching reading literacy in the early grades. Previous PIRLS studies have alerted the Department of Basic Education to the need for more challenging reading materials for young readers and to the obstacles South Africa faces in reading literacy.


PIRLS 2016
Fundela ukuzithokozisa
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CHAPTER 3: RESEARCH DESIGN AND METHODS IN PIRLS 2016

Celeste Combrinck, Karen Roux, Mishack Tshele, Gabriel Mokoena and Nelladee McLeod Palane

3.1 Introduction

An overview of the PIRLS research design and methodology, as applied in South Africa, is described in Chapter 3. Differences to the international study are noted but generally all international procedures were followed, complied with and quality assured. For more information on the international study, see the TIMSS and PIRLS International Study Centre[10] webpages. An encyclopaedia is also available for each country (see Mullis, Martin, Goh & Prendergast, 2017 and Howie, Combrinck & Roux, 2017). Martin, Mullis and Hooper (2017) provide detailed information on the PIRLS 2016 study in their Methods and Procedures[11] publication.

South Africa was one of 50 countries participating in PIRLS 2016 and there were an additional 11 benchmarking participants (TIMSS and PIRLS International Study Centre, 2017). In each of the 50 countries, a representative random sample of classes was tested. In terms of countries which chose to be benchmarking participants, they selected one or more test populations and do not have a representative sample of the country (province, language etc). South Africa had a fully representative sample for Grade 4. At the Grade 5 level, South Africa was a benchmarking participant and chose representative samples of Afrikaans, English and isiZulu schools which are also representative of provinces.

This chapter provides a broad overview of the PIRLS Grade 5 study and how it was implemented in the South African context. The international conceptual framework underlying the study is described as well as the broad research questions (see also Mullis & Martin, 2015). This chapter also includes the methods, sampling, research instruments, translation and data collection methods, how the data were captured, scoring of the open-ended achievement instruments and the data processing and quality assurance procedures. The international study utilises sophisticated methods that have been developed over the course of the last 50 years or more, and relies on statistics and psychometric models, developments in the reading comprehension discipline and research methodology developed specifically for large-scale assessment studies. At the heart of the study is the globally recognised tenet that reading and comprehension skills are pivotal to function in a modern society.

[10] https://timssandpirls.bc.edu/pirls2016/index.html
[11] https://timssandpirls.bc.edu/publications/pirls/2016-methods.html

3.2 International Conceptual Framework: PIRLS 2016

The PIRLS framework defines reading literacy as being able to understand written works required for functioning as an individual and as part of a society (Mullis & Martin, 2015). The conceptual framework is shown in Figure 3.1 below.

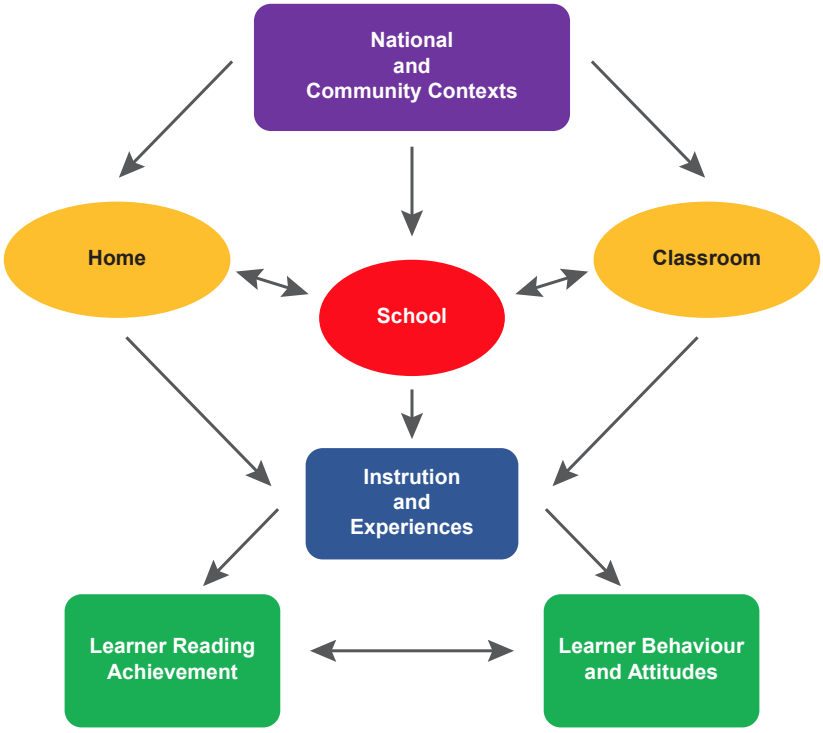


Figure 3.1: Conceptual Framework for the PIRLS 2016 (from Mullis et al., 2009)

In order to function in a society, a reader must be able to retrieve information from a text, interpret what they read, evaluate the information and apply it in a variety of contexts (Britt, Goldman & Rouet, 2012). The acquisition and development of reading literacy is influenced by home, school, classroom and broad societal factors. The international PIRLS framework is based on the direct or indirect association of home, learner, classroom, school and society factors with reading literacy achievement (Mullis & Martin, 2015).

3.3 National Research Objectives

Overall the study aimed to assess how well learners at the Grade 5 level comprehend a text when compared to the international benchmarks and standards. The specific research objectives for PIRLS are described below.

1. To assess the overall reading comprehension achievement and benchmarks reached for Grade 5 learners in South Africa, in Afrikaans, English and isiZulu and in nine provinces;
2. To assess Grade 5 learner comprehension levels in relation to curriculum objectives for reading education;

3. To assess the potential impact of the home environment and school conditions on Grade 5 learner performance and the role of parents in reading achievement;
4. To assess classroom approaches to and strategies for the teaching of reading in Grade 5, taking into account time and reading materials for instruction;
5. To assess policy implementation regarding curriculum and infrastructural development in schools at Grade 5 level; and
6. To link PIRLS Literacy to PIRLS so that learner achievement can be compared to the international benchmarks.
7. To track long-term trends in reading literacy at Grade 5 level.

3.4 Study Design and Methods

PIRLS is designed as a Trend study and this determines the design and utilisation of the specific methods to be used. In order to measure trends, countries therefore need to participate in multiple cycles of PIRLS. South Africa has participated in three cycles: 2006, 2011 and 2016. If all three rounds of PIRLS are compared for Grade 5 learners, only the achievement and questionnaire data of learners from Afrikaans and English schools is comparable. Some questionnaire items changed from one cycle to the next and only items that remained the same in each cycle should be used for comparison. Table 3.1 below shows comparisons possible for the Grade 5 cohorts across the cycles.

Table 3.1: Comparisons Possible Across Groups (Trends)

	2006, 2011 & 2016	2006 & 2016
Grade 5	• Achievement and contextual (questionnaire) data for Afrikaans and English Language groups can be compared.*	• Achievement and contextual (questionnaire) data for Afrikaans, English & isiZulu. Language groups or provinces can be compared.*

* Languages cannot be compared within provinces. No provincial data collected in 2011

The 2006 and 2016 cycles offer the opportunity to compare achievement results for isiZulu as well as contextual data for questionnaire items that remained the same for this language group. This comparison gives an indication of potential changes that have been taking place in literacy development in the five years between the cycles for the selected language groups. It offers an important indicator of progress being made in language of instruction. Based on the fact that South Africa participated as a benchmarking country with only selected populations, the label used in the international report as well as the national report for South Africa's participation is: Eng/Afr/Zulu- RSA (5).

3.4.1 Population and Sampling: PIRLS 2016

The target population for PIRLS is the grade that represents four years of schooling counting from the first year of ISCED Level 1. However, the IEA has a policy that students should not fall under the minimum average age of 9.5 years old at the time of testing (Mullis, et al, 2017). As mentioned in Chapter 1, South Africa had two populations participating in PIRLS 2016:

1. Grade 4 learners that participated in PIRLS Literacy 2016 and met the target population description. This population was a nationally representative sample stratified by language and by province; and
2. Grade 5 learners that participated in PIRLS 2016 and were a year older than the target population defined by the IEA for the purpose of benchmarking. This population is the focus of this report and is therefore described in greater detail below.

The population selected for benchmark participation was the South African Grade 5 learners in three school languages (namely, Afrikaans, English and isiZulu). As the Language of Learning and Teaching (LoLT) changes for the majority of learners from Grade 4, schools were selected based on the LoLT in Grade 1 to 3 (Foundation Phase)[12]. A random sample of schools was selected to be representative of language and province. Results reported in Chapters 4 to 9 are representative of the South African Grade 5 population for three school languages (weighted percentages). To obtain the precision needed in the sample for the three languages, there are implicit strata which impact the final sample. In the schools, there are schools with

- European-based languages (Afrikaans or English)
- African languages (9 official South African languages)
- European-based and African languages
- Both European-based languages
- Multiple African languages

The reason why these three languages in particular were selected was as a result of the previous rounds of PIRLS in 2006 and 2011. In 2006, all 11 languages were tested at the Grade 4 and Grade 5 level but the average performance was well below the Lowest Benchmark and did not provide adequate information about reading literacy for South African Grade 4 learners, more especially those learners writing in an African language[13]. This resulted in the data from Grade 5 being used for reporting. Subsequently, in 2011 South Africa participated in PIRLS at Grade 5 level as a benchmarking participant and selected Afrikaans and English schools as the performance in these two languages was adequate for valid and reliable measurement, especially from a trend perspective.

PIRLS implements a two-stage stratified cluster sampling design which was used to select the samples. In Stage one of the sampling, schools were randomly sampled with a probability proportion to size design, followed by a second stage of randomly sampling classrooms within school. The second stage was to select a class (cluster) within a school randomly. All the children in that class were selected to participate unless there was a problem with their eligibility.

[12] There are 11 official languages that are offered in schools from Grades 1-3 and thereafter only Afrikaans and English are offered officially as the Language of Learning and Teaching.
[13] Therefore the Grade 4 learners wrote the easier test prePIRLS in 2011 and PIRLS Literacy in 2016

The PIRLS 2016 Grade 5 sample was designed to be representative of Grade 5 learners from all the nine provinces and of the three selected languages and the sample can be generalised to each of the provinces and each of the three languages. However, because the sample does not include the other eight official languages, the sample cannot be generalised as a national representative sample overall. To reduce costs and optimise the fieldwork, the same schools were selected for both PIRLS and PIRLS Literacy where possible together (resulting in 82 common schools). Figure 3.2 shows the PIRLS Grade 5 sample in the context of the PIRLS study as a whole.

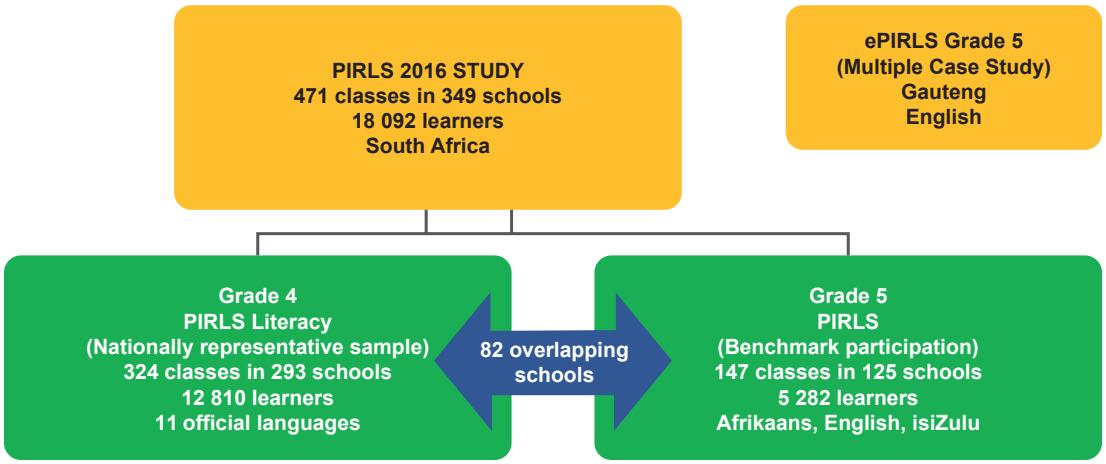


Figure 3.2: The South African Grade 5 PIRLS Sample in context of the broader sample

A total of 152 schools were originally sampled to participate in PIRLS 2016 by Statistics Canada from the sampling framework based upon the Electronic Management Information System (EMIS) dataset. Two datasets were obtained from the national Department of Basic Education. The EMIS data was combined with a dataset about language implementation in the Foundation Phase in schools. Each school had a first and second replacement school with the same characteristics in the event a school declined to participate. Some schools were also not able to participate because they either did not have the target grade, the school had closed down or was unreachable. This information was not reflected on the EMIS database and therefore these schools were unknowingly selected.

PIRLS 2016 was a voluntary study and schools were not obliged to participate. After contacting the 152 sampled schools, 133 schools were deemed eligible for participation, that is, they had the correct LoLT (for which they had been selected) and had the appropriate grade. The final achieved sample (schools that were tested) comprised a total of 125 schools, resulting in a participation rate of 94%. Within the 125 schools selected for participation in the study, a total of 156 classes were sampled for the PIRLS 2016 Grade 5 study. Table 3.2 presents the number of schools participating per province.

Note that in Table 3.2, the original number of schools selected for participation is shown, before eligibility had been determined as well as the actual number of schools that participated.

Table 3.2: PIRLS Grade 5 Sampled Number of Schools per Province

	Original Number of Schools selected for participation	Number of Schools Participated	Percentage of Schools Participated
Eastern Cape	14	8	57%
Free State	6	3	50%
Gauteng	36	30	83%
KwaZulu Natal	47	44	94%
Limpopo	5	2	40%
Mpumalanga	9	8	89%
North West	6	5	83%
Northern Cape	6	5	83%
Western Cape	23	20	87%
Eng/Afr/Zulu- RSA (5)	152	125	82%

*Table includes replacements

After contacting the participating schools, only 156 classes were deemed eligible for participation. However, ultimately 147 classes were tested as part of the study representing 94% of classes tested. Table 3.3 illustrates the number of classes participating in the study per province.

Table 3.3: PIRLS Grade 5 Eligible Number of Classes per Province

	Number of Classes Eligible for participation	Number of Classes Participated	Percentage of Classes Participated
Eastern Cape	10	9	90%
Free State	6	6	100%
Gauteng	39	37	95%
KwaZulu Natal	47	45	96%
Limpopo	3	2	67%
Mpumalanga	10	9	90%
North West	7	7	100%
Northern Cape	6	6	100%
Western Cape	28	26	93%
Eng/Afr/Zulu- RSA (5)	156	147	94%

Table 3.4 shows the breakdown of the classes tested by language. Breakdown per school for languages is not shown as languages were, in some cases, sampled from the same schools (schools with more than one LoLT at Foundation Phase). Of the 147 classes, most (60) classes were from English schools followed by isiZulu (53).

Table 3.4: PIRLS Grade 5 Total Number of Classes Tested by Language

	Number of Classes Eligible for participation	Number of Classes Participated	Percentage of Classes Participated
Afrikaans	37	34	92%
English	64	60	94%
isiZulu	55	53	96%
Eng/Afr/Zulu- RSA (5)	156	147	94%

3.4.2 Assessment Instruments: PIRLS 2016

The assessment instruments were designed to be administered in the languages that learners were exposed to for four years. In the South African context, this meant that learners were tested in the language in which they had received instruction from Grades 1 to 3 and then for most learners, the Home Language taken in Grade 4.

As PIRLS uses a rotated test design, the matrix design of the assessment instruments included 12 literary and informational passages in various combinations together with 8-12 items (questions). Of the 12 passages, six were trend passages. The six trend passages consisted of four PIRLS passages and two prePIRLS passages. The prePIRLS passages created a vital link between the PIRLS and PIRLS Literacy studies which enabled the IEA to align the PIRLS Literacy results with the PIRLS international scale. The PIRLS passages (both literary and informational) started with the passage, followed by its questions. PIRLS passages are set up according to international standards of what learners should be able to read and understand in their fourth year of schooling. The passages were then combined into booklets with two passages and their associated items.

In PIRLS, literary (narrative-based texts) and informational texts assessed two 'purposes for reading': that is, reading for literary experience and reading for the use and acquisition of information with each comprising 50% of the assessment. Within each of these two purposes, four 'processes of comprehension' were identified (Mullis & Martin, 2015). The learner is required to:

- Focus on and retrieve explicitly stated information
- Make straightforward inferences
- Interpret and integrate ideas and information; and
- Examine and evaluate content, language and textual elements

Important Note Regarding Scaling: *The scaling of PIRLS and PIRLS Literacy was done conjointly but the international achievement scale was fixed to the PIRLS common item difficulties. In 2011, the prePIRLS achievement results could not be placed on the PIRLS scale as yet and was seen as a separate measurement. In 2016, there were common passages between PIRLS and PIRLS Literacy, creating the opportunity to place both studies on the same scale using Item Response Theory. The PIRLS Literacy achievement data for both 2011 and 2016 have been rescaled to be on the PIRLS measurement scale aligned to the international standard. This means there is one scale of measurement, but two ways a child can be placed on the scale: either from PIRLS which has more difficult passages and/or from PIRLS Literacy which has easier passages. PIRLS Literacy may provide more information for children with lower reading ability as they may be more able to access the items and secondly, more motivated to complete an easier version of the test.*

3.4.3 Contextual Questionnaires for PIRLS 2016

Five questionnaires were included in PIRLS (learner, parent, teacher, principal and curriculum). The questionnaires were designed to collect information related to the reading behaviour of learners and attitudes of learners, parents, teachers and school principals towards education and reading in general, in addition to contextual information about homes, classrooms and schools. As part of the new assessment cycle, the National Research Co-ordinators (NRC) reviewed the aforementioned questionnaires to ensure that the items align with the goals for each questionnaire. Thereafter, the TIMSS and PIRLS International Study Center updated the draft questionnaires based on the NRC reviews which were then discussed at the Questionnaire Development Group (QDG) meeting for final review and modification.

The Learner Questionnaires included questions about the attitudes to reading and reading habits, in addition to collecting information about their experiences, and their home and school environment. The Home Questionnaire asked parents or primary caregivers about their demographics, attitude to reading, the early home activities conducted with their child as well the quality of the relationship between the parent and the school. The Teacher and *School Questionnaire*s asked about school and classroom environments, the attitudes of the principal and the teachers as well as other related factors such as the qualification, years of experience, teacher professional development and job satisfaction of the teacher(s).

Participating countries had the opportunity to add National Options to the four questionnaires. National Options are additional contextual items added to relevant sections of the questionnaires, and in the South African study, National Options allowed for more insight into the South African educational and social landscape.

The *Curriculum Questionnaire* was completed by the NRC together with assistance from others. Questionnaires related to the language curriculum content and reading on system level are asked. This is to provide the vital context for understanding the achievement results.

3.4.4 Translation of Instruments in South Africa

A certified translation company was contracted to translate the instruments as well as to adapt the international English version to UK English. The translation processes were protracted due as the subtleties and nuances of the passages, the immense challenges of translating four PIRLS passages into 10 of the official languages after initially adapting the English version to the South African context, as well as the changes made as a result of the international meeting held in Finland in 2015. The late release of the instruments made translation especially problematic for the South African team and resulted in only six weeks to translate, back translate, complete translation verification, complete formatting and layout, layout verification prior to the printing of instruments. Grade 5 language teachers (language of the test) were recruited and they reviewed passages for appropriateness of translation and difficulty for Grade 5. The final translations were based on the decision from the official translators as the translation company used certified language practitioners.

In addition, all new PIRLS passages were translated, back translated, translations verified and proofread against English versions in this restricted period. A total of four PIRLS passages were translated and underwent a rigorous process of verification. It is also important to note that the trend passages could not be drastically changed, as too many changes would invalidate the link between the studies (2006, 2011 and 2016). Modifications or refinements to trend passages and items were extremely limited in order to protect the link between the studies. The main aim of the translations was to create equivalent versions across all the languages. Crafting equivalent versions of an existing English version in other languages is immensely difficult as phrases and vocabulary may not be available in some of the languages, especially the minority languages. The translation team endeavoured to translate content as accurately and fairly as possible but also acknowledged that languages are qualitatively different from one another in ways for which translation cannot account. All the translated instruments were sent to the IEA international partners for translation verification. The translation verification required the international partners to select local translators in South Africa to check the quality of the translations. The translation verification then resulted in comments and suggestions which the South African language specialists implemented in conjunction with local translators.

The *School* and *Teacher Questionnaires* were translated into Afrikaans, whilst the *Learner* and *Home Questionnaires* for PIRLS were translated into Afrikaans and isiZulu[14]. The questionnaires underwent thorough translation verification and extensive quality assurance processes. As part of quality assurance of the questionnaires, an experienced team of language experts meticulously reviewed each item for translational equivalence across the different languages. Where there seemed to be a discrepancy in the translations, the language expert, together with the questionnaire co-ordinator, conducted a follow-up review of the specific item(s) and made informed final decision(s) about the item(s).

[14] In PIRLS at Grade 5, all assessments were translated into the three official languages as were the learner and parent questionnaires (the latter was a bilingual version including English as a second language).

3.4.5 Formatting and preparation of instruments

After the translation verification was completed, the files were imported and formatted in *InDesign*. After the passages were formatted in *InDesign*, they were returned to the translators for proofreading. The assessment instruments comprised 15 different types of booklets with each passage appearing in three booklets. In addition, a reader, which contains two passages not repeated in any of the other booklets, forms part of the set of instruments. The reader was printed in colour and left at the school as a resource for the teacher. To create 16 booklets for each of the three languages resulted in the creation of 48 different types of instruments for the PIRLS Grade 5 study. The questionnaires required the creation of two instruments for the school and *teacher questionnaire* (in English and Afrikaans) and six instruments for the parent and learner questionnaire (which is in every official language). Figure 3.3 illustrates the translation and layout processes.

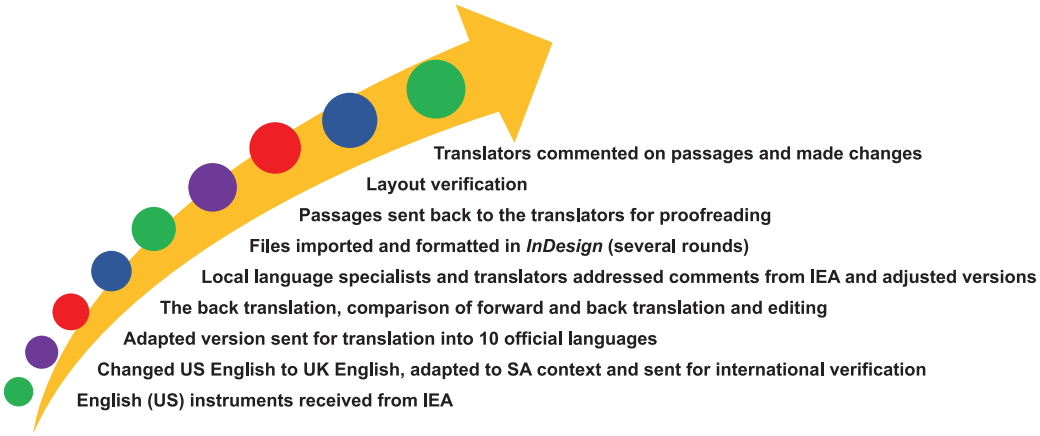


Figure 3.3: Translation and Formatting Processes for PIRLS 2016

After the creation of the booklets and questionnaires, quality assurance was conducted by the internal team, prior to being returned to Boston College in the USA for layout verification. The layout verification process required three working days and when instruments were received from Boston, further changes had to be made. The final print version was checked and signed off by the National Research Co-ordinator (NRC). This process took place in September and October 2015 and short timelines resulted in the layout verification only being completed after fieldwork had commenced as South Africa's production of more than 200 instruments (including the Grade 4 instruments in 11 languages exceeded the capacity of the international quality assurers). Fortunately, the technical quality of the layout was excellent in general and no significant problems were encountered.

3.4.6 Contacting Schools, obtaining Class Lists and confirming Participation

The process of contacting the schools consisted of making the initial contact with the schools, sending of letters, confirming participation, confirming school details and obtaining class lists. After recruiting and training callers, each was assigned specific province/s to call. Callers were provided with calling files, which contained the training manual, the interview protocol as well as the calling sheets for each sampled school of a particular province. The calling sheets contained the school information that needed to be confirmed, including the school name, principal's name,

district, study (PIRLS/PIRLS Literacy), EMIS Number, school address, number of Grade 4 and/or Grade 5 classes, stratum, contact person, telephone number, fax number and email address. All of the above data was recorded on the calling sheet. The callers requested the schools to send, by fax or email, the class lists of all the classes of the sampled grade with specific demographic information such as learner names and surname, class name, gender and date of birth. The follow-up phoning was implemented a week or so later to obtain the class lists. In the case of unreachable schools, the provincial co-ordinators and district officials were contacted to assist with updated contact details of the schools. After all possible avenues of contacting these unreachable schools were exhausted, replacement schools were contacted.

3.4.7 Field Trial

A field trial of the English version of the assessment instruments was conducted for both PIRLS and PIRLS Literacy nine months prior to the main study data collection. The field trial took place form 9-19 March 2015. The schools were contacted in the weeks prior to data collection by the Centre for Evaluation and Assessment (CEA). Of the 16 schools originally sampled, two declined to participate and were replaced. The field trial was only conducted in Gauteng and only in schools where the LoLT was English from Grade 1.

3.4.8 Data Collection Main Study

The data collection for the main study of PIRLS was conducted at the end of 2015 with a smaller percentage of schools (36%) at the beginning of 2016. An external company was contracted to implement the data collection. The performance of the 2016 group was lower statistically than 2015 achievement. This is mainly attributed to the fact that it was the most-difficult-to-reach schools which made up the majority tested in 2016 for the Grade 5 study.

3.4.8.1 Packaging the materials

As every instrument had a personalised unique number, a number of packing assistants were recruited and trained to pack the boxes as per IEA guidelines. Boxes were prepared, labelled for each school, and colours assigned to each province. Each class had two boxes: Box 1 (a bigger box) contained achievement booklets, Learner Questionnaires, learner and teacher tracking forms, test administration forms, student response rate forms, school infrastructure checklist, pencils and sharpeners and Box 2 (a smaller box), contained the *School, Teacher* and *Parent Questionnaires*. The packer, assigned to pack a particular box of a class, received a package for that class from the dispatcher, consisting of stickers for achievement booklets and all the questionnaires, and student and teacher tracking forms. Achievement booklets were assembled in batches chronologically per language. A CEA quality control officer checked each box using a quality assurance checklist. The completed boxes were recorded on the spreadsheet and dispatched for collection by the fieldwork company. The process was repeated for Box 2, where learner labels were pasted on the *Parent Questionnaires*. A quality control officer checked the box and despatched them for collection by the fieldwork company.

3.4.8.2 Training of Test Administrators (fieldworkers)

Fieldworkers attended a full-day training session which included an introduction to the study, explanation of the instruments and standardised procedures, what challenges to expect as well as practice sessions. At the end of the training day, each data collector completed an assessment in which they had to describe in their own words the processes to follow during fieldwork. Based on scoring results from the essay assessment, fieldworkers who did not understand the standardised procedures and/or were not adequately literate were eliminated from the fieldwork teams.

3.4.8.3 Procedures

Learners answered two passages on their own, and were given 40 minutes for each passage and its questions, with a break in-between. After the achievement booklets had been completed and collected, learners were given another break. Following the second break, the fieldwork administered the Learner Questionnaire by reading each question aloud and demonstrating how to answer the questions. The questionnaire administration was treated as an exam situation where learners were allowed to ask questions but not to speak to one another to reduce social desirability responding.

3.4.8.4 Challenges During Data Collection

Fieldwork for the IEA studies is always challenging given the complex nature of the design and the South Africa environment and conditions in schools. PIRLS 2016 was more challenging than previous cycles for the following primary reasons:

- A shorter international timeframe and subsequent late receipt of international instruments. This delay meant less time to translate instruments into 10 languages which was exceptionally challenging.
- The timing of the testing coinciding with the examinations in many schools was unfortunate and subsequently, had a negative impact on school's willingness to participate and increased difficulties in securing dates.
- The forced closure of the University of Pretoria intermittently across the end of October and November 2015 due to student protest action cost the project a week of work, immediately before the fieldwork commenced, and had a significant impact resulting in rescheduling of testing. The forced closure again in January 2016 resulted in delays and more rescheduling.
- Challenges of finding a fieldwork company. The CEA selected an external fieldwork company to conduct the data collection and there were limited choices available in South Africa. This is especially challenging considering that the PIRLS study required a fieldwork company experienced in educational data collection with fieldworkers who have knowledge and experience of the South African school system. Furthermore, due to the many languages assessed, there is also a requirement that fieldworkers be fluent in the language of testing. Securing a fieldwork company meeting all requirements was very challenging when also taking into consideration the regulatory requirements as specified by the University of Pretoria.

- Annual National Assessments (ANAs) unexpectedly enforced on schools in December 2015 simultaneously to PIRLS fieldwork resulted in cancellations and refusals by schools, and ultimately shut down the fieldwork at the end of November 2015 with no further testing taking place in 2015.

As a result, the fieldwork of PIRLS and PIRLS Literacy was an immense challenge. However, the CEA worked closely with the selected fieldwork company to ensure high quality implementation of the project as well as timely completion.

3.4.9 Scoring

Whilst many of the items were multiple choice, there was a significant proportion of the items that were open-ended and required scoring. Strict standardised procedures were put in place for the scoring and quality assurance processes that were followed and are described below: Batches were created for each language in preparation for the scoring of the constructed response items in the achievement booklets. The scoring comprised several processes:

1. ***Recruiting Scorers:*** Scorers were recruited on the basis of the language of assessment and were required to have relevant educational training and experience.
2. ***Interviewing and Assigning Scorers to Teams***: After scorers were chosen, they were assigned to either Team A or Team B. These teams were constructed for reliability scoring. Randomly selected achievement booklets are scored on separate sheets by both teams and these results are captured so that the reliability of the scoring could be compared.
3. ***Training of Scorers:*** A team of three researchers with expertise in English, Afrikaans and isiZulu received international training on the scoring guides prepared by the IEA. During training, the recruited scorers first worked through the international training material which required them to score and discuss as a group approximately 15 practice examples for every item across all the assessments. This process familiarised them with the passages and the mark allocation for each item as laid out in the scoring guide. As batches of booklets became available for scoring, training became specific to the passages and assessments needing to be scored and live booklets were then scored and moderated by those with the international training, with feedback where necessary given to the scorers.
4. ***Quality Assurance of Scoring:*** As Team Leaders emerged during the scoring process, these selected scorers received additional training which enabled expertise to develop in the moderation process across all the African languages. The Team Leaders for each representative language were then made responsible for the quality assurance of the scripts for their team of scorers.
5. ***Cross-Country Reliability Scoring:*** This was done at the end of the study when South African scorers scored the same materials as was scored internationally using the IEA Cross-Country Scoring and Reliability Software. The selected materials were only from English-speaking countries. The cross-country reliability scoring involved all the scorers who scored English Language items. These scorers were assigned items from other countries and scored these items so that their scoring could be compared to the international scoring level.

6. ***Trend Reliability Scoring:*** The trend reliability study was done with the IEA materials from PIRLS 2011 trend passages, which were scanned in and provided electronically to the trend countries. Trend scoring was used to ensure consistent scoring over time. Scorers made use of the IEA Trend Scoring and Reliability Software. The trend reliability scoring study meant that scorers had the additional work of scoring 2011 items on a laptop. These items were scanned from the South African 2011 achievement results and scorers scored them so that their current scoring for 2016 could be compared to the scoring done in 2011.

Throughout the scoring process, rigorous quality control was in place. This resulted in 25% of instruments being randomly checked by quality controllers to ensure high levels of scoring reliability. Fgure 3.4 shows a visual representation of the scoring processes.

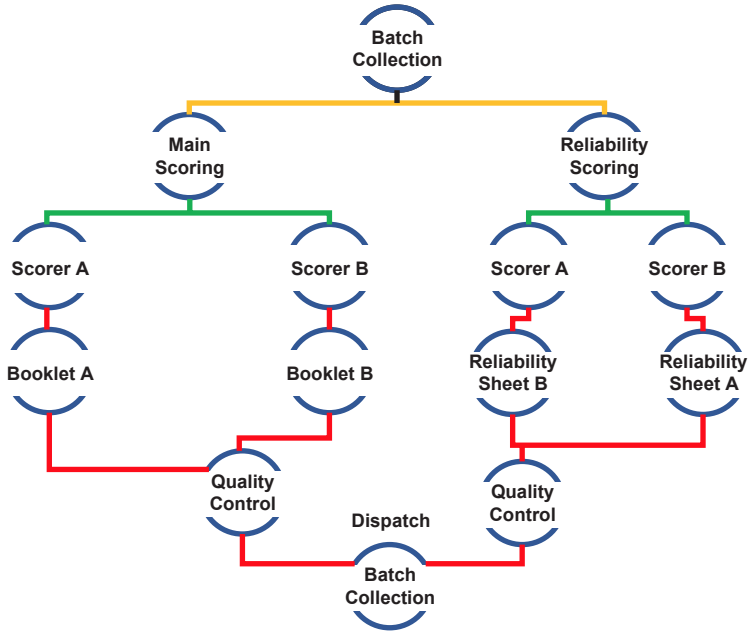


Figure 3.4: Scoring Processes followed for PIRLS scoring

Scorers completed reliability sheets: each scorer was assigned to either Team A or Team B and scored only these booklets, and then scored a percentage of the other team's booklets on a separate sheet. The scoring process provided evidence of the scoring reliability. Quality assurance workshops were held improve coherent understanding of the scoring process. Overall the scoring processes were of high quality with the scoring team working hard to complete the process (reliability above .90 for scoring).

3.4.10 Data Capturing and Processing

Once the achievement instruments were scored and the questionnaires had been quality assured, all the information from the instruments had to be captured electronically using the IEA's program, Data Management Expert (DME). The CEA, with help from the IEA data centre, created templates for the capturing of all instruments and associated forms. An external capturing company was selected to capture all data from the instruments, including the achievement booklets, the

questionnaires and other related forms. A team of approximately 40 data capturers was trained by the CEA Data Manager but data capturing was done at the company's premises. Throughout the capturing process, the Data Manager was involved in an extensive data cleaning process, sending feedback to the capturing company with requests to correct errors. Data cleaning is the process of identifying and correcting corrupt or inaccurate records from a database. It involves identifying incomplete, incorrect, inaccurate or irrelevant parts of the data and then correcting, modifying, or deleting them. Data verification was done for 100% of all instruments (double capturing), which meant that every instrument was captured by two people and then compared to minimise capturing errors. The DME has built in checks and data validation techniques which assist the data manager in ensuring that the data capturing is of a good standard. The use of this software also allows the data manager to track the progress of each scorer and determine the number of errors per scorer. The double capturing confirmed that the data were being captured correctly and ultimately, a clean database was submitted to the IEA.

Information from the questionnaires is also included in this report. In order to report on questionnaire data, it is important to take into consideration the percentage of missing data. Data are missing at two levels, firstly if the questionnaire was not returned, and secondly, if the questionnaire was returned but the respondent elected to not answer certain questions. In Table 3.5, the percentage of questionnaires returned is shown per type of questionnaires, the first type of missing data.

Table 3.5: Return Rate of Questionnaires per language group for PIRLS Grade 5 Study

Language	% Learner Questionnaires Returned	% Parent Questionnaires Returned	% Teacher Questionnaires Returned	% School Questionnaires Returned
Afrikaans	100%	82%	82%	96%
English	99%	72%	70%	78%
isiZulu	97%	58%	81%	84%
Eng/Afr/Zulu-RSA (5)	98%	68%	77%	85%

The return rate of *Parent Questionnaires*, answered by parents or guardians is especially challenging in a large-scale assessment studies such as PIRLS. The parents of learners in isiZulu schools had the lowest return rate of questionnaires (only 58%). This was followed by English (72%) and Afrikaans (82%). Overall the return rate of the questionnaires was high for South Africa, with the exception of the *Parent Questionnaire*, which in 2016 was the lowest return rate ever.

In Table 3.6, the return rate for questionnaires is shown per province.

Table 3.6: Return Rate of Questionnaires per province for PIRLS Grade 5 Study

Province	% Learner Questionnaires Returned	% Parent Questionnaires Returned	% Teacher Questionnaires Returned	% School Questionnaires Returned
Eastern Cape	100%	86%	89%	88%
Free State	100%	74%	33%	67%
Gauteng	99%	66%	70%	77%
KwaZulu Natal	96%	56%	78%	82%
Limpopo	100%	99%	100%	100%
Mpumalanga	100%	87%	89%	100%
North West	100%	95%	86%	100%
Northern Cape	100%	77%	100%	100%
Western Cape	100%	71%	77%	90%
Eng/Afr/Zulu-RSA (5)	98%	68%	77%	85%

In KwaZulu Natal, the parents or guardians of learners returned only 56%, while in Gauteng 70% of the parents returned questionnaires. The Free State had a low return rate for the *Teacher Questionnaire*, but there were only 3 schools participating in this province for the Grade 5 study.

3.4.11 Quality Assurance in the PIRLS Study

Quality assurance took place at every step of the PIRLS implementation process. Sampling was done externally by Statistics Canada with a database of schools and classes taken from the EMIS database. Contacting schools took place in close collaboration with the provincial educational departments and included verifying the information obtained from the EMIS database. Class lists were captured using the IEA program and data cleaning conducted by the CEA team. Fieldwork was monitored by both the CEA and the international monitor. Data capturing was monitored by the CEA and checked externally by the Data Processing Centre (DPC) in Hamburg. The quality of scoring was assured by the reliability scoring process stipulated by the IEA and monitored extensively by the CEA team. The processes as described earlier were also externally verified by the IEA through the cross country reliability scoring. CEA members and external companies involved in the processes underwent intensive training in data collection, scoring, capturing and analysis. In summary, The IEA has built-in quality assurance processes at key stages such as translation verification, layout verification, international quality monitors, reliability scoring, cross-country scoring, trend scoring, double-capturing system (100% verification) and data analysts who check quality of the data.

3.4.12 PIRLS Data and Analysis

The Data Processing Centre (DPC) in Hamburg conduct the final data processing and provides the final datasets to all countries as well as software and support for analysis.

International Database Analyzer: The International Study Centre and country participants in PIRLS and other international studies use the International Database (IDB) Analyzer software to analyse their data for country reports amongst others. This was created for IEA data as it takes into account the IEA's different studies' complex procedures for sampling, weights and multiple imputed achievement scores to generate statistical results (Foy & Drucker, 2013). It may be used in conjunction with SPSS or SAS to analyse the data. IDB Analyzer can be used to merge files and compute a range of statistics, including percentages of learners in subgroups and mean learner achievement in the subgroups. It can also run more complex statistics such as correlations, regressions coefficients and percentiles of achievement distribution as well as cumulative or discrete benchmarks.

Using Plausible Values for Proficiency Estimation: In order to produce the scores for the achievement results as presented in this report, PIRLS makes use of plausible values (PVs). In each cycle, PIRLS depends on Item Response Theory (IRT) scaling to combine each participating country's learner population and to provide accurate estimates of learner reading achievement. PIRLS scaling methodology also makes use of multiple imputation or more generally known as plausible values to obtain learner reading proficiency scores. Learners only answer questions for two passages but their scores are estimated for all passages through the use of IRT scaling (Martin & Mullis, 2012). Plausible values use all available background data to estimate the characteristics of learner populations by using multiple imputations from estimated ability distributions and can be analysed with statistical software for reporting. For more detail on plausible values, see Martin et al., 2017.

3.5 National Implementation of PIRLS for benchmark participation

The following section summarises the how PIRLS was implemented locally in relation to international roles and guidelines (see Table 3.7).

Table 3.7: Summary of PIRLS implementation in South Africa and International roles and guidelines

Activity	PIRLS International	PIRLS South Africa
Instrument design (passages)	• Expert group designed the passages and items.	• SA used the internationally designed instruments. • SA attended meetings to give inputs into which passages and items to be used. • SA also submitted passages for consideration.
Instrument translation	• Internationally US English version was designed. • Countries contextualised (including cultural adaption) and translated. • IEA conducted translation verification.	• SA followed the IEA guidelines of translating and back-translating. • SA has extensive translation due to implementing in 11 languages. • Translation verification done by the IEA. Questionnaires the same as the international versions but with added national options.
Instrument layout	• Standardised layouts which all countries followed. • Layout verification conducted by IEA,	• SA followed the international guidelines for layout.
Instrument printing and packing	• Internationally instruments were printed in colour. • Standardised procedures for packing.	• SA did not print in colour due to cost. • SA followed IEA standardised packing procedures.
Data collection	• Internationally most countries used teachers as “school co-ordinators” to collect data. • Whilst some used external data collectors. • Appointed International Quality Assurance Monitor for each country	• SA contracted an external company to conduct fieldwork. • CEA conducted monitoring of sample of schools
Scoring	• Standardised scoring manuals and training provided in English by IEA.	• Scoring was done according to IEA training and procedures. • SA did not translate the scoring guides prior to scoring, scorers translated during training.
Capturing	• The DME Program designed and training on program provided by IEA.	• SA used DME which was provided by the IEA but increased verification to 100%.
Analysis for national report	• DPC worked with countries to clean data. • Processing conducted by DPC. • IEA conducted training for countries to use IDB analyzer	• SA used IDB analyzer as recommended by IEA. • SA created and analysed national options variables relevant to country).
Reporting	• IEA provided international report	• SA designed country report based on data received from IEA DPC and local context.

3.6 Conclusion

PIRLS is a large, complex project which involved many stages of planning and implementation and an extended team. The main goal was to gain insights into how well learners in Grade 5 read in their language of instruction for the three selected languages and how these compared internationally and what were possible contextual factors explaining the achievement. PIRLS, as with the previous cycles, remains the only international comparative large-scale assessment study at primary school level conducted in South Africa (and internationally) that assesses reading literacy and offers benchmark findings against international standards, providing critical information for policy and practice. This chapter endeavoured to give a brief explanation of the design, methods and processes involved in the PIRLS 2016 study. Readers are encouraged to read IEA materials such as the Assessment framework document to gain deeper understanding into the complexities of conducting large scale international assessment programmes and to provide insight into the findings that follow (See https://timssandpirls.bc.edu/index.html).

CHAPTER 4: LEARNER PERFORMANCE IN READING IN 2016

4.1 Introduction

PIRLS 2016 is designed as an international comparative assessment study for reading literacy and as such the South African results can be compared to those of other countries that participated in PIRLS 2016. However, as explained in Chapter 1 and 3, a representative sample of Grade 5 learners attending schools offering instruction in Afrikaans, English and isiZulu between Grades 1-3, participated in PIRLS. As not all the official languages were assessed, the Grade 5 sample was only considered a benchmarking participant as it did not reflect the national population of all Grade 5 learners (see Chapter 3 for details).

In this chapter, the performance of the South African Grade 5 learners is compared directly to the performance in reading literacy of the other benchmarking participants and discussed relative to the other 49 participating countries in PIRLS. This chapter explores the learner achievement scores in terms of province, gender, test language, and home language as well as the reading purposes and processes.

4.2 International Achievement in PIRLS

Figure 4.1 presents the distributions of achievement results of the 11 benchmarking participants in PIRLS 2016. These included samples of learners from cities, provinces, states as well as a different grade from diverse countries such as Argentina, Canada, Denmark, Norway, Russian Federation, Spain, United Arab Emirates. South Africa was the only country to have national samples of languages included for benchmarking purposes. An average of 500 points with a standard deviation of 100 points was obtained through the use of Item Response Theory (IRT) scaling and participant achievement is depicted relative to this international mean.

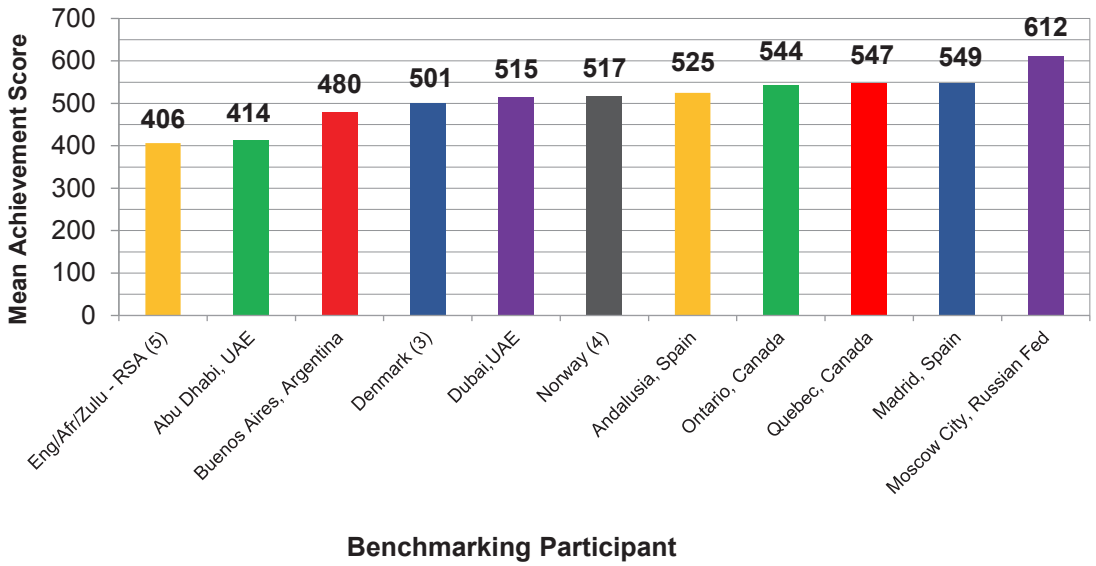


Figure 4.1: South African Grade 5 Learner Achievement compared to other benchmarking countries participating in PIRLS 2016

Of the 11 benchmarking participants in PIRLS 2016, South African Grade 5 learners achieved the lowest score (406 points, SE=6.0) and Denmark Grade 3 learners (501 points, SE=2.7) achieved the highest scores. The South African learners were amongst the older learners taking part in PIRLS.

There was an approximately 206-point difference between the South African Grade 5 learners and those from Moscow that achieved the highest scores. However, South Africa's score (406 points, SE=6.0) was not significantly lower than the UAE (414 points, SE =4.7). It is notable that eight of the benchmarking participants achieved above the international centrepoint and that South Africa with the UAE and Buenos Aires, Argentina fell below the international centerpoint.

The direct comparison of the South African Grade 5 learners with those from the benchmarking participants was not as useful given the nature of the sample of those participants and therefore, it is important to review the main international participants to see where the Grade 5 Afrikaans, English and isiZulu sample would approximate on the PIRLS scale compared to the main participants.

South Africa's average achievement in reading literacy as well as countries participating in PIRLS at the Grade 5 level is depicted in Figure 4.2 relative to that of certain reference countries, including those in the top five positions (Russian Federation, Singapore, Hong Kong, Ireland and Finland). As described in Chapter 3, the scores from PIRLS Literacy 2016 were put onto the same scale as the scores from PIRLS 2016 and therefore the South African Grade 5 Benchmarking sample can also be compared to South Africa's Grade 4 performance for Afrikaans, English and isiZulu. Hence the position of the Grade 5 learners writing in only Afrikaans, English and isiZulu can be benchmarked to the results of the countries with fully representative national samples but not directly compared.

Figure 4.2: International Achievement of selected Benchmark Participants and Countries in PIRLS 2016

In Figure 4.2, the results of the top 5 performing countries from PIRLS (Russian Federation, Singapore Hong Kong, Ireland and Finland), as well as other countries of interest such as Canada (which tested in English and French) and New Zealand (bilingual system tested in English and Maori) are depicted on the same performance scale (see Chapter 3). A few of the participating countries had post-colonial characteristics in the languages of testing (see Howie & Chamberlain, 2017).

The top performing countries for PIRLS achieved substantially higher scores than the South African Grade 4 and Grade 5 learners. The Russian Federation, the highest performing country, achieved approximately 250 points more than South African Grade 4 learners and 206 points more than the Grade 5 sample. All three African countries were the lowest three performing countries in PIRLS 2016.

The Eng/Afr/Zulu (RSA) learner performance when related to the overall PIRLS scale (see Appendix 1) was very low at 406 points and would have been situated between Oman and Kuwait. The Afrikaans, English and isiZulu Grade 5 sample achieved higher scores than Grade 4 learners from Morocco, Egypt and South Africa and comparable to Kuwait and Oman. Sixteen systems fell below the international centre point, including South African Grade 4 and 5 learners. The top five performing countries, the Russian Federation, Singapore, Hong Kong, Ireland and Finland represent diverse regions of the world. Of the top five countries, only Singapore and Hong Kong wrote the test in more than one language. More than 111 score points represents the difference between all the countries above the international centre point. However, there is a 180-point difference between the countries/systems below the international centre point. There was a 40-point difference amongst the top 25 education systems and 34 countries achieved above the international centre point. Almost all countries tested Grade 4 learners except Norway that tested Grade 5 learners, who were on average 10.8 years of age. The youngest learners were tested in Kuwait, (average age 9.6 years). Learners from the Eastern and Northern European countries in PIRLS in general were older with learners from

Latvia at 10.9 years being the oldest and the others at 10.8 years included were learners from Bulgaria, Denmark (Grade 4), Lithuania, Poland and the Russian Federation. South Africa's Grade 5 learners were the oldest in the study at 11.6 years.

4.3 Provincial Achievement in PIRLS

As in PIRLS 2006, the South African sample was stratified by province allowing for explicit comparisons between provinces as this was of direct interest to the Heads of Provinces voiced at a national meeting of Ministers after PIRLS 2011.

None of the provinces achieved a mean score above the international centre point (see Figure 3). The challenge in this comparison is that given there were only three languages tested, varying populations for these language exist across provinces and this has to be considered in these provincial comparisons. Therefore for Grade 5 learners writing in Afrikaans, English and isiZulu, the highest achieving province was the Free State, with the lowest provincial mean score being found in KwaZulu Natal. A difference of more than 100 points was found between the two provinces. Northern Cape, Mpumalanga and KwaZulu Natal achieved mean scores below 400 points.

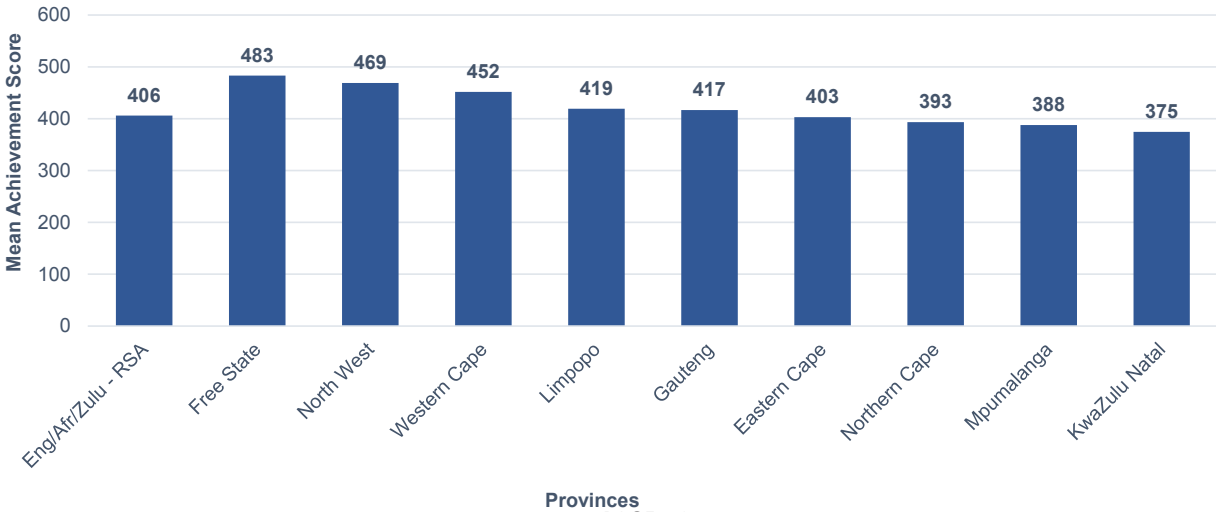


Figure 4.3: South African Grade 5 Learner Achievement in PIRLS 2016 by Province

The greatest variance in the mean score can be seen in Free State and Limpopo (see Figure 4.3), indicating that learner performances varied very widely within those provinces (both high and low). This variance was most certainly due to the language sampling (see Chapter 3 for test language distributions).

KwaZulu Natal had the smallest variation in its mean score and learners tended to score within a narrower margin of performance. This is due to the fact that there was great similarity in the performance of learners in the languages tested in KwaZulu Natal who exhibited uniformly low achievement. Learners in the Free State, Limpopo and North West, as did a fraction in the Western Cape, revealed individual performances above 600 points at the 95th percentile, whilst

Mpumalanga and the Northern Cape exhibited very low performances at the 5th percentile stretching to almost 200 points.

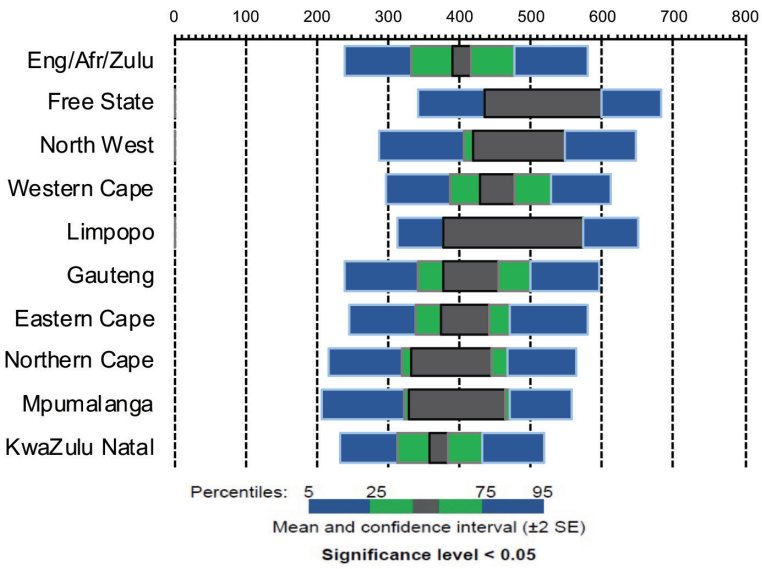


Figure 4.4: Distribution of Grade 5 Learner Achievement PIRLS 2016 for all Provinces

Two provinces, namely Limpopo and the Free State, had very small samples and large standard errors (SEs > 40). Consequently, between the 25th percentile and the 50th percentile, as well as between the 50th and 75th percentile, there is a lack of variation in the scores when calculating the range of the scores and adjusting for the standard errors.

How to interpret the percentile graph

- ***Scale of graph:*** *The graph is set on a scale of 0 to 1000. The results are shown in terms of percentiles[15] based on the plausible values (PV). PIRLS plausible values are imputed scores based on raw item scores and modelled with demographic factors and anchored to values from previous rounds of the study.*
- ***Bands:*** *The black band is the mean of the group plus or minus two Standard Errors (SE) on either side (M + 2 SE and M – 2 SE). The green band on the left is the 25th percentile to the mean minus two SE, and on the right the mean plus two SE to the 75th percentile. The blue band on the left indicates the 5th percentile to the 25th percentile, and on the right the 75th percentile to the 95th percentile.*
- ***Length of the Band:*** *indicates the spread of the scores (not the number of learners). Less spread means that the group is more homogeneous (narrower blocks), and groups with greater heterogeneity are indicated by wider blocks.*
- ***Standard Error:*** *A large standard error shows that the data is widely spread (less reliable) and a small standard error shows that the data are clustered closely around the mean (more reliable). The standard error is a statistical term that measures the accuracy with which a sample represents a population. In PIRLS large standard errors are greater than 10 (rule of thumb). Greater than 20 should be noted as it may indicate too much variance around the mean.*

A statistical analysis was undertaken to ascertain the differences in achievement between the nine provinces (see Table 4.1). Only Free State, North West, the Western Cape and Gauteng learner performance is significantly higher in achievement than KwaZulu Natal in addition to the Western Cape being significantly higher than the Eastern Cape. Otherwise none of the provinces were significantly different to one another.

[15] Percentile: A percentile is a score at or below which a certain percentage of the distribution lies.

Table 4.1: Significant Provincial Differences for South African Grade 5 Learners participating in PIRLS 2016

Province	Mean	SE	Free State	North West	Western Cape	Limpopo	Gauteng	Eastern Cape	Northern Cape	Mpumalanga	KwaZulu Natal
Free State	483	40.7		●	●	●	●	●	●	●	▲
North West	469	31.6	●		●	●	●	●	●	●	▲
Western Cape	452	11.9	●	●		●	●	▲	●	●	▲
Limpopo	419	48.4	●	●	●		●	●	●	●	●
Gauteng	417	19.1	●	●	●	●		●	●	●	▲
Eastern Cape	403	16.7	●	●	▼	●	●		●	●	●
Northern Cape	393	28.5	●	●	●	●	●	●		●	●
Mpumalanga	388	33.4	●	●	●	●	●	●	●		●
KwaZulu Natal	375	6.7	▼	▼	▼	●	▼	●	●	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

4.4 National and Provincial Achievement in PIRLS by Gender

Girls comprised slightly more than half of the sample (50.5%) (see Figure 4.5). However, their performance was significantly above that of the boys as girls scored 421 points (SE=6.0 compared to 391 points (SE=6.5). South Africa has the third largest achievement gap (30 points, SE=3.4) between boys and girls other than Saudi Arabia (where girls scored more by 52 points, SE=7.5) and Abu Dhabi (40 points SE=10.2).

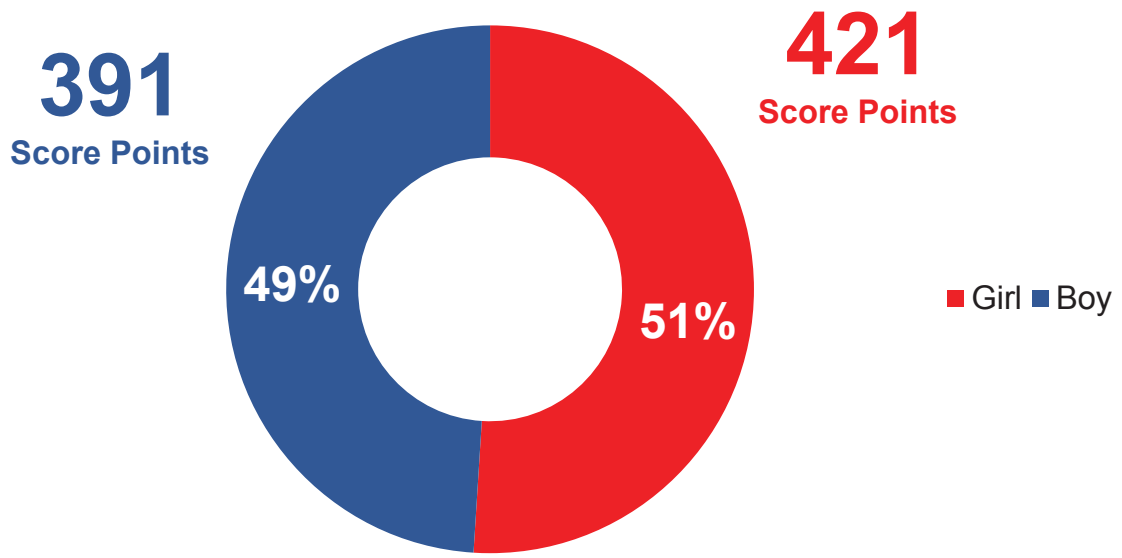


Figure 4.5: Grade 5 learners participating in PIRLS 2016 and their Mean Achievement by Gender

The pattern was similar across all languages as girls consistently performed better than the boys (see Figure 4.6). There were almost equal percentages of boys (49.5%) and girls (50.5%) for the benchmark participation. In Afrikaans and isiZulu, there were slightly more boys than

girls in contrast to English where there were more girls than boys. The largest differences in the scores were found for Afrikaans and isiZulu (33 points) favouring girls. These are substantial differences as they indicate almost one year's difference in education terms.

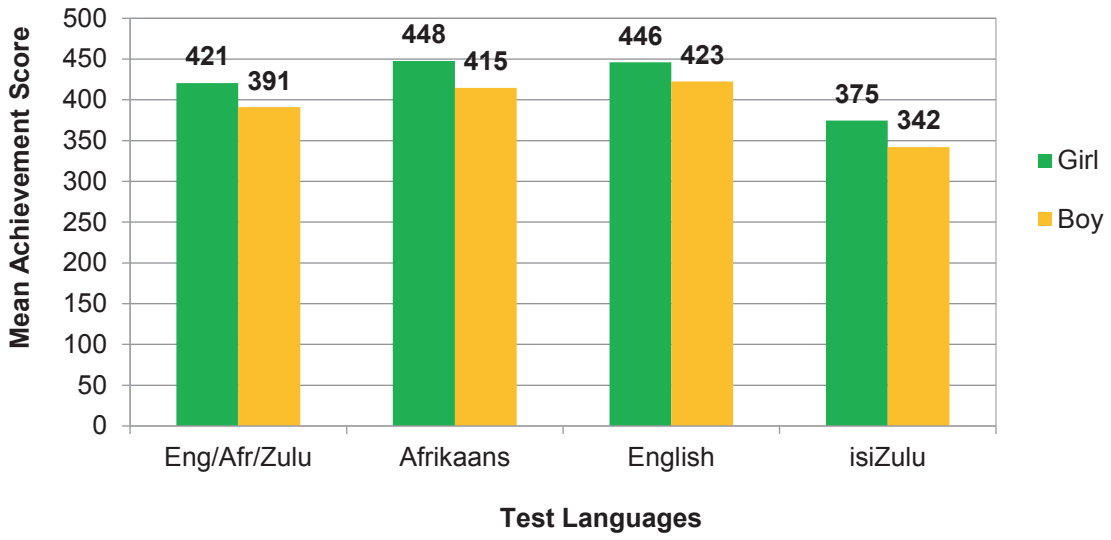


Figure 4.6 : South African Grade 5 Learner Achievement in PIRLS 2016 by Gender

4.5 South African Achievement in PIRLS 2016 per Test Languages

As described in Chapter 3, a nationally representative sample was drawn from Afrikaans, English and isiZulu schools so that the performance of learners could be analysed and compared in each language. Figure 4.7 reveals the achievement of the learners by test language. Only three languages were tested in Grade 5 in contrast to all 11 official languages in Grade 4 PIRLS Literacy 2016 (see Chapter 1 and Chapter 3).

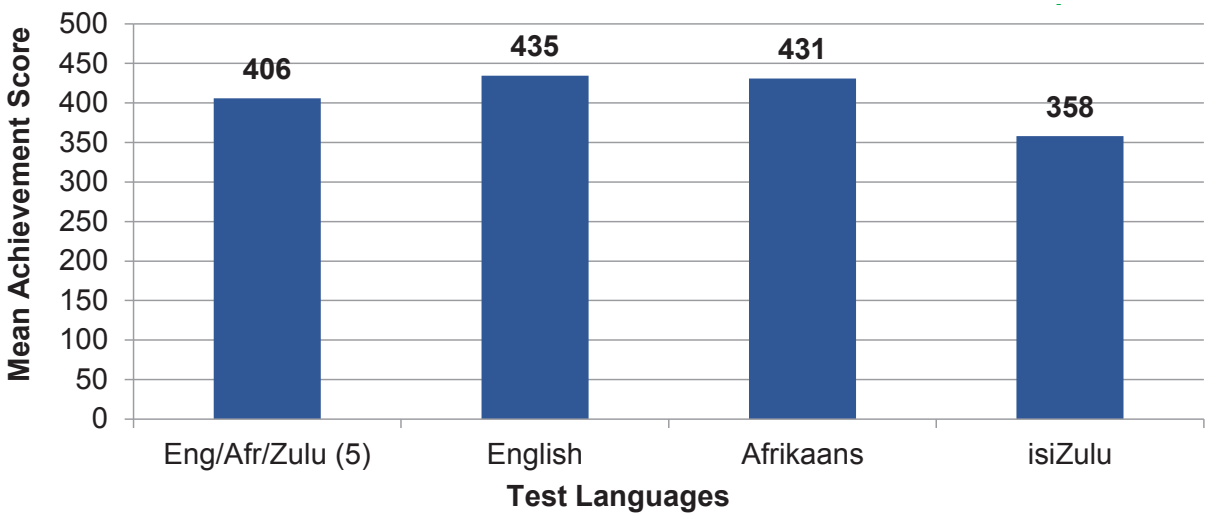


Figure 4.7: South African Grade 5 Achievement in PIRLS 2016 by Test Language

No tested language in South Africa reached the international centre point (see Figure 4.7) despite testing Grade 5 learners and despite including the highest performing languages traditionally. The highest performing test languages were English (435 points, SE=11.9) and Afrikaans (431 points, SE=11.6). The lowest performing language was isiZulu (358, SE=11.5). The variation in performance between the test languages was substantial (77 points) between the highest (English) and lowest (isiZulu), and equating to almost two years of education.

The differences between languages were tested statistically (see Table 4.2). The learners writing in English and Afrikaans did not differ from each other but both achieved higher scores than those learners writing in isiZulu (as indicated in Table 4.2).

Table 4.2: Multiple comparisons by Language for three Test Languages for South African Grade 5 Learner Achievement in PIRLS 2016

Languages	Mean	SE	English	Afrikaans	isiZulu
English	435	11.9		●	▲
Afrikaans	431	11.6	●		▲
isiZulu	358	5.1	▼	▼	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

In Figure 4.8, the distributions of learner achievement for the learners writing in the test languages, including the average scale score with its 95 percent confidence interval and the ranges in performance for the middle half of the students (25th to 75th percentiles), as well as the extremes (5th and 95th percentiles), are represented.

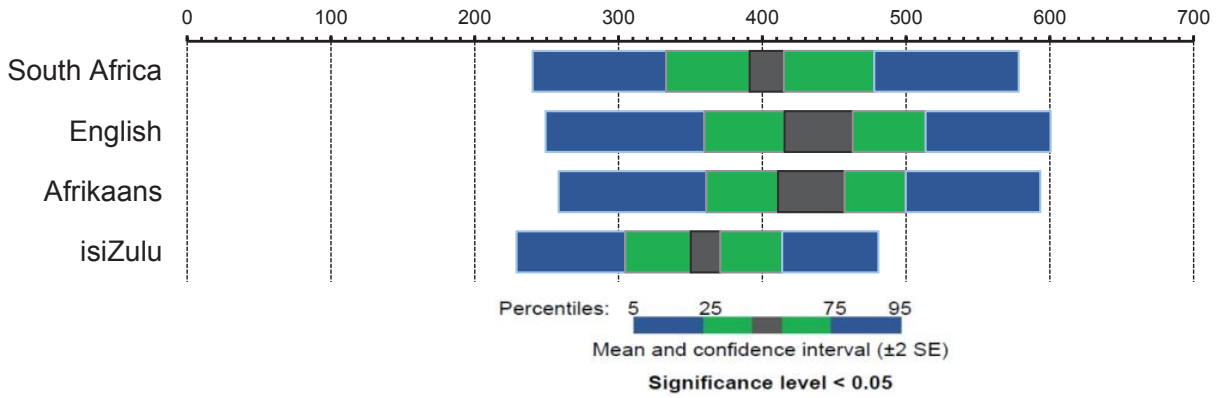


Figure 4.8: Comparison of South African Grade 5 Achievement in PIRLS 2016 three languages

The greatest variation with the scores was found in English indicating a wider range of achievement than in the other languages (below 300 to 600, see Figure 4.8). The language with the least variation in the mean scores was isiZulu, indicated by the mean. The 95th percentile for Afrikaans and English was achieved at well over 500 points with English reaching 600 points. In contrast for isiZulu, the 95th percentile was achieved more than 100 points less at just less than 500 points. Of concern was the 5th percentile attained at just above 200 points meaning that the weakest learners, in that language (isiZulu), were performing at a low level for Grade 5 learners.

The differences found by language may also be conflated by a number of other factors. The national sample revealed a strong rural element (see Table 4.3) with more than 60% of the learners tested at schools in rural areas which had been previously found to have an effect on the PIRLS 2011 performance (Howie, 2015). Of schools sampled, 39% were from remote rural areas and 9% from townships (see table below).

The PIRLS 2016 results concur with the previous findings (Howie et al., 2012) and indicate that the learners in remote rural settings achieve significantly below (360 points, SE=7.6) learners from urban areas who achieved between 445 - 484 points. Learners in township areas also tended to achieve low scores, only 24 points higher than learners in remote areas but 100 points below the highest performing group.

Table 4.3: South African Grade 5 Learner Achievement by Location

Location and % of weighted sample	Mean	SE	Medium size city or large town	Suburban	Urban–Densely populated	Small town or village	Township near urban area	Remote rural
Medium size city or large town (8%)	484	17.7		●	●	▲	▲	▲
Suburban (12%)	469	23.6	●		●	▲	▲	▲
Urban–Densely populated (14%)	445	21.2	●	●		▲	▲	▲
Small town or village (18%)	397	12.5	▼	▼	▼		●	▲
Township near urban area (9%)	384	15.0	▼	▼	▼	●		●
Remote rural (39%)	360	7.6	▼	▼	▼	▼	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

4.6 South African Achievement in PIRLS by Test language and Home Language

The South African home environment may be very complex in terms of the languages spoken in many homes where multilingualism or bilingualism is relatively common (see Chapter 9). A number of questions were included in the questionnaires to learners, parents, teachers and principals about the test language and the home language. In Figure 4.9, the findings of the extent to which the test language was spoken at home were included. Learners were asked how often they spoke the language of the test at home, and answer options included *Always, Almost Always, Sometimes* and *Never*.

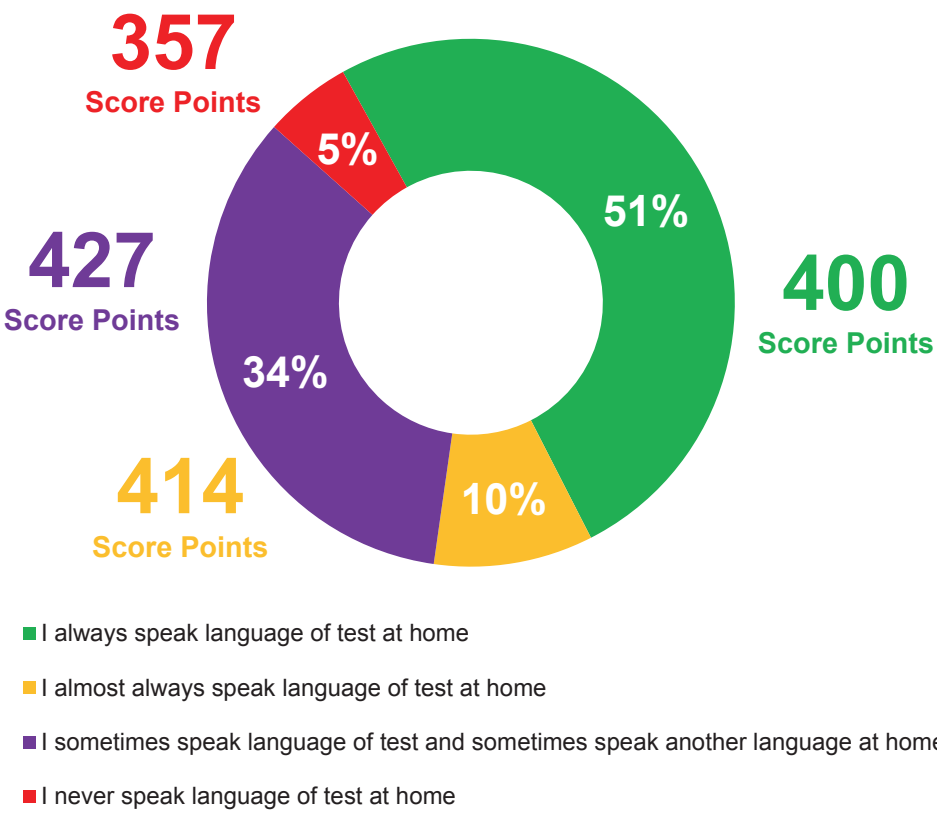


Figure 4.9: Frequency with which South African Grade 5 learners in PIRLS 2016 speak the test Language at Home and their Achievement

Half (51%) of learners always spoke the language of the test at home and in total 61% *Always* or *Almost Always* spoke the language of the test at home. The percentage of "first language" learners in the Grade 5 sample is less than the international average (63%) but significantly above high-achieving Singapore (30%) and is similar to another high achieving country, Hong Kong (54%).

In order to understand the proportion of learners writing in their specific home language (see Chapter 2 for further information) and those having to write the test in an alternate language to their home language, a combined variable was created based upon data from the Learner Questionnaire and *Parent Questionnaire* data. In the original learner questionnaire, a question was included what language was mostly spoken at home for the learners, given the many multilingual homes. In the *Parent Questionnaire*, the parents were asked what language they spoke mostly at home. Given the importance of the information, an attempt was made to secure information for every learner so where there was missing data in the *Learner Questionnaire*, it -was supplemented by the *Parent Questionnaire* data thereby reducing the missing data to 2.3%.

Forty-two percent of the learners did not write the test language in their first language (see Figure 4.10), and an analysis was done of learner performance where they wrote in their first language and where learners wrote in their second language. Those learners who spoke the test language at home (58%) were regarded as home language speakers and labelled "same" and those who did not speak the test language at home often (42%) were categorised as second language speakers and labelled "different" in Figure 4.10.

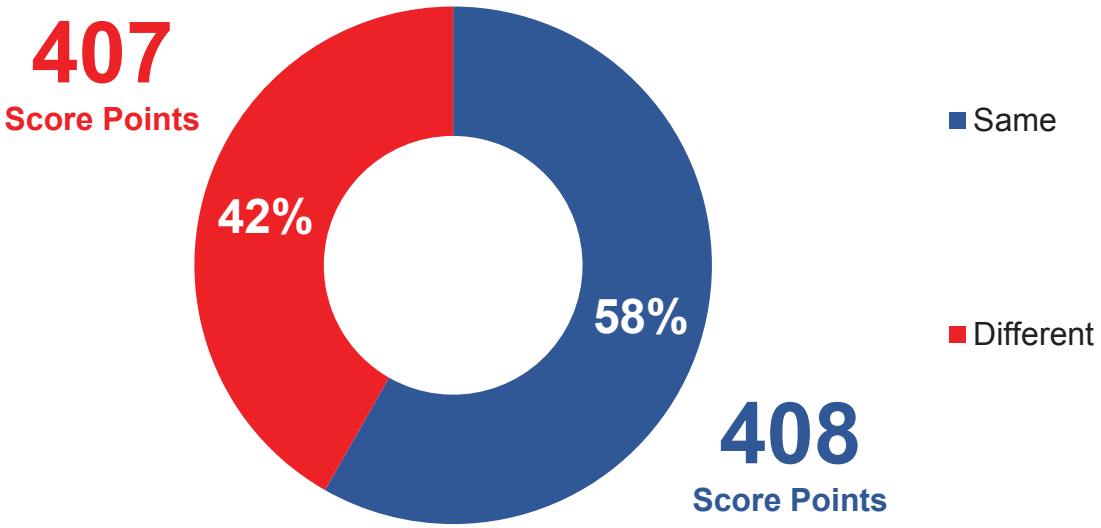


Figure 4.10: Achievement of South African Grade 5 Learners in PIRLS 2016 who speak the same or a different language to the Test Language at Home

There was no difference in the performance of the learners writing in their first language (same) (408 points, SE=5.7) than those who wrote in their second language (different) (407 points, SE=9.4).

An analysis was undertaken across the three languages to ascertain the extent of any differences in achievement of the learners who wrote in the test language as their first language or second language (see Figure 4.11).

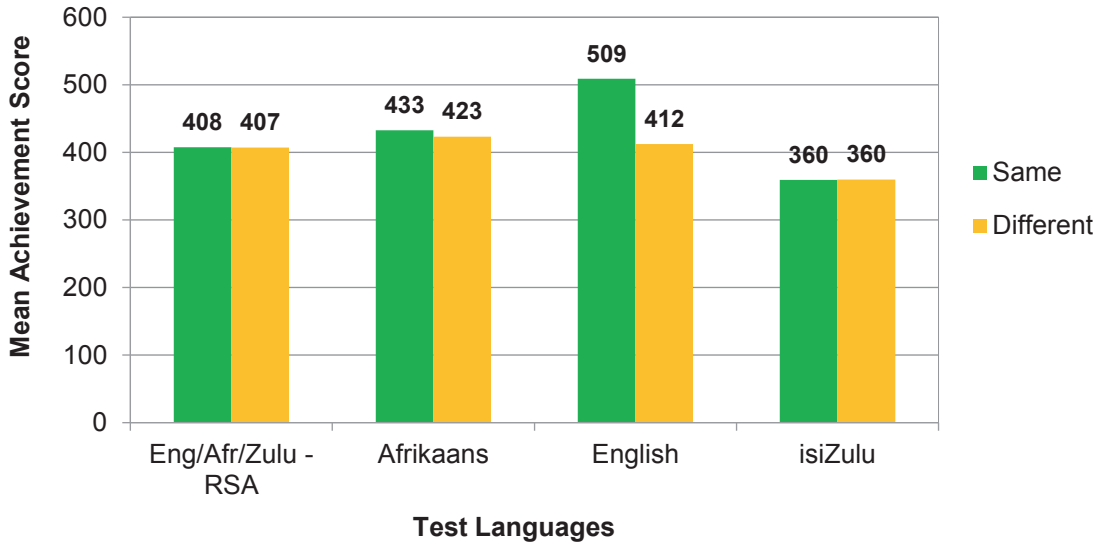


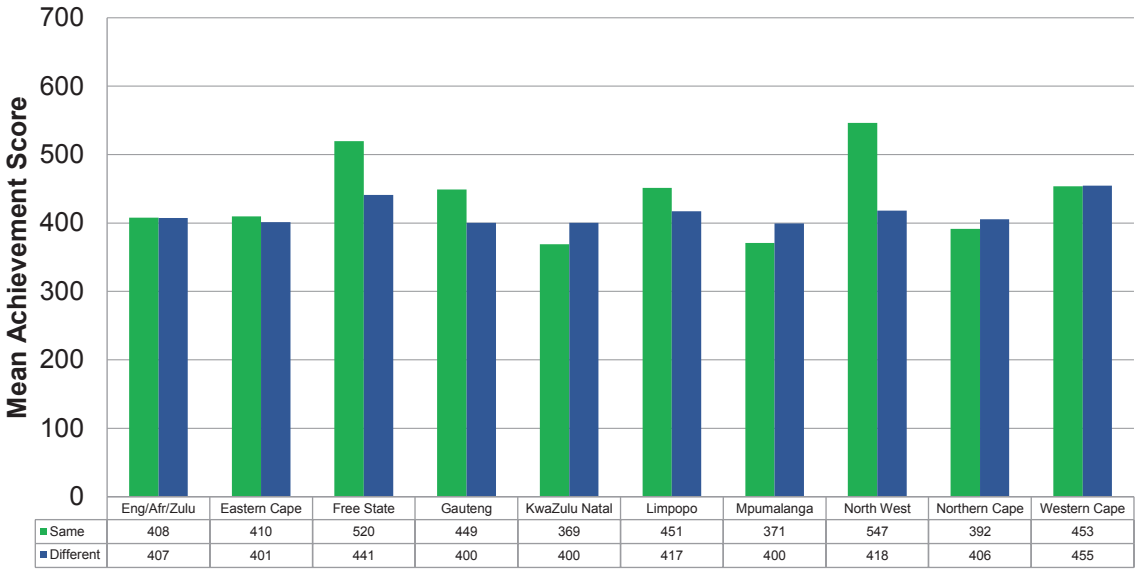
Figure 4.11: Achievement of South African Grade 5 Learners tested in PIRLS 2016 in the same as or different language to their Home Language

The profile of achievement varied across languages with learners writing in their first language (same), compared to those writing in a second language (different) but there was not a consistent pattern. Learners writing in English in their first language (509 points, SE=9.5) achieved significantly higher scores (almost 100 points) than those who wrote in a different

language (412 points, SE=11.2) to their home language. The highest percentage of second language speakers were found in English where 76% of learners wrote in a different language to their home language. The majority of learners writing in Afrikaans (88%) and isiZulu (88%) wrote in their first language. There was little or no difference in scores between first language and second language speakers in Afrikaans and isiZulu. Learners who were second language speakers in Afrikaans and English achieved higher scores than first language speakers in isiZulu.

The only statistical differences found were those for English and where the learners, writing in their home language, achieved higher scores than those writing in a different language. There were no significant differences in achievement in other languages.

In Figure 4.12, the achievement of learners writing the PIRLS tests in their first language (same) and writing in a second language (different) is presented by province. The majority of learners in every province wrote the test in their home language. This varied from 87% in the Northern Cape and 75% in KwaZulu Natal to 9% in Limpopo. Learners writing in the same language in the Western Cape (78%) achieved the highest scores (453 points, SE=13.4) compared to all provinces.



	Eng/Afr/Zulu	Eastern Cape	Free State	Gauteng	KwaZulu Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape
Same	408	410	520	449	369	451	371	547	392	453
Different	407	401	441	400	400	417	400	418	406	455

Figure 4.12: South African Grade 5 Learner Achievement in PIRLS 2016 by the same language as the Test Language or different to their Home Language by Province

In three out of nine provinces, learners who wrote in their second language (different) achieved higher scores (KwaZulu Natal, Mpumalanga and Northern Cape) whilst there was no difference in the Western Cape. Whilst overall nationally, learners writing in a different language to their home language achieved similar scores, this was not the case in all provinces. Statistical differences were found within only two provinces: 34% of learners in Gauteng wrote in the same language and achieved significantly higher results (449 points, SE=22.5) than those writing in a different language (400, SE=16.7), and learners in North West writing in the same

language (547 points, SE=12.1) achieved more than 100 points more than those writing in a different language (418, SE=14.5). There was considerable variation in the mean scores for some groups writing in their second language (for example, Free State, North West) as indicated by the large standard errors.

Table 4.4: South African Grade 5 Learner Achievement in PIRLS by Province in a language the same as or different to their Home Language

Province	Home Language	Percentage of Learners	%SE	Mean Score	SE	Significance
Eng/Afr/Zulu - RSA	Same	58	2.4	408	5.7	●
	Different	42	2.4	407	9.4	●
Eastern Cape	Same	37	9.7	410	16.0	●
	Different	63	9.7	401	21.1	●
Free State	Same	53	37.0	520	60.9	●
	Different	47	37.0	441	37.3	●
Gauteng	Same	34	7.6	449	22.5	▲
	Different	66	7.6	400	16.7	▼
KwaZulu Natal	Same	75	1.7	369	5.7	●
	Different	25	1.7	400	21.0	●
Limpopo	Same	9	0.2	451	69.4	●
	Different	91	0.2	417	45.6	●
Mpumalanga	Same	41	13.2	371	23.1	●
	Different	59	13.2	400	51.2	●
North West	Same	40	20.7	547	12.1	▲
	Different	60	20.7	418	14.5	▼
Northern Cape	Same	87	4.1	392	30.6	●
	Different	13	4.1	406	18.2	●
Western Cape	Same	78	4.0	453	13.4	●
	Different	22	4.0	455	11.7	●

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

4.7 South African Achievement in Reading Purposes for PIRLS

As discussed in Chapter 3, PIRLS assessed two different reading purposes, namely reading for literary experience (literary purpose) and reading to acquire and use information (informational purpose). Each of these is often associated with specific types of text; for example, fictional material for literary purposes and expository, informational articles or instructional texts for informational purposes. The PIRLS 2016 assessment takes the form of fictional passages when reading for the purposes of literary experience, and informational articles for the purposes of reading to acquire and use information.

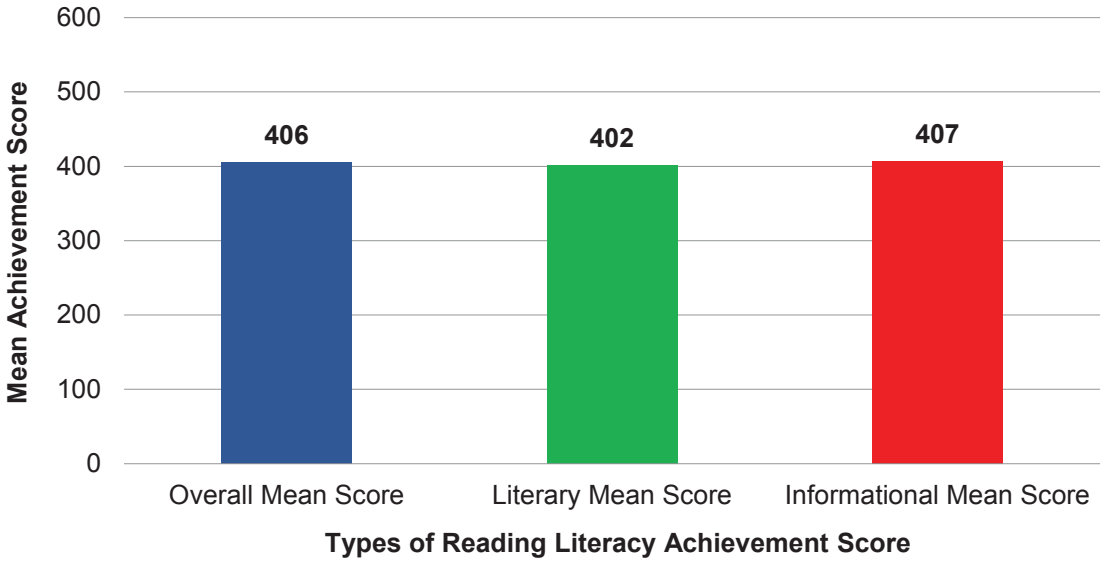


Figure 4.13: South African Grade 5 Learner Overall Mean Score and Achievement in Reading Purposes in PIRLS 2016

The average achievement of the South African Grade 5 learners for literary purposes (402, SE =6.3) was close to the overall PIRLS mean score and the informational purposes (407 points, SE=6.0) was similar to the PIRLS overall mean score. This was similar to Belgium, Chile, Denmark, England, Ireland, Northern Ireland, New Zealand and the USA, amongst others.

Two out of three languages (English and isiZulu) achieved slightly higher scores for literary purposes than informational purposes. Learners writing in Afrikaans achieved higher scores for informational purposes.

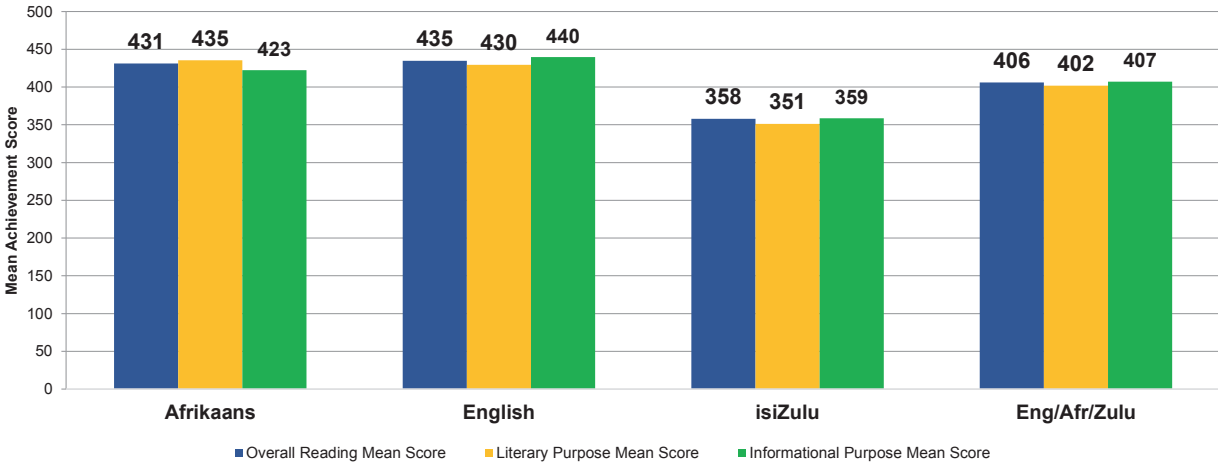


Figure 4.14: Average Achievement of South African Grade 5 Learners in PIRLS 2016 for Reading Purposes by Test Language

The differences in achievement in purpose (see Figure 4.15) compared to the overall mean score ranged from 4 points (Afrikaans) to -7 (isiZulu) for the literary purposes and; from 1 point (isiZulu) to -9 points (Afrikaans) for the informational purpose.

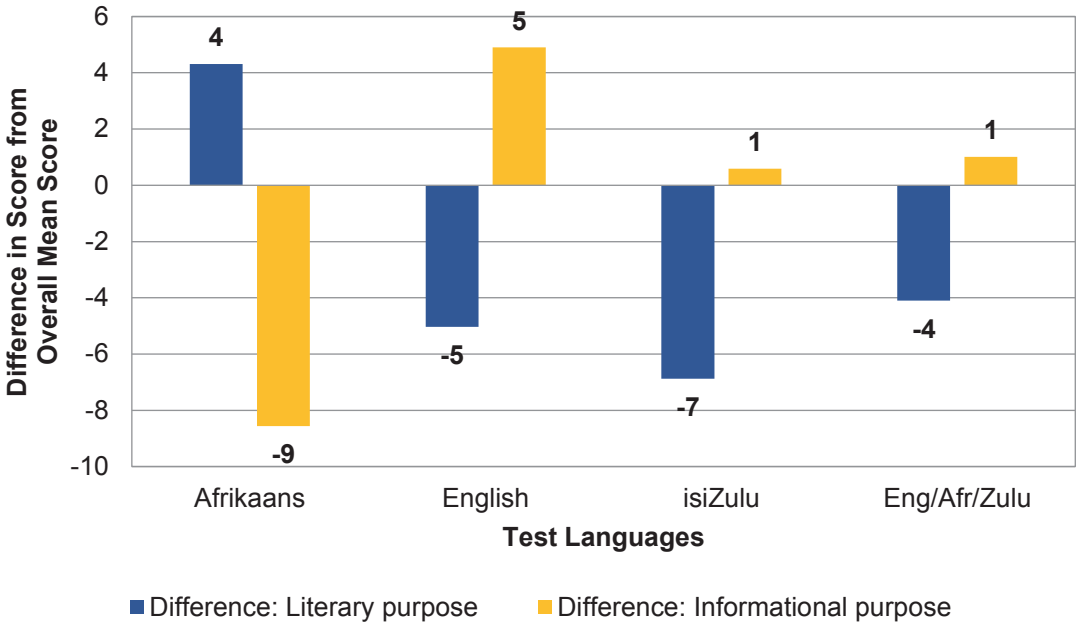
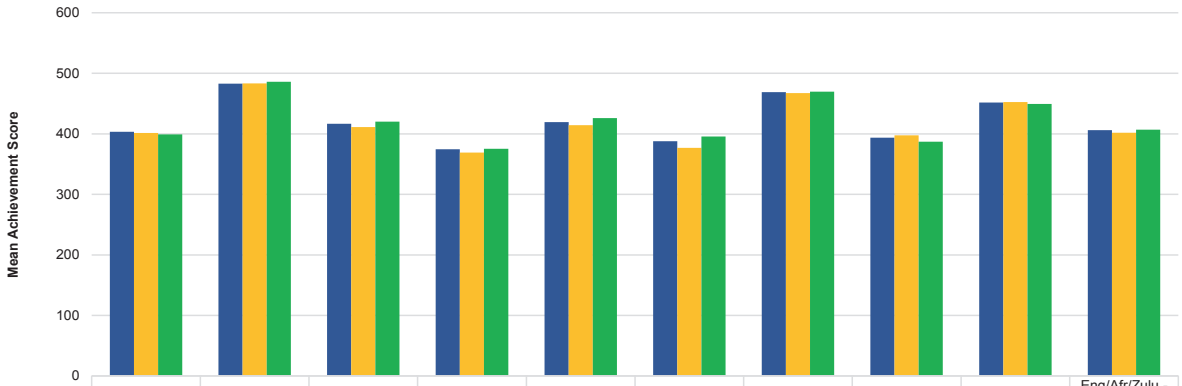


Figure 4.15: Differences in South African Grade 5 Learner Achievement Scores between Reading Purposes and Overall Mean Scores for each Test Language

Comparing the provincial performance, learners achieved lower scores for Informational purposes in general, with the exception of the Eastern Cape, Northern Cape and Western Cape, and where the performance was higher for the Literary purpose (see Figure 4.16).



	Eastern Cape	Free State	Gauteng	KwaZulu Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape	Eng/Afr/Zulu - RSA
Overall Reading Mean Score	403	483	417	375	419	388	469	393	452	406
Literary Purpose Mean Score	401	483	411	369	414	377	467	398	453	402
Informational Purpose Mean Score	399	486	420	375	426	396	470	387	449	407

Figure 4.16: Average Achievement of South African Grade 5 Learners in PIRLS 2016 for Reading Purposes by Province

The differences in achievement in purpose (see Figure 4.17) compared to the overall mean score ranged from 1 point (Western Cape) to -11 points (Mpumalanga) for the literary purposes above the overall mean score and from -6 points (Northern Cape) to 8 points (Mpumalanga) less for informational purpose than for the overall mean score. This may imply less exposure in certain provinces to informational texts than others.

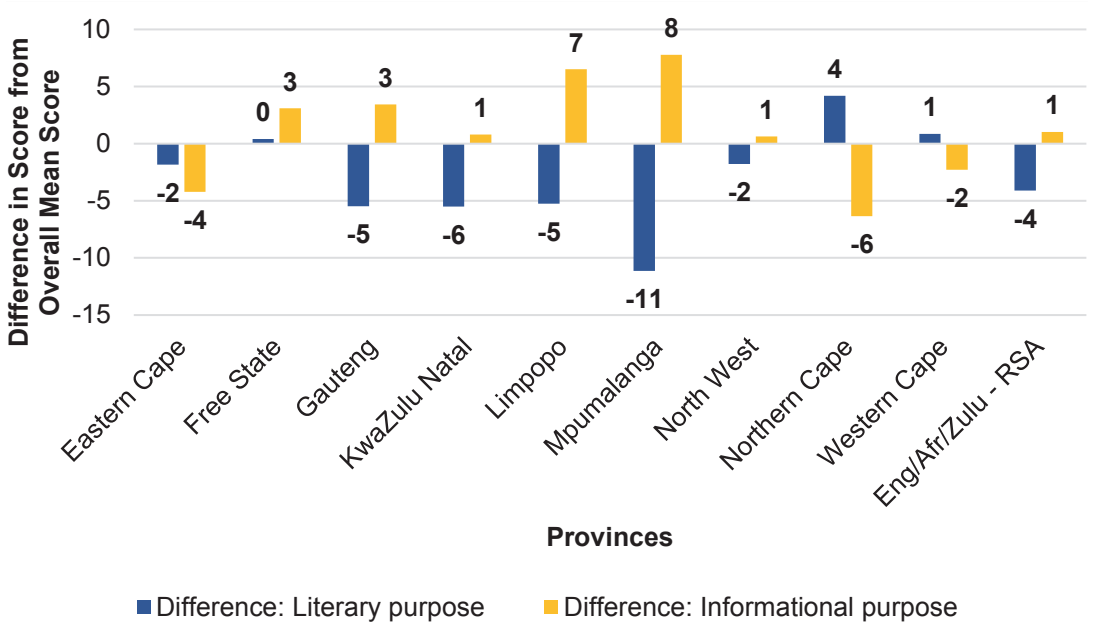


Figure 4.17: Differences in South African Grade 5 Learner Achievement Score between Reading Purposes and Overall Mean Score for each Province

The reading purposes was also analysed by gender (see Figure 4.18). Both boys and girls achieved better scores in the informational texts than in the literary texts. However, the difference was greater between girls and boys for literary texts (32 points favouring girls) than for informational texts (28 points) suggesting that girls were also stronger in the literary texts.

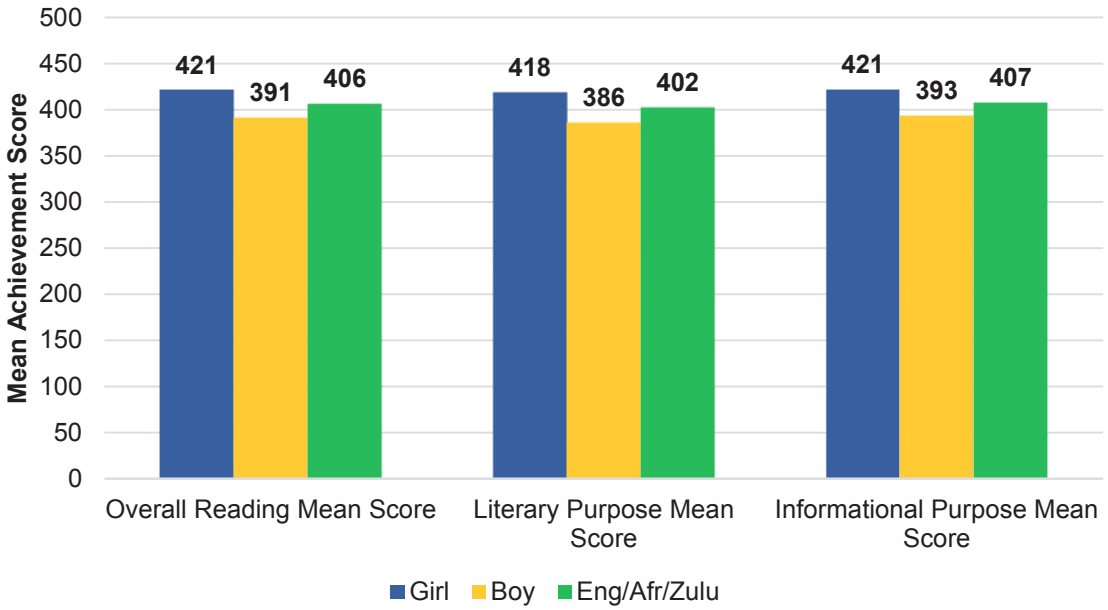


Figure 4.18: Average Achievement of South African Learners in PIRLS 2016 for Reading Purposes by Gender

However, the difference in the boys' scores was particularly large in the literary texts (see Figure 4.19) suggesting that girls may favour literary texts more than the boys. In contrast, girls obtained lower scores for the informational texts than the boys.

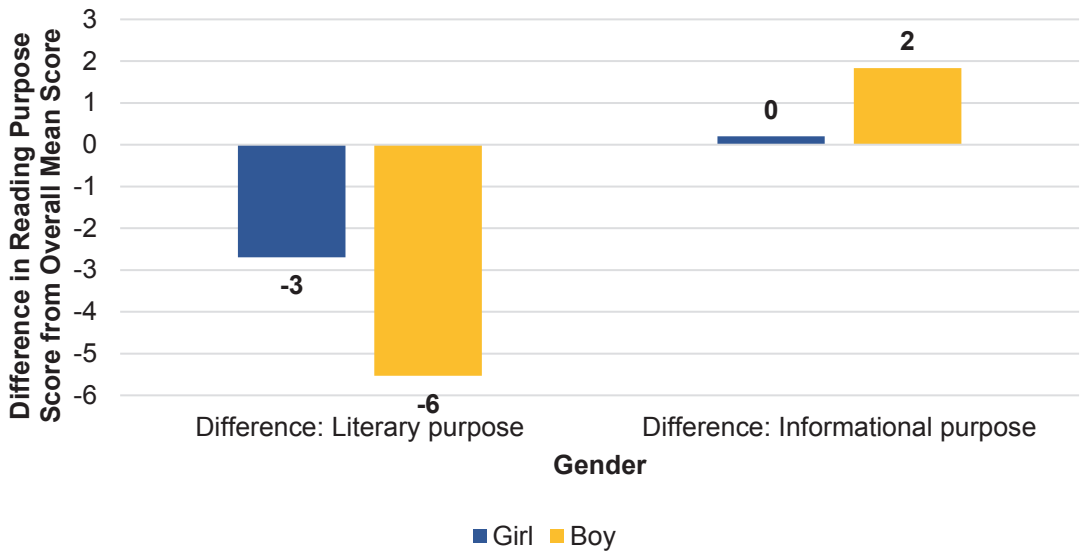


Figure 4.19: Differences in Achievement Scores between Reading Purposes and Overall Mean Score by Gender

4.8 South African Achievement in Reading Comprehension Processes for PIRLS

PIRLS assessed learner ability to undertake a number of reading comprehension processes. These included: Focus on and retrieve explicitly stated information, Make straightforward inferences, Interpret and integrate ideas and information; and Examine and evaluate content, language and textual elements (see Chapter 3 for details).

In Figure 4.20, the performance of South African Grade 5 learners is presented for the combined processes Retrieving and Straightforward inferencing (which combined the lower order cognitive processes of focus on and retrieve explicitly stated information and make straightforward inferences) where learners achieved higher scores (407 points) and Interpreting, integrating and evaluating (which combined higher order cognitive processes Interpret and integrate ideas and information; and Examine and evaluate content, language and textual elements) where learners achieved a substantially lower score (400 points). South African learners performed better on lower order processes than higher order processes (a difference of 7 points) as had been the case in previous PIRLS cycles (see McLeod Palane, in press).

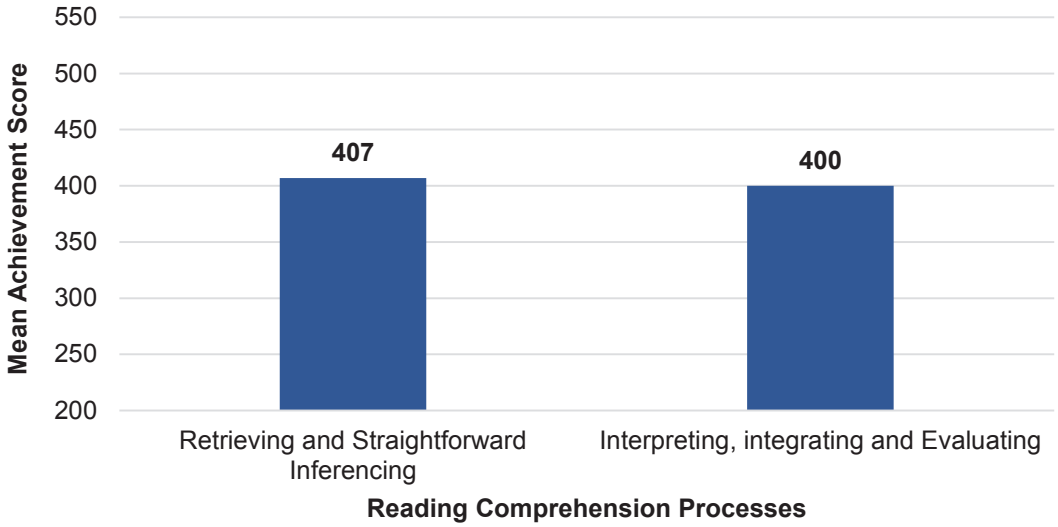


Figure 4.20: South Africa Grade 5 Learner Performance by Comprehension Process

In Afrikaans and English, learners achieved similar scores for the comprehension processes (see Figure 4.21). However, there was a larger difference for isiZulu with learners achieving much higher scores for the lower order questions than the higher order questions (23 points difference). The results suggest that learners in Afrikaans and English (where the difference was only 2 and 3 points respectively) are achieving a greater and deeper understanding of the texts and are able to comprehend higher order questions far better, relative to learners in isiZulu.

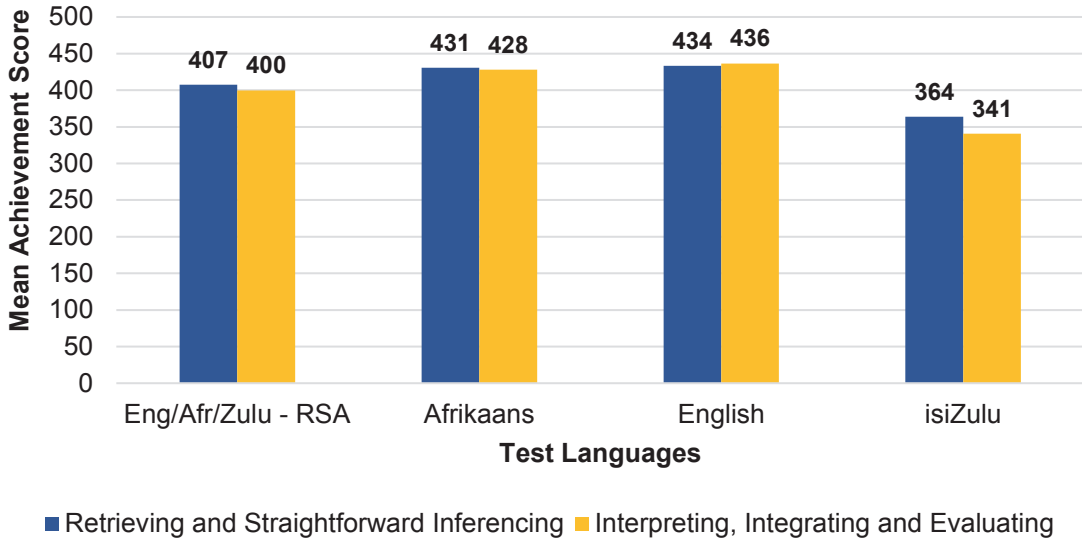


Figure 4.21: South African Grade 5 Learner Achievement on Reading Comprehension Processes by Language

South African learners performed consistently better on the lower order processes in six out of nine provinces (see Figure 4.22). Limpopo, North West and the Western Cape were the exceptions as their achievement on the higher order processes was similar or slightly higher than the lower order processes. However, whilst there was no difference for North West, substantial differences were found in KwaZulu Natal (18 points), where higher order comprehension processes were found more demanding by learners.

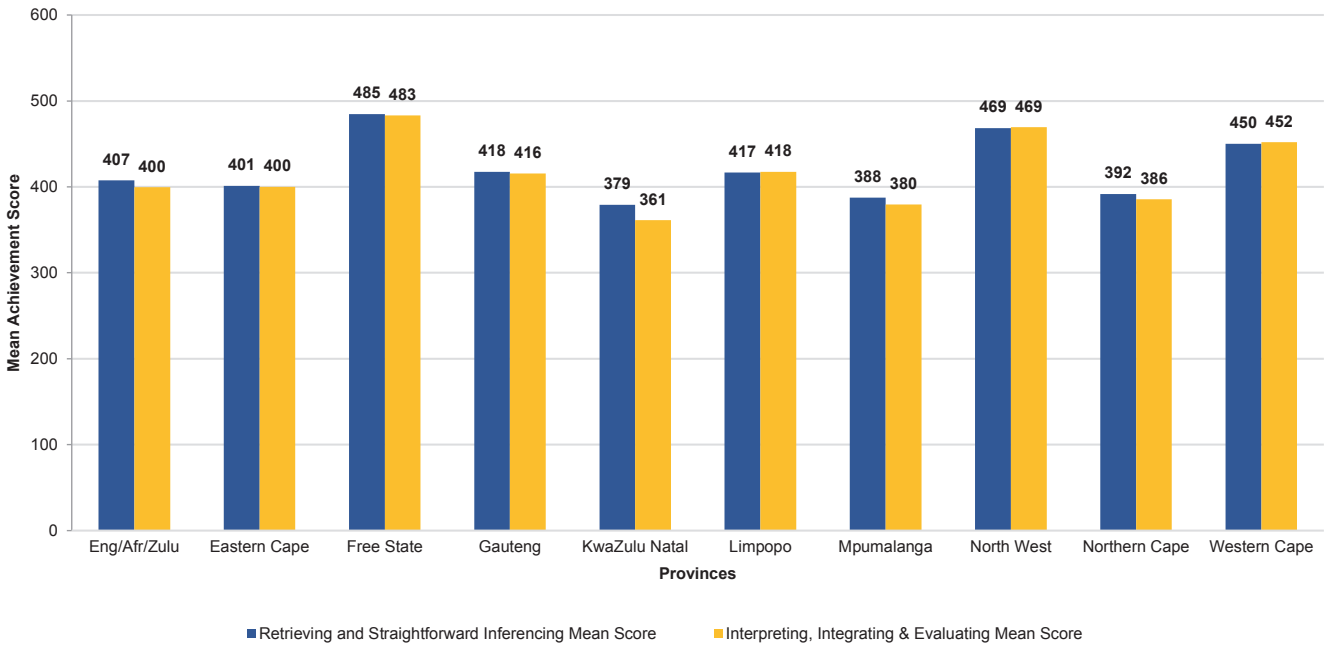


Figure 4.22: South African Grade 5 Learner Achievement on Reading Comprehension Processes by Province

Boys and girls performed differently on the lower and higher order comprehension processes (see Figure 4.23). Whilst boys performed significantly below the girls overall, they scored 28 points less on the lower order Retrieving and Inferencing and 34 points less on the higher order Interpreting, Integrating and Evaluating questions. Boys appeared to find the higher order items more challenging than the lower order questions.

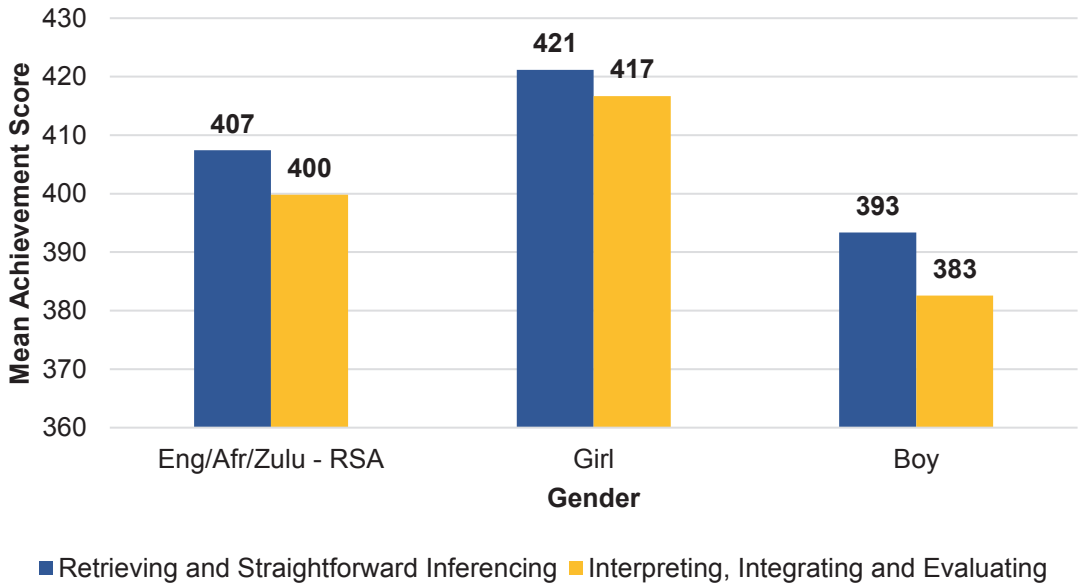


Figure 4.23: South African Grade 5 Learner Performance on Comprehension Processes by Gender

Interpreting, integrating and evaluating are crucial reading comprehension skills which learners require throughout their schooling career. Therefore, it is recommended that teachers place more emphasis on higher order reading comprehension skills. This should start in the Foundation Phase, and in schools where the emphasis on higher order comprehension processes are placed in earlier grades, learners perform better in reading literacy comprehension.

4.9 Conclusion

The South African learner achievement scores were low compared to other countries participating in PIRLS, despite being Grade 5 learners compared to Grade 4 learners. This was evident when benchmarked on the PIRLS scale with all countries in PIRLS,and found to be more than 200 points below the top performing countries and more than 80 points below the international centre point. The comparable countries to the three language South African sample were Morocco, Egypt, Kuwait and Oman.

The national performance varied considerably between the highest performance found in the Free State and the lowest performance in KwaZulu bearing in mind the distribution of the three languages nationally. Girls achieved significantly higher scores than boys, thus following the international trend with South Africa exhibiting the second largest gender gap internationally. This performance was consistent across the three languages with the largest gender gap found in Afrikaans and isiZulu.

Likewise across the test languages, significant differences were found with learners writing the test in English, being the highest and those writing the test in isiZulu, achieving the lowest scores, and the latter performing significantly below all other languages. A review of the distribution of the scores within each language revealed greater variations in English performance compared to the other languages and a low performance at the 5th percentile of the isiZulu learners. Whilst overall, those learners who spoke the language of the test most of the time, achieved almost the same score as those who did not. In Afrikaans and English, most learners spoke the language of the test at home and performed better than those who did not speak the language at home. Learners writing in isiZulu did exactly the same in both reading purposes. Learners who were second language speakers in Afrikaans and English, achieved higher scores (more than 50 points) than first language speakers in isiZulu. Only in Gauteng and North West did learners do better when they wrote in the same language as their home language.

In South Africa, learners did slightly better in the informational reading purposes than the literary. However, an analysis by language revealed that the learners who wrote in English and isiZulu did better in literary texts. Learners writing in the Eastern Cape, Northern Cape and Western Cape performed better on the literary texts compared to the other provinces. Girls also achieved higher scores for Literary texts than Informational texts. South African Grade 5 learners performed better on lower order questions compared to higher order processes. Exceptions were found in Afrikaans, and English where differences were minimal and in Limpopo, North West and the Western Cape where the performance was similar for learners on both lower and higher order questions. Learners in KwaZulu Natal found higher order

processes much more demanding than in other provinces. Boys also found the higher order questions more demanding than girls.

In summary, the best performing groups of learners were girls and those found in the Western Cape writing the test in English and Afrikaans who attended schools in more urbanised areas, not all of whom spoke the language of the test. The most at-risk learners were boys in remote rural areas, particularly in Limpopo and the Eastern Cape and those learners writing in African languages and never speaking the language of the test at home. In general, South African learners do better on literary-based texts and lower order questions.

In Chapter 6, the differences in performance in PIRLS 2016 and earlier studies are presented, whilst greater insight into the South African learner performance is described in Chapter 5 in terms of learner performance on the international benchmarks.


PIRLS
2016

CHAPTER 5: PIRLS 2016 GRADE 5 BENCHMARK ACHIEVEMENT

Celeste Combrinck, Karen Roux and Sarah Howie

5.1 International Benchmarks versus Benchmarking Participants

The following chapter examines the international benchmarks attained by the South African benchmarking participants. The word “benchmarks” can be confusing in the PIRLS study as it is used in two distinct ways, the first being International Benchmarks of reading literacy: These are benchmarks of reading literacy which indicate which skills readers have attained. Each level indicates more advanced reading literacy skills and can be used as criterion-referenced feedback for countries to identify skills learners have acquired and developed as well as those they still need to learn.

The second use of the word is in Benchmarking Participants: Some countries choose to sample only a particular sub-population; for example, only choosing one language or one province to participate. Such countries do not have nationally representative samples and are classified as benchmarking participants. Countries are only allowed one main nationally representative sample, and if they have an additional representative sample, the second sample would also be classified as a “benchmark participation” (as is the case with Denmark who had nationally representative samples for Grade 4 and Grade 3). In the case of South Africa, the Grade 4 PIRLS Literacy is the nationally representative sample (representative of all languages and provinces). The PIRLS Grade 5 participation is classified as a benchmark participation as only Afrikaans, English and isiZulu languages were sampled (not nationally representative of all languages). Please note that this chapter shows the International Benchmarks of reading literacy for the countries that participated as Benchmarking participants. South Africa is named the same way as in the international report, as Eng/Afr/Zulu (RSA) to indicate that only these three languages were assessed.

5.2 The Benchmarks and their Interpretation

Averages of achievement may be enlightening about how well children read in comparison to others and allow for comparison of individuals, schools, districts, provinces and even countries (Scherman, Bosker & Howie, 2017). However, educators need more than just numbers; they need to know what those numbers signify and criterion-referencing provides a process of examining questions that were easier, moderately difficult and very difficult for children completing the test (Meyer, Doromal, Wei & Zhu, 2017; Popham, 2014). When educational specialists collectively examine the test questions, they consider: If a child got this question right, what reading skill did he or she have? Looking at test questions in this way, allows one to see what reading skills children have gained and what they still need to acquire, learn and develop.

The aim of the PIRLS International Benchmarks is to offer a description of what children can do at each benchmark in terms of reading comprehension skills. The benchmarks provide a global picture of the reading abilities children in South Africa have acquired and developed, as well as the abilities they still need to learn. In addition, benchmarks can also help teachers, district and provincial officials as well educational departments plan for training and interventions. Benchmarks shift the focus from the reading literacy achievement to ways in which reading literacy can be improved.

The PIRLS Literacy assessment framework was set up to determine how well children read different types of texts which include fiction (literary) and non-fiction (informational). Half the texts are fiction and the other half non-fiction. Within those two categories of text, comprehension processes, which follow the cognitive development of young children's reading experience (Mullis & Martin, 2015), are assessed. Figure 5.1 shows the benchmarks in terms of the score point ranges for each benchmark, as well as the reading literacy skills demonstrated at each level.

	Benchmark Description
4 **Advanced International Benchmark** **625 and above score points**	***When reading Literary texts, learners can:*** • Integrate ideas and evidence across a text to appreciate overall themes • Interpret story events & character actions, provide insights that are text based ***When reading Informational texts, learners can:*** • Distinguish and interpret complex information from different parts of text • Integrate information across a text to provide explanations, interpret significance and sequence activities
3 **High International Benchmark** **550 - 625 score points**	***When reading Literary texts, learners can:*** • Identify significant events & actions • Make inferences & explain relationships, give text-based support • Identify significance of events, recognise language features (tone) ***When reading Informational texts, learners can:*** • Locate relevant information within complex text or table • Make inferences & logical connections to provide explanations • Evaluate content & make generalisations
2 **Intermediate International Benchmark** **475 - 549 score points**	***When reading Literary texts, learners can:*** • Retrieve & reproduce explicit information • Make straight-forward inferences about character feelings, motivations • Interpret obvious reasons and causes, give basic explanations ***When reading Informational texts, learners can:*** • Locate & reproduce 2-3 pieces of information from text • Use sub-headings, figures & text boxes to locate information • Retrieve & reproduce explicit information
1 **Low International Benchmark** **400 - 474 score points**	***When reading Literary texts, learners can:*** • Locate and retrieve explicitly stated information ***When reading Informational texts, learners can:*** • Locate & retrieve 2-3 pieces of information in text • Find information in text boxes, headings and figures

Figure 5.1: International Benchmarks of PIRLS Reading Achievement

The section below offers examples of questions and their answers relating to each of the benchmarks, giving the reader an idea of what is expected at each benchmark. Approximately half of the questions are multiple choice type (MC) items, and the other half are constructed response (CR) (Mullis & Martin, 2015). The examples are from a PIRLS Literacy passage (The Pearl) and a PIRLS passage (Flowers on the roof). Both types of passages were used in the PIRLS assessments, with more PIRLS passages utilised at the Grade 5 level.

Example of Low International Benchmark Question

1. Where does the boy find the pearl?

   Ⓐ on the beach

   Ⓑ beside the sea

   Ⓒ where they played games

   ● in the deeper water

Example of Intermediate International Benchmark Question

16. What does the oxpecker do to warn the rhino of danger?

1 it makes loud noises and hisses

Example of High International Benchmark Question

8. Find the part of the story by this picture of Granny Gunn:  .
Why did Granny Gunn wink and grin at the little boy?

1 Because the child gave her a good idea

Example of Advanced International Benchmark Question

7. The color of a hatchling's shell protects it from predators.

Give a way it is protected from birds.

1 The dark color of the top part blends in with the water when viewed above.

Give a way it is protected from sharks.

1 The bottom is white so sharks may not spot her in the sunlight

Size font differs from the instrument

At the Low International Benchmark, between 400 and 474 mean achievement score points, the learner can read to locate and retrieve explicit information. This benchmark is the most basic level of reading for meaning. Learners falling below the lowest benchmark cannot read for meaning or retrieve basic information from the text to answer simplistic questions.

At the Intermediate Benchmark (475 – 549), learners begin to interpret and identify obvious reasons for what is happening in the text as well as giving basic explanations for actions or information.

The High International Benchmark is between 550 and 625 score points. At this level, learners begin to make intricate connections between events in the text. They can identify crucial features and, in addition, can make generalisations while interpreting complex text and tables and giving evidence for their conclusions from the text.

The Advanced International Benchmark (625 and above score points), is the level at which learners integrate ideas as well as evidence across a text to appreciate overall themes, understand the author's stance and interpret significant events.

5.3 The PIRLS Grade 5 International Benchmark Attainment

The following section presents results in terms of the percentage of South African learners who attained the various international benchmarks[16] (see Figure 5.1). The results are presented in two types of formats:

1. As discrete percentages: When the benchmarks are represented as discrete categories, the percentage of all Grade 4 South African learners, who can achieve each benchmark, are shown in the table or graphs (see Figure 5.2 as example)
2. As cumulative percentages: When benchmarks are represented as cumulative percentages, each category is shown as the percentage that can achieve the benchmark as well as all categories of learners that are able to attain the lower benchmarks.

5.3.1 PIRLS Grade 5 Benchmark Achievement: Eng/Afr/Zulu (RSA) and International Benchmarking Participants

When comparing the Grade 5 South African (Eng/Afr/Zulu) results to other benchmarking participants, the South African PIRLS Grade 5 learners are the least likely to achieve the higher benchmarks. In Figure 5.2, the discrete percentages of learners able to achieve the benchmarks are shown for some of the benchmarking participants (see Appendix B for all benchmarking participants). Moscow City in the Russian Federation was the top performing participant. Quebec in Canada provides an interesting comparison given its bilingual policy. The Denmark Grade 3 participants outperformed both the Grade 4 and Grade 5 South African cohorts. Norway (Grade 4) has a similar enrolment age as South Africa but significantly different performance. Buenos Aires in Argentina has an emerging economy, making comparisons with South Africa more feasible and relevant.

[16] Percentages represent the population and not sample n (sample extrapolated to population) see chapter 3

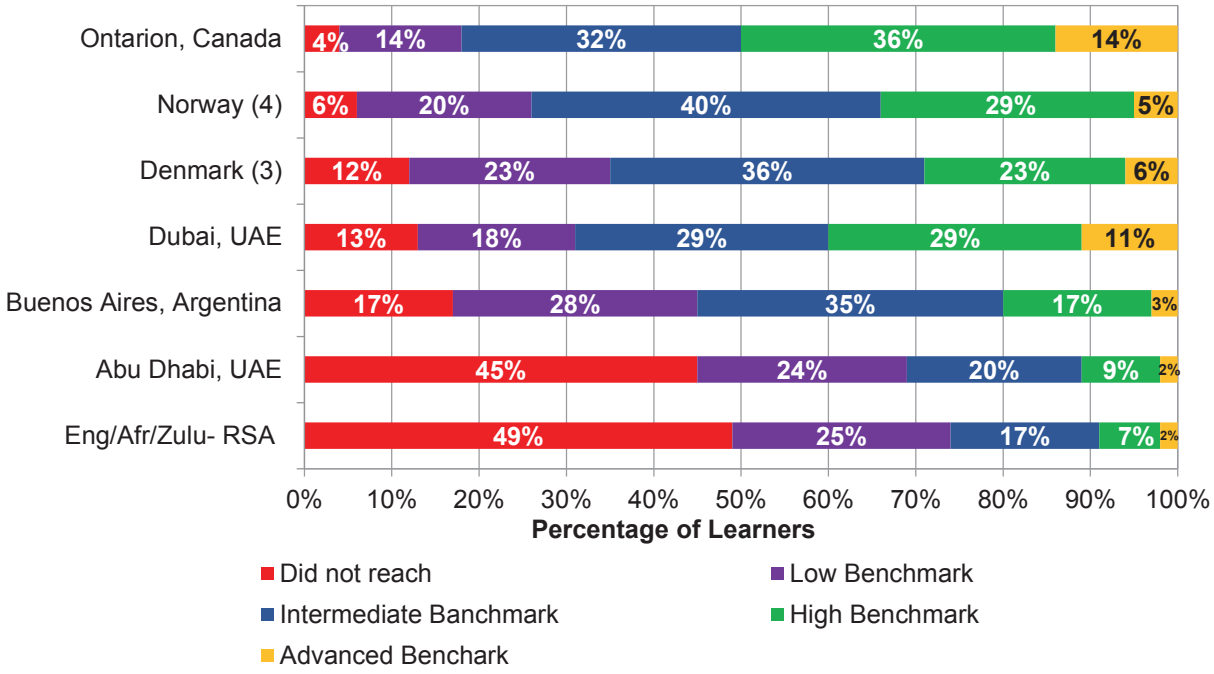


Figure 5.2: International Benchmarks reached per PIRLS Benchmarking Participant as Discrete Categories

As shown in Figure 5.2, a total of 49% of the Grade 5 South African (Eng/Afr/Zulu) sample were not able to reach the Lowest Benchmark. Learners who did not reach the Lowest Benchmark, could not locate explicit information or reproduce information from a text at the end of Grade 5. The lack of ability to correctly answer basic questions could indicate an inability to read on their own and/or understand basic text. It could also indicate a lack of ability to complete a test or difficulty in handling a testing situation that is a lack of being test-wise.

Abu Dhabi's results are the closest to the South African (Eng/Afr/Zulu) benchmark attainment results while Moscow City in the Russian Federation had the largest percentage of learners in the Advanced Benchmark (43%). In the South African Grade 5 sample, only 7% of the children reached the High Benchmark and were able to distinguish and interpret complex information, integrate ideas and interpret complex text. A total of 2% of the Grade 5 learners writing in Afrikaans, English and isiZulu were able to reach the Advanced Benchmark.

In Figure 5.3, the percentage of South African Grade 5 learners reaching the Lowest Benchmark is compared to those who did not reach the Lowest Benchmark, and illustrates the South African and the international median.

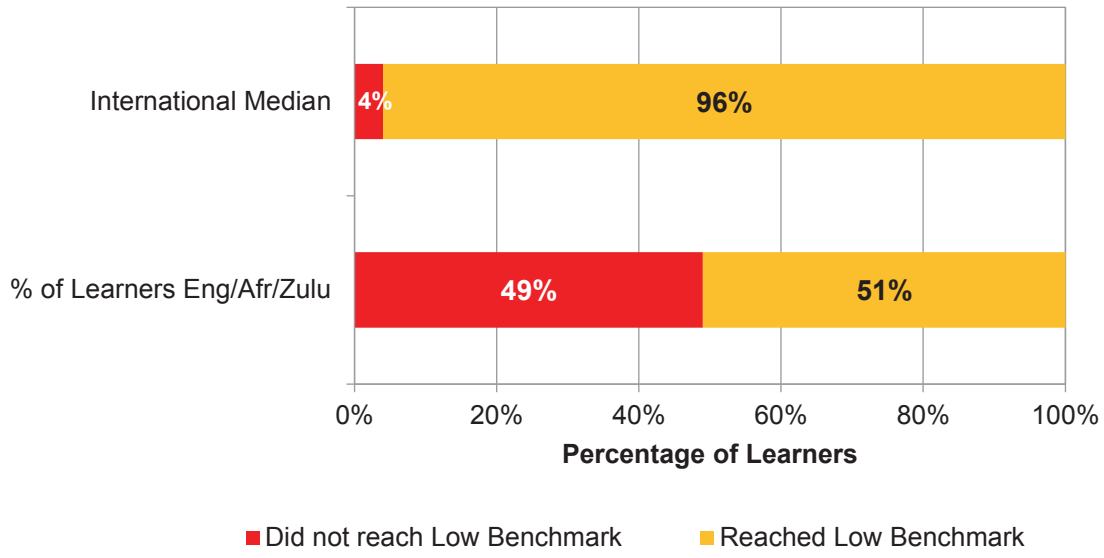


Figure 5.3: Eng/Afr/Zulu and International Learners reaching and not reaching the Low International Benchmark

Figure 5.3 reveals that in the South African (Eng/Afr/Zulu) study, 49% of learners did not reach the lowest benchmark, in comparison to only 4% of learners not reaching the lowest benchmark internationally.

In Figure 5.4, the discrete percentages of learners who reached the benchmarks are shown for South Africa (Eng/Afr/Zulu) compared to the overall international achievement.

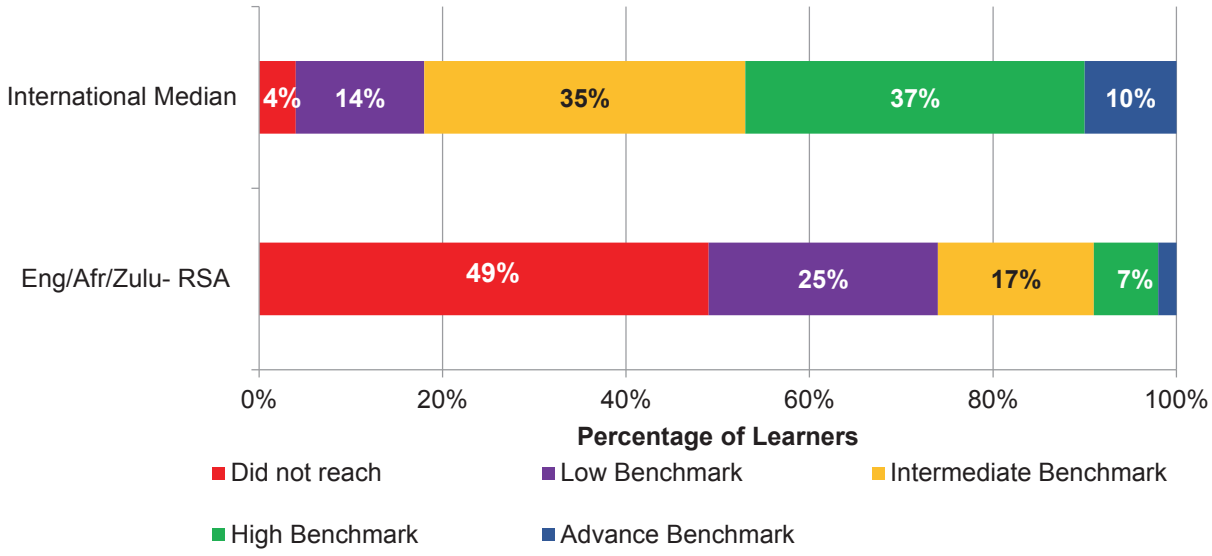


Figure 5.4: Did not reach the Low Benchmark versus reached for Eng/Afr/Zulu and International learners

The percentage of learners reaching the Low Benchmark is higher for South Africa's English, Afrikaans and isiZulu learners (25%) as compared to the international population (14%). However, with the Intermediate, High and Advanced Benchmarks, fewer learners in South Africa (Eng/Afr/Zulu) were able to reach these benchmarks compared to the overall international

achievement. Internationally, 10% of learners achieved the Advanced Benchmark, whereas only 2% of South African learners were able to reach this benchmark. Table 5.1 below shows the cumulative percentages of South African learners who reached the benchmarks in comparison to the international achievement of benchmarks.

Table 5.1: International Benchmarks Attained by Eng/Afr/Zulu Learners and International Median

Benchmark	Eng/Afr/Zulu- RSA (5)	International Median
Did not reach Low Benchmark	49%	4%
Reached low Benchmark	51%	96%
Reached Intermediate Benchmark	26%	82%
Reached High Benchmark	9%	47%
Reached Advanced Benchmark	2%	10%

While 51% of South Africa's Grade 5 Afrikaans, English and isiZulu learners reached the Lowest Benchmark, in contrast, internationally 96% of learners were able to reach this benchmark. Internationally, 47% of all learners reached the High Benchmark cumulatively compared to the South African Grade 5 learners, where only 9% were able to reach this benchmark. South Africa faces many educational challenges as a developing country and in comparing the attainment of international reading achievement by benchmark, this comparison raises concerns about the teaching of reading literacy in schools.

5.3.2 Benchmark Achievement for PIRLS Grade 5 per Language

Table 5.2 below shows the cumulative percentages of learners per language group who reached each of the benchmarks for the PIRLS Grade 5 cohort.

Table 5.2: Cumulative Percentages of Learners who reached International Benchmarks per Language in PIRLS

	Did Not Reach Low Benchmark	Reached Low Benchmark	Reached Intermediate Benchmark	Reached High Benchmark	Reached Advanced Benchmark
Afrikaans	37.5%	62.5%	34.4%	12.7%	2.2%
English	37.1%	62.9%	38.4%	14.5%	2.8%
IsiZulu	69.2%	30.8%	5.8%	0.2%	0.0%
Eng/Afr/Zulu-RSA	**48.9%**	**51.1%**	**25.8%**	**8.9%**	**1.7%**

In Table 5.2, learners who wrote the test in Afrikaans or English were more likely to reach the High Benchmark (12-14%). However, the results show that more than a third of the learners who completed the assessment in Afrikaans (37%) or English (38%) were unable to attain the Lowest Benchmark. The picture for those writing in isiZulu is very different, with only 31% reaching the Low Benchmark. The disparity between the Afrikaans and English achievement and that of the only African language included in the Grade 5 sample is large. Sixty-nine percent (69%) of learners who wrote in isiZulu were unable to read for meaning, despite most writing in their first language (see Chapter 4), at the end of Grade 5.

5.3.3 Benchmark Achievement for PIRLS Grade 5 per Province

The cumulative percentages reached per province by the Grade 5 PIRLS learners are displayed in Table 5.3 below. Taking into consideration the three languages tested for Grade 5, a pattern emerges for provinces where more isiZulu learners were tested (especially KwaZulu Natal and Mpumalanga). See Chapter 3 for a breakdown of the languages tested in each of the provinces.

Table 5.3: Cumulative Percentage of learners who reached International Benchmarks per Province PIRLS Grade 5

	Did Not Reach Low Benchmark	Reached Low Benchmark	Reached Intermediate Benchmark	Reached High Benchmark	Reached Advanced Benchmark
KwaZulu Natal	61.8%	38.2%	12.9%	2.4%	0.4%
Mpumalanga	54.1%	45.9%	24.2%	6.3%	0.9%
Northern Cape	51.7%	48.3%	21.5%	8.3%	0.6%
Eastern Cape	50.0%	50.0%	24.0%	7.3%	0.7%
Gauteng	45.7%	54.3%	31.9%	12.7%	2.3%
Limpopo	41.4%	58.6%	24.5%	3.6%	0.0%
Western Cape	29.5%	70.5%	41.0%	17.7%	3.9%
North West	25.3%	74.7%	52.4%	20.4%	5.0%
Free State	17.3%	82.7%	54.3%	21.1%	3.3%
Eng/Afr/Zulu-RSA	**48.9%**	**51.1%**	**25.8%**	**8.9%**	**1.7%**

In KwaZulu Natal, Mpumalanga, the Northern Cape and Eastern Cape, more than 50% of learners were unable to reach the Lowest Benchmark and as such, do not seem to have basic literacy skills in place by the end of Grade 5. The Free State had the most learners who reached the benchmarks and this province is very different in attainment when compared to the other provinces. This is probably explained due to the nature of their sample and the distribution of languages tested (see Chapter 3 and Appendix A). Limpopo and Gauteng are similar in attainment of the benchmarks.

5.3.4 Benchmark Achievement in South Africa for PIRLS Grade 5 by Gender

The graph below (Figure 5.5) shows the differences in benchmark achievement in South Africa for boys compared to girls.

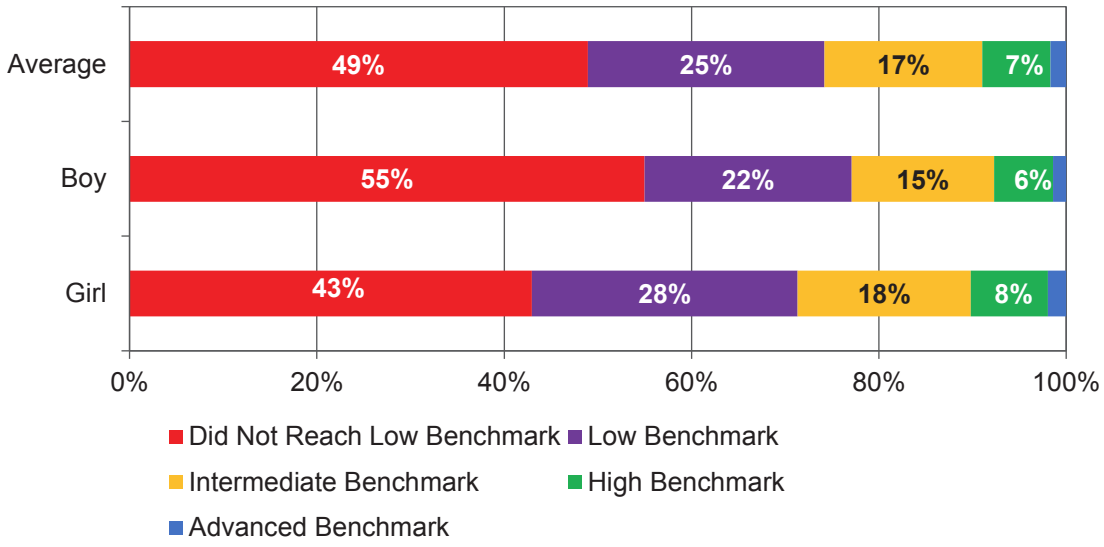


Figure 5.5:South African Boys compared to Girls in terms of reaching the International Benchmarks

In Figure 5.5, the most serious concern that arises is that 55% of boys did not reach the Lowest Benchmark, whereas 43% of girls could not reach the Low Benchmark. Significantly more girls (29%) reached the top three benchmarks whereas only 23% of boys could achieve the three higher benchmarks. Overall girls were more likely to attain each of the benchmarks when compared to boys. Boys may be an at-risk group in South Africa that would require additional and indepth reading literacy interventions (see Chapter 10).

5.3.5 Benchmark Achievement for PIRLS Grade 5 by Location

Table 5.4 below presents the discrete categories of benchmarks attained per location.

Table 5.4: Discrete categories of International Benchmarks reached per Location

	Did Not Reach	Low Benchmark	Intermediate Benchmark	High Benchmark	Advanced Benchmark
Remote rural	67.1%	24.8%	7.5%	0.7%	0.0%
Township near urban area	56.7%	28.3%	12.2%	2.5%	0.2%
Small town or village	52.2%	29.5%	13.5%	3.5%	1.3%
Urban–Densely populated	31.2%	25.1%	28.4%	12.8%	2.5%
Suburban	25.1%	26.1%	26.8%	16.9%	5.1%
Medium size city/ large town	17.8%	24.1%	34.2%	21.3%	2.6%
Eng/Afr/Zulu-RSA (5)	**48.9%**	**25.3%**	**16.9%**	**7.3%**	**1.7%**

Discrepancies in attainment of benchmarks was evident between learners living in the various types of residential areas found in South Africa, such as remote rural areas, small towns or villages, townships near urban areas, urban (densely populated) or suburban areas and mediums-sized cities and towns. The international benchmarks reached by learners residing in the various areas of South Africa is illustrated in Figure 5.6 below.

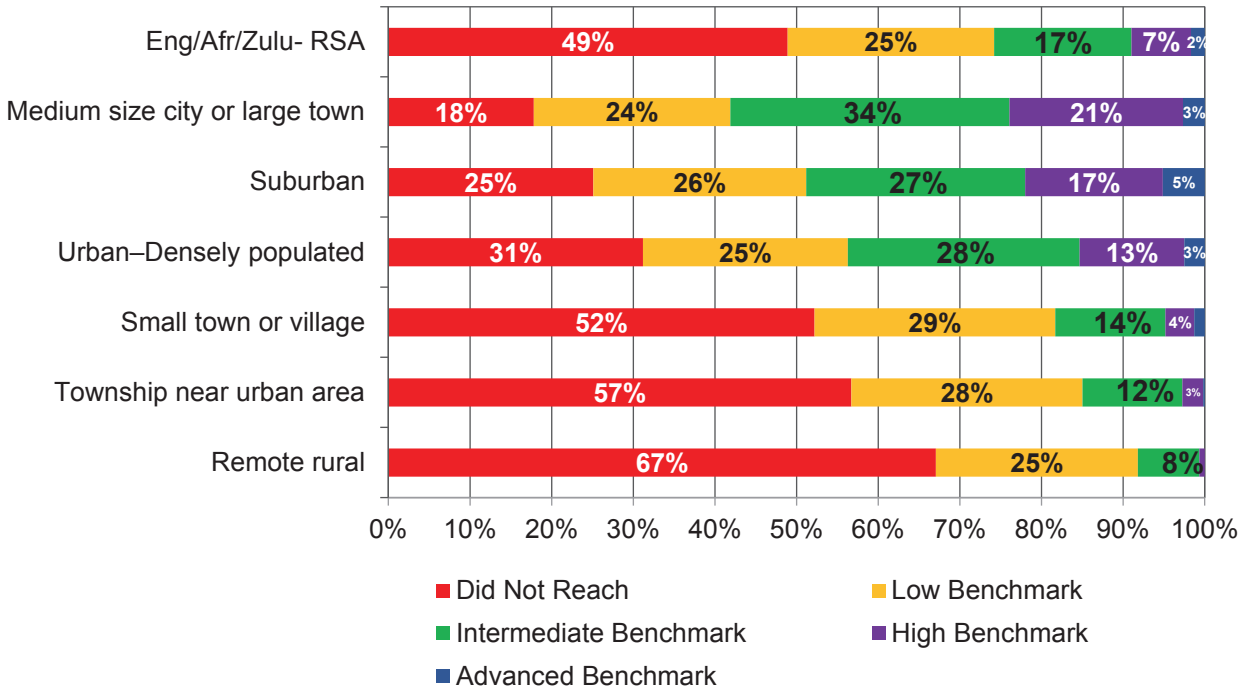


Figure 5.6: South African Grade 5 Learner Achievement of International Benchmarks per Location

Learners in medium-sized cities or large towns, suburban and densely populated urban areas were more likely to reach international benchmarks (see Figure 5.6). Remote rural areas were the residential area where learners were the least likely to reach the Lowest Benchmark with 67% not being able to read for basic meaning. In small towns or villages (52%) and townships (52%), more than half of the learners were not able to achieve the Lowest Benchmark. In contrast, learners in densely populated urban areas or medium to large towns (3%) and suburban areas (5%) were the most likely to achieve the Advanced Benchmark. No learners in remote rural areas attained the Advanced Benchmark and only a fraction (0.7%) obtained the High Benchmark.

In Table 5.5, the International Benchmarks reached are shown per school quintile classification (see Chapter 3 for more information about quintiles[17]). The results in Table 5.5 show that quintile one to three schools are similar in their attainment of the benchmarks, with quintile one to three having a large percentage of learners (64% and more) that did not reach the lowest benchmark.

[17] As mentioned in Chapter 4, data was not collected in the study concerning quintiles. However the variable was obtained from the EMIS database for this analysis but the data could not be verified in terms of its accuracy.

Table 5.5: South African Learners who reached the International Benchmarks per School Quintile

	Did Not Reach Low Benchmark	Reached Low Benchmark	Reached Intermediate Benchmark	Reached High Benchmark	Reached Advanced Benchmark
Quintile 1	67.4%	24.1%	7.8%	0.7%	0.0%
Quintile 2	66.8%	24.8%	7.3%	1.0%	0.1%
Quintile 3	64.4%	25.5%	8.8%	1.4%	0.0%
Quintile 4	50.6%	31.1%	13.5%	3.8%	1.0%
Quintile 5	17.5%	22.2%	34.4%	21.0%	4.9%
Eng/Afr/Zulu	**48.9%**	**25.3%**	**16.9%**	**7.3%**	**1.7%**

It is important to note that no learners in Quintiles 1 and 3 reached the Advanced Benchmark and that only about one percent in Quintiles 1-3 reached the High benchmark. Quintile 4 schools recorded fewer learners not reaching the Lowest Benchmark (51%), whereas Quintile 5 schools are significantly different with only 18% of learners not reaching the Lowest Benchmark. In Quintile 5 schools, there is also a substantially larger percentage of learners who were able to reach the High Benchmark (21%) and the Advanced Benchmark (5%).

5.4 Conclusion

About half (49%) of South African Grade 5 learners who wrote the test language in Afrikaans, English and isiZulu did not reach the Lowest Benchmark (indicating that they do not have basic literacy skills). A quarter of the South African learners (25%) reached the Lowest Benchmark and were able to read for basic, straightforward inference at the end of Grade 5. Only a very small percentage (2%) reached the Advanced Benchmark. Compared to other Benchmarking participants, South Africa's Grade 5 sample had the most learners not reaching the benchmarks, with Abu Dhabi's results being the closest (45% of their learners do not reach the Lowest Benchmark). Internationally, when all 50 participating countries are analysed, there are only 4% of learners who do not reach the Lowest Benchmark, which is concerning when compared to South Africa where half of the Grade 5 learners did not attain this benchmark.

A breakdown by language showed that Grade 5 learners who wrote the test in Afrikaans and English had similar achievement, with 37% of them not reaching the Lowest Benchmark. This is in contrast to isiZulu, where 69% of the learners could not attain the Lowest Benchmark. This highlights the difference in the ability to read for meaning by the end of Grade 5 in Afrikaans and English compared to that in isiZulu. Attainment of the International Benchmarks by province also showed a great deal of disparity, with the Free State standing out as the province reaching the benchmarks possibly due to the small, selective nature of the sample. In the Free State, only 17% of learners did not reach the Lowest Benchmark. North West had the second highest percentage of learners to attain the benchmarks followed by the Western Cape. The province with the fewest learners reaching the Lowest Benchmark was KwaZulu Natal, where 62% of learners did not have basic literacy skills. Given that only three languages were tested and that the distribution of languages is provincially dependent i.e.: provinces and languages are linked in terms of achieving the benchmarks (see Appendix A).

The South African Grade 5 learners (Afrikaans, English and isiZulu) overall showed large differences in attainment of the benchmarks for girls when compared to boys. Girls were far more likely to reach the Lowest Benchmark (57%) whereas boys found it more difficult attaining the Lowest Benchmark (45%). Boys once again emerged as an at-risk group.

Grade 5 learners living in remote rural areas (67%) and townships (56%) were the least likely to attain the Lowest Benchmark, followed by small towns or villages (52%). Learners living in medium-sized cities or large towns have the have the best chance of being able to read for meaning; only 18% of learners living in medium cities or large towns could not attain the Lowest Benchmarks.

When the analysis of schools by quintiles was done, it was found that Quintiles 1, 2 and 3 were very similar in attainment of the benchmarks, with more than 65% of learners in these schools not being able to read for meaning. Quintile 4 results were very different, with half of the learners not being able to reach the Lowest Benchmark. Quintile 5 shows a substantial difference when compared to the other four quintiles as only 18% of the learners in Quintile 5 were unable to reach the Lowest Benchmark.

It is important to emphasise that the South African Grade 5 sample was limited to only three test languages: Afrikaans, English and isiZulu. There were large differences between those learners who wrote the test in Afrikaans or English compared to isiZulu. This is related to some of the other results in this chapter and contextualised in Chapters 2 and 3 as well as in the chapters focusing on the questionnaire data in Chapters 7-9. For instance, learners from KwaZulu Natal were the least likely to reach the International Benchmarks (province in which the most isiZulu learners were represented). Also the fact that remote rural areas and townships showed the lowest attainment (more isiZulu learners likely to be in these areas) and that Quintiles 1, 2 and 3 had the lowest attainment of the benchmarks (more of these schools located in remote rural areas). The injustices of the past as well as the social, economic and political complexities of the present and the problems of implementing African languages continue to disadvantage certain population groups within South Africa. This chapter highlights the need for investment in African languages, as well as greater effort to reach those living in remote rural areas and attending under-resourced schools (lower quintiles) and these points are further elaborated in Chapter 10.

CHAPTER 6: PIRLS 2006, 2011 AND 2016 GRADE 5 TRENDS IN READING LITERACY COMPREHENSION

Celeste Combrinck and Sarah Howie

6.1 PIRLS Trends Internationally

Countries are given the option of participating once every five years in the PIRLS study thereby collecting comprehensive information on how well learners read at different points in the educational system (Martin, Muller & Hooper, 2017, p.3). By comparing results every five years, the trends offer countries the opportunity to:

- track learner reading comprehension within the system and to compare with other participating countries;
- assess the accomplishment of goals and standards set nationally;
- assess curriculum functioning to consider and inform reform;
- improve teaching and learning through research;
- conduct national studies to monitor equity and assess other grades; and
- train teachers and researchers in assessment, monitoring and evaluation.

The tracking of changes taking place between different rounds of PIRLS is based on trend passages which are repeated in different rounds. In Figure 6.1, the matrix design (rotated test design) is shown with the new PIRLS passages (orange), the PIRLS trend passages (green), the released passages (blue) and the PIRLS Literacy passages (yellow) spread across the sixteen different types of booklets. The spread of informational (shown as a 1) and literary texts (shown as a 2) is also demonstrated for each category in the design.

	Passage 1	Passage 2	Passage 3	Passage 4	Passage 5	Passage 6	Passage 7	Passage 8	Passage 9	Passage 10	Passage 11	Passage 12
Booklet 1	NEW P ❶	P TREND ❷										
Booklet 2	NEW P ❶		P TREND ❷									
Booklet 3			P TREND ❷		PL TREND ❶							
Booklet 4						NEW P ❷	P TREND ❶					
Booklet 5					PL TREND ❶	NEW P ❷						
Booklet 6							P TREND ❶	NEW P ❷				
Booklet 7								NEW P ❷	P TREND ❶			
Booklet 8									P TREND ❶	PL TREND ❷		
Booklet 9		P TREND ❷		NEW P ❶								
Booklet 10				NEW P ❶						PL TREND ❷		
Booklet 11			P TREND ❷				P TREND ❶					
Booklet 12					PL TREND ❶			NEW P ❷				
Booklet 13		P TREND ❷							P TREND ❶			
Booklet 14	NEW P ❶									PL TREND ❷		
Booklet 15				NEW P ❶		NEW P ❷						
Booklet 16 (Reader)											RELEASED ❷	RELEASED ❶

4 New PIRLS Passages: NEW
4 trend passages from PIRLS: P TREND
2 trend passages from PL: PL TREND
2 released PIRLS passages: RELEASED

Informational passage ❶ Literary passage ❷

Figure 6.1: Matrix design of PIRLS showing PIRLS and PIRLS Literacy Trend Passages across 16 different booklets

The PIRLS 2016 Grade 5 assessment study included four trend passages from previous PIRLS cycles, two trend PIRLS Literacy passages, four new passages and two released passages (the latter were combined into a Reader Booklet which is left in the classroom as a resource).

6.2 PIRLS Trends in South Africa

South Africa has participated in three PIRLS cycles, namely 2006, 2011 and 2016. The possible trend comparisons, per cycle, are shown in Figure 6.2.

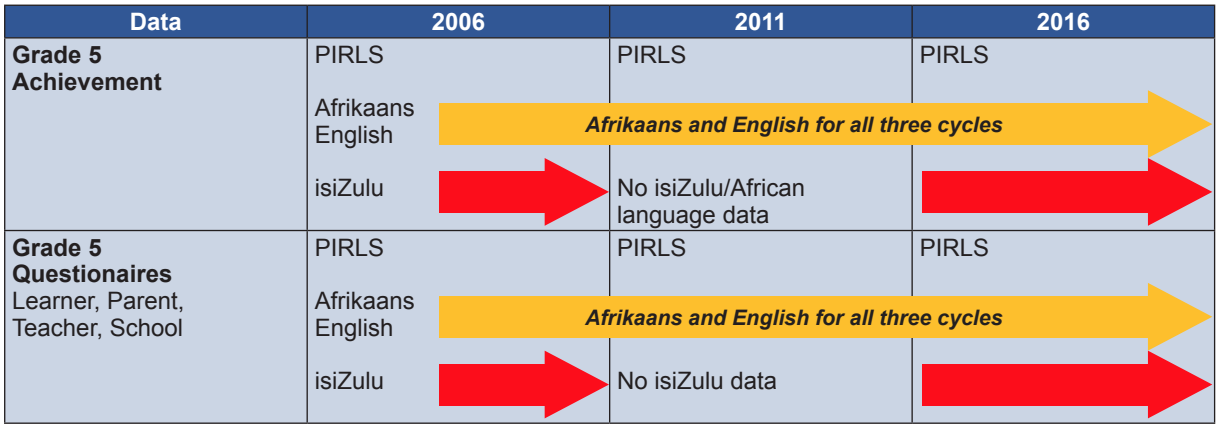


Figure 6.2: Trends possible for South African PIRLS Grade 5 data per Cycle

As explained in Chapters 1 and 3, in 2006, a nationally representative sample was drawn for both languages and provinces respectively for both Grade 4 and Grade 5. However, the 2006 South African Grade 4 national achievement results could not be used for international reporting or trend due to the very low mean scores, and the African languages in Grade 5 could not be used for trend analysis as this would cause unstable measurement for trend in the African languages. To maintain the trend, in 2011 only Grade 5 learners who wrote the PIRLS assessment in Afrikaans and English participated. In 2016, isiZulu was added to the Grade 5 PIRLS participation sample to assess whether changes had been taking place in the most widely spoken African language. As a result, trend analysis of reading literacy achievement is possible for the Grade 5 cohorts for Afrikaans and English in the 2006, 2011 and 2016 rounds of participation. IsiZulu 2006 results can be compared to 2016 isiZulu results (see Figure 6.2). No African language groups participated for Grade 5 after 2006, except isiZulu in 2016. In 2011, a representative sample of provinces was not drawn, therefore this chapter focuses on comparing language groups in the Grade 5 PIRLS rounds of participation as no national comparison is possible.

6.3 PIRLS 2006, 2011 and 2016 Grade 5 South African Reading Achievement Trend Results

The following section presents the South African trend data from 2006, 2011 and 2016 as well as the Standard Errors (SE). It also indicates whether the changes were statistically significant. As is the case with the international report, the label of Eng/Afr/Zulu – RSA is used to specify which groups are being used in analysis.

In Figure 6.3, the average mean achievement scores are shown for the combined group of learners who wrote in Afrikaans and English across the three cycles.

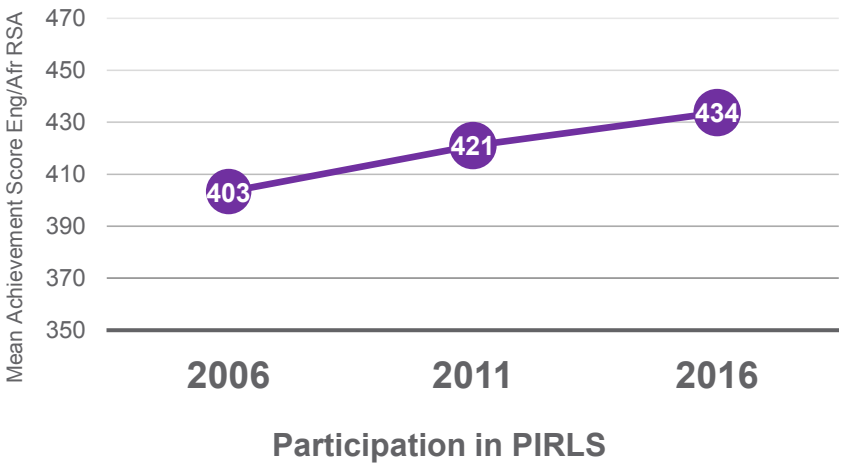


Figure 6.3: South African (Eng/Afr RSA) Overall Score for 2006, 2011 and 2016 PIRLS

When the mean reading literacy achievement score for the two languages across the three cycles is compared, there are no statistically significant differences between 2011 and 2016. However, the 2016 score of 434 points is significantly higher than the 2006 average of 403 score points, as is shown in Table 6.1 below, indicating that change has occurred over the 10 year period.

Table 6.1: Eng/Afr RSA (5) Mean Achievement Score for 2006, 2011 and 2016 PIRLS Grade 5

	Year	Mean	SE	2006	2011	2016
Eng/Afr RSA (Grade 5)	2006	403	12.2		●	▼
	2011	421	7.3	●		●
	2016	434	9.3	▲	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

In the international report, the 2006 and 2016 averages of all three languages (Eng/Afr/Zulu-RSA) are compared, as shown in Figure 6.4 below.

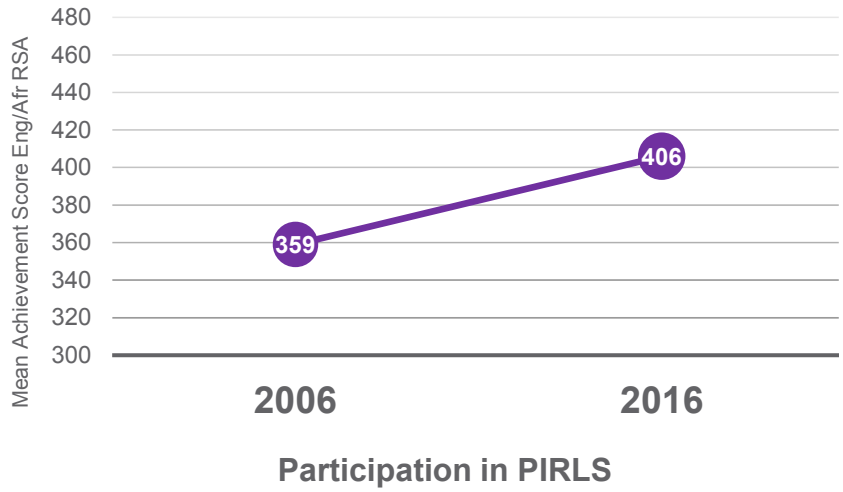


Figure 6.4: South African (Eng/Afr/Zulu RSA) Mean Reading Achievement Score for 2006 and 2016 PIRLS Grade 5

The large significant difference between the two rounds when the three languages are combined, may be explained by the very low mean score achievement of the isiZulu group in 2006. Therefore, comparisons per language, or the combination of Afrikaans and English is recommended. The Afrikaans and English scores are more similar and more comparable than the combination of all three languages.

6.3.1 PIRLS Grade 5 Trend Results across Cycles by language of test

The mean reading achievement scores for Grade 5 learners writing in Afrikaans and English can be compared for 2006, 2011 and 2016. isiZulu achievement results can only be compared for 2006 and 2016. A representative sample of provinces was only drawn for the 2006 and 2016 cohorts and therefore, provincial data is not presented here. In Table 6.2, the average mean achievement per language for the rounds of participation can be seen, as well as the Standard Errors (SE) and the statistical significance between the rounds of participation.

Table 6.2: Afrikaans, English and isiZulu Mean Reading Achievement in 2006, 2011 and 2016 for PIRLS Grade 5

Language	Year	Mean	SE	2006	2011	2016
Afrikaans	2006	416	12.3		●	●
	2011	427	10.6	●		●
	2016	431	11.6	●	●	
English	2006	398	16.8		●	●
	2011	419	8.9	●		●
	2016	435	11.9	●	●	
isiZulu	2006	263	5.9		●	▼
	2011			●		●
	2016	358	5.1	▲	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

Even though Afrikaans and English have higher mean achievement scores with each round of participation, the differences in scores are not statistically significant (-1.96 > t < 1.96) due to the large variation around the mean (large standard errors). The isiZulu group recorded statistically higher achievement in 2016 compared to 2006[18]. This may be partly explained by the fact that isiZulu started from a very low base and remains significantly below the international centre point (500 score points) of the PIRLS scale. However, the large score point increase and the significance of the improvement is encouraging.

In Figure 6.5, a visual representation of the reading literacy average achievement can be seen for each language, as is possible for the PIRLS Grade 5 study.

[18] $t > 1.96 \approx p < 0.05$.

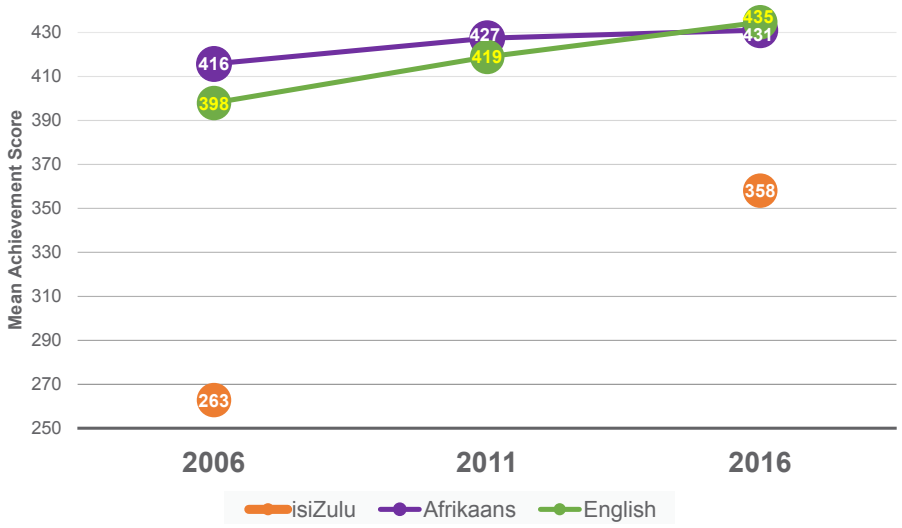


Figure 6.5: PIRLS Grade 5 Achievement by Language for 2006, 2011 and 2016

6.3.2 PIRLS Grade 5 Trend Results across Cycles by Gender

Achievement in the PIRLS Grade 5 study has shown that girls score significantly higher in each round than boys. Table 6.3 shows the average achievement of girls compared to boys in the three rounds of participation. In this table, the combined results of learners who wrote in Afrikaans and English are shown as a combined group. As isiZulu only participated in 2006 and 2016, their results are shown separately in Figure 6.7.

Table 6.3: Eng/Afr PIRLS Grade 5 Mean Reading Achievement per cycle

Gender (Afr/ Eng)	Year	Mean	SE	2006	2011	2016
Girls	2006	421	13.03		●	●
	2011	434	7.65	●		●
	2016	446	9.15	●	●	
Boys	2006	384	12.47		●	▼
	2011	408	8.80	●		●
	2016	420	9.82	▲	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

On average over the three cycles, girls tended to score 30 points higher than boys. Girls had equivalent performance across the cycles. Boys however performed significantly better in the 2016 cycle compared to their performance in 2006.

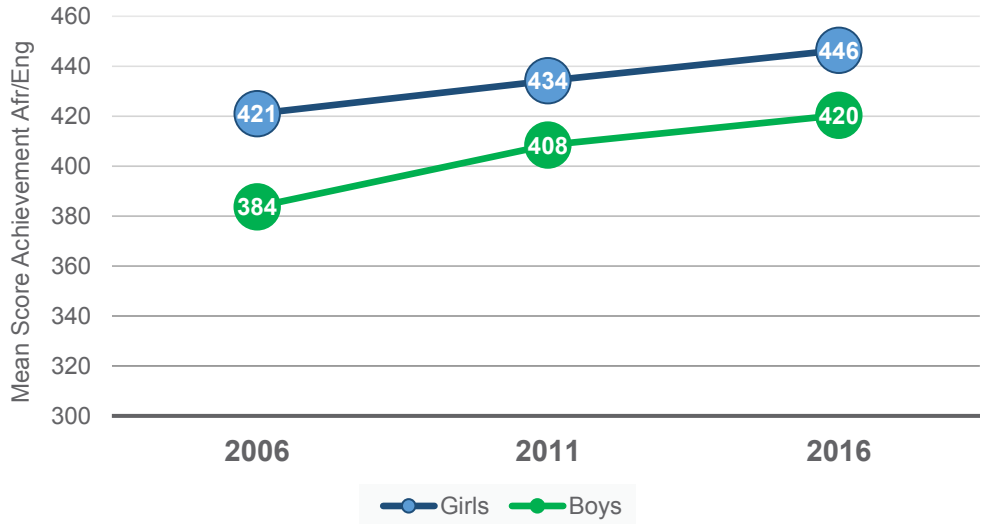


Figure 6.6: PIRLS Grade 5 2006, 2011 and 2016 Afrikaans and English combined Mean Achievement Scores by Gender

Figure 6.7 shows the average performance of boys and girls for the isiZulu participants. For both boys and girls, there is almost 100-points difference over the past 10 years (see Table 6.4 with significance indicated).

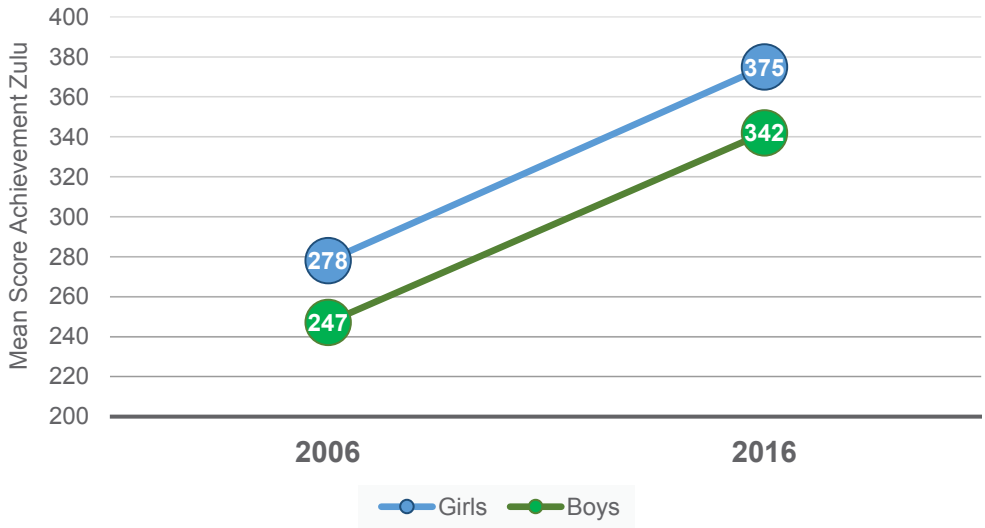


Figure 6.7: PIRLS Grade 5 2006 and 2016 isiZulu Mean Achievement Scores by Gender

In Table 6.4 the mean reading achievement of Afrikaans, English and isiZulu can be seen for girls and boys in each PIRLS cycle.

Table 6.4: PIRLS Grade 5 2006, 2011 and 2016 Afrikaans, English and isiZulu Mean Reading Achievement by gender

Language	Gender	Cycle	Mean	SE	2006	2011	2016
Afrikaans	Girls	2006	427	11.6		●	●
		2011	441	10.4	●		●
		2016	448	11.7	●	●	
	Boys	2006	405	13.7		●	●
		2011	413	11.4	●		●
		2016	415	12.4	●	●	
English	Girls	2006	419	17.6		●	●
		2011	432	9.5	●		●
		2016	446	11.6	●	●	
	Boys	2006	374	17.5		●	▼
		2011	407	10.8	●		●
		2016	423	12.7	▲	●	
isiZulu	Girls	2006	278	5.9		●	▼
		2011			●		●
		2016	375	4.6	▲	●	
	Boys	2006	247	6.6		●	▼
		2011			●		●
		2016	342	6.6	▲	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

Significant improvements were found for boys writing in English, as well as girls and boys writing in isiZulu, who achieved significantly higher scores in the 2016 round when compared to 2006.

6.3.3 PIRLS Grade 5 Trend Results across Cycles of Reading Achievement of International Benchmarks

The percentage of learners reaching the international benchmarks gives a good indication of the standard of reading literacy in these languages. Figure 6.8 shows the percentages of Grade 5 learners in South Africa who attained the international benchmarks per cycle in PIRLS, and separates different combinations of the languages for a clearer picture of benchmarks reached.

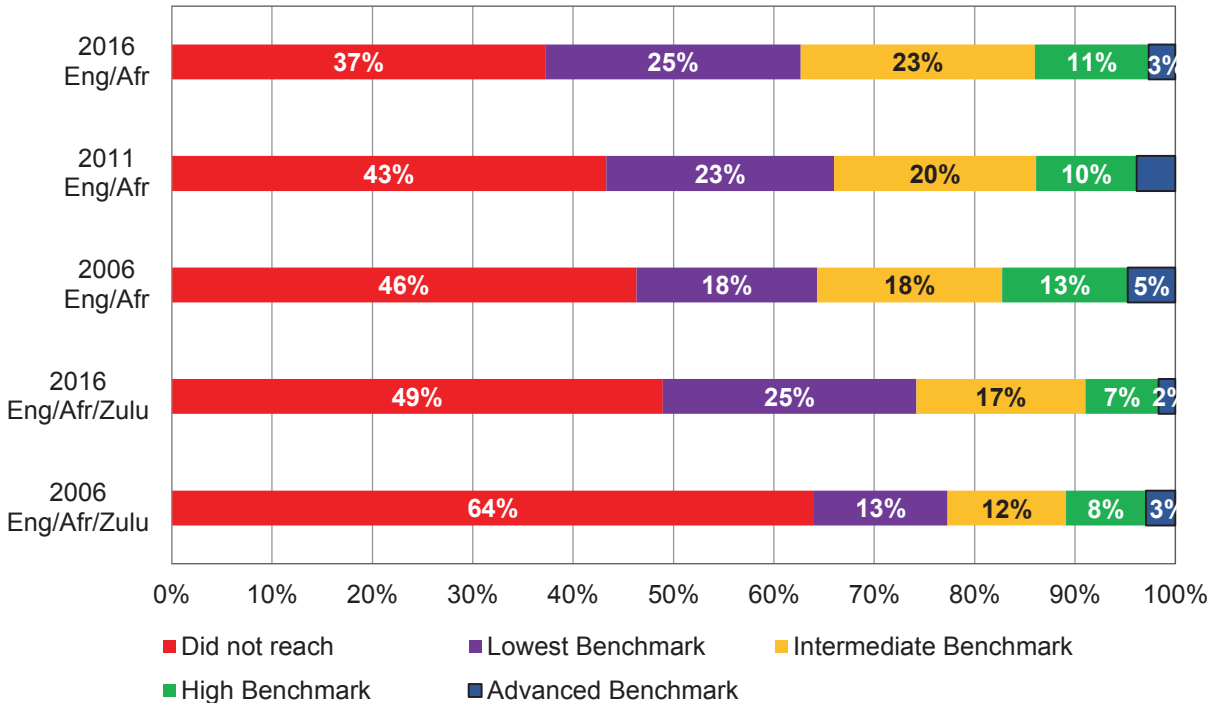


Figure 6.8: Attainment by South African Grade 5 Learners of International Benchmarks across Cycles (discrete categories)

When only the Afrikaans and English combined scores are compared across the three cycles (2006, 2011 and 2016), each subsequent round had fewer learners not reaching the Lowest Benchmark, indicating improvement in these languages. In 2006, 46% were unable to reach the Lowest Benchmark whereas in 2016, this percentage was reduced to only 37% not reaching this benchmark. However, for the Afrikaans and English combined scores, fewer learners have reached the High International Benchmark and Advanced Benchmarks with each subsequent cycle (the rise of bottom end learners but a drop at the top). When the 2006 and 2016 cycles are compared for all three languages (Afrikaans, English and isiZulu), a significant improvement can be seen in Figure 6.8 with those not reaching the Lowest Benchmark, moving from 64% in 2006 to 49% in 2016, which is due to the improvement in the isiZulu cohort scores.

The percentage of learners who reached the benchmarks is shown in Table 6.5, as per language for the 2006, 2011 and 2006 cycles.

Table 6.5: Discrete percentages per language of Grade 5 learners who could attain the International Benchmarks for each cycle

	Year	Did not reach	Lowest Benchmark	Intermediate Benchmark	High Benchmark	Advanced Benchmark
Afrikaans	2006	44.8%	19.8%	18.7%	11.9%	4.8%
	2011	39.0%	27.9%	22.0%	9.4%	1.7%
	2016	37.5%	28.1%	21.6%	10.5%	2.2%
English	2006	47.8%	16.2%	18.2%	13.1%	4.7%
	2011	44.7%	21.0%	19.5%	10.2%	4.6%
	2016	37.1%	24.5%	24.0%	11.7%	2.8%
isiZulu	2006	92.3%	6.8%	1.0%	0.0%	0.0%
	2016	69.2%	25.0%	5.6%	0.2%	0.0%

The Afrikaans group had a higher percentage of learners who were able to attain the Lowest Benchmark with each subsequent cycle and the same is true of the English schools. However, in 2016 for both Afrikaans and English, fewer learners were able to attain the Advanced Benchmark. The isiZulu group showed the most drastic change, going from 92% not being able to reach the benchmarks to only 69% not being able to do so. This means that in 2016, 30% of learners reached the benchmarks and a total of 25% of learners who wrote in isiZulu, reached the Lowest Benchmark.

6.5 Conclusion

The 2006, 2011 and 2006 results can be compared for the Grade 5 Afrikaans and English schools, whereas only the isiZulu participation in 2006 and 2016 can be compared. When taking a overall view of the South African results (Eng/Afr), the 2016 participation showed a significantly higher mean achievement when compared to the 2006 cycle. The 2011 and 2016 averages were not statistically different between the cycles for the South African Grade 5 participation (Eng/Afr – RSA). When Afrikaans and English were analysed separately, there were no significant differences between the rounds of participation for each of the two languages. Afrikaans and English achievement results were also not significantly different from one another across the cycles. isiZulu showed a remarkable increase in mean reading achievement from 2006 (263 points) in comparison to 2016 (358 points+). The isiZulu group had a very low starting point, and as is the case with the other groups, remains significantly below the international centre point of 500 score points. Grade 5 girls had significantly higher reading literacy achievement when compared to boys. Boys writing the test in English and isiZulu also showed a marked improvement from their 2006 mean achievement when compared to 2016.

The benchmark achievement results showed an improvement of learners at the lower end of the scale with more Grade 5s reaching the Lowest International Benchmark (basic literacy). However a drop at the top end of the achievement was also observed, with smaller percentages of learners reaching the High and the Advanced International Benchmarks with each cycle. isiZulu had far more learners reaching the Lowest Benchmark in 2016 compared to 2011, but 69% of isiZulu learners were still not able to read for meaning in their home language by the end of Grade 5 in the 2016 cycle.

CHAPTER 7: THE SCHOOL ENVIRONMENT AND CLIMATE IN PIRLS 2016

Karen Roux and Sarah Howie

7.1 Introduction

The general schooling environment in South Africa during the conducting of PIRLS 2016, at the end of 2015 and the beginning of 2016, is described in this chapter. In this report, the term 'school climate' is an umbrella term used to portray the school environment, which includes several aspects such as school composition, school resources and facilities, school emphasis on academic success, principal leadership activities, school discipline and safety. In educational effectiveness research, both nationally and internationally, a conducive school climate is seen as one of the foremost explanatory factors in explaining learner educational attainment (see Reynolds, Lee, Turner, Bromhead & Subasic, 2017; MacNeil, Prater & Busch, 2009).

The theme school environment is separated into two sections: School Composition and Resources (7.2) and School Climate (7.3). The former will explore school emphasis on school composition and location as well as school facilities, resources and technology. The following section will look at academic success and school order, safety and discipline.

In order to understand South African learner achievement during PIRLS 2016, this chapter highlights some key indicators and describes the broader learning environment of participating learners. It should be noted that this chapter refers to the *School Questionnaire*, completed by the school principal, unless otherwise stated. Furthermore as stated in Chapter 4, the achievement data is only representative of three languages sampled based upon the languages of Learning and teaching in Grade1-3 for Afrikaans, English and isiZulu for benchmarking purposes and therefore is not representative of the whole national Grade 5 population in South Africa.

7.2 School Composition and Resources

The school environment may be a positive influence on learner academic success as it affects teacher and learner attitudes about teaching and learning. However, the relationship between school resources and learner achievement has been deemed complicated (Mullis, Martin, Foy & Drucker, 2012). In this section, the profile (7.2.1) of the tested schools is described followed by the facilities and resources (7.2.2).

7.2.1 Profile of South African Schools and Grade 5 Learners

The PIRLS *School Questionnaire*, completed by the school principals, sought information about the school location, school composition in terms of socio-economic background and language of the test as home language, as well as the language proficiency levels of learners entering primary school.

7.2.1.1 School Location

The location of the schools appears to be important, as was found in previous PIRLS studies, in that it has an effect on learner achievement (see Howie et al., 2008 and Howie et al., 2012). This was also found to be the case in PIRLS 2016 (see Chapter 4). The national sample revealed a substantial rural element (see Table 7.2) with two-thirds of the schools and more than half of the learners being tested at schools in rural areas which had been previously found to have an effect on the PIRLS 2011 performance (Howie, 2015).

The school location of PIRLS Grade 5 learners is presented in Table 7.1.

Table 7.1: School Location of South African Schools participating in PIRLS 2016

School Location	% of schools	% of learners	SE of %
Urban– densely populated	14	21	3.7
Suburban– on fringe or outskirts of urban area	12	13	4.7
Township near urban area	9	18	4.5
Medium size city or large town	8	6	1.7
Small town or village	18	18	4.1
Remote rural	39	23	4.4

As reported by school principals, about one-quarter (23%) of Grade 5 learners attended schools in remote rural areas and 21% of Grade 5 learners attended schools in densely populated urban areas. The spread of school location was due to the language stratification (see Chapter 3 for more detail about sampling). As discussed in Chapter 4, Grade 5 learners who attended schools in remote rural areas (360, SE=7.6), townships near urban areas (384, SE=15.0) and small towns or villages (397, SE=12.5) performed considerably lower than their peers in urban (445, SE=21.2), suburban (469, SE=23.6) and medium size cities (484, SE=17.7) areas.

As with the PIRLS Literacy report, the differences found by language could be explained by other factors; for example, the South African Grade 5 sample revealed a stronger rural and urban element (see Table 7.1).

Table 7.2: South African Grade 5 Learner Achievement by Location

School Location	Mean	SE	Medium sized city or large town	Sub-urban	Urban	Small town or village	Town-ship near urban area	Remote rural
Medium size city or large town	484	17.7		●	●	▲	▲	▲
Suburban	469	23.6	●		●	▲	▲	▲
Urban - populated	445	21.2	●	●		▲	▲	▲
Small town or village	397	12.5	▼	▼	▼		●	▲
Township near urban area	384	15.0	▼	▼	▼	●		●
Remote rural	360	7.6	▼	▼	▼	▼	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

The results from the PIRLS 2016 study concur with the previous results (see Howie et al., 2012) where learners from rural areas achieved significantly lower scores (360, SE=7.6) compared to learners from medium size cities (484, SE=17.7) well over 100 points or more than two years of education. Learners from township areas also performed significantly lower than their peers from urban areas.

Whilst data was not collected on quintiles nor was the sample stratified by the variable "quintile", the data related to quintiles was drawn from the original EMIS database used for the sampling framework.

Therefore the results per quintile are tentatively presented as they could not be verified. The majority of the learners assessed were from Quintiles 1-3 (58% of schools) which is lower than the national schooling population, this may be explained by the fact that only one African language was included in this sample. These quintiles would also comprise mainly learners tested in isiZulu. The highest performing group was from Quintile 5 (14% of schools) which is consistent with other data and comprised learners mostly tested in Afrikaans and English, although the home languages varied considerably.

Table 7.3. South African Grade 5 Learner Achievement of in PIRLS 2016 by Quintile

Quintile	% of schools	Mean	SE	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	29	360	6.9		•	•	▼	▼
Quintile 2	12	365	10.2	•		•	▼	▼
Quintile 3	17	369	6.8	•	•		▼	▼
Quintile 4	15	397	10.2	▲	▲	▲		▼
Quintile 5	14	487	10.4	▲	▲	▲	▲	

Note: Independent schools (14%) are excluded from results, they do not have a quintile classification.

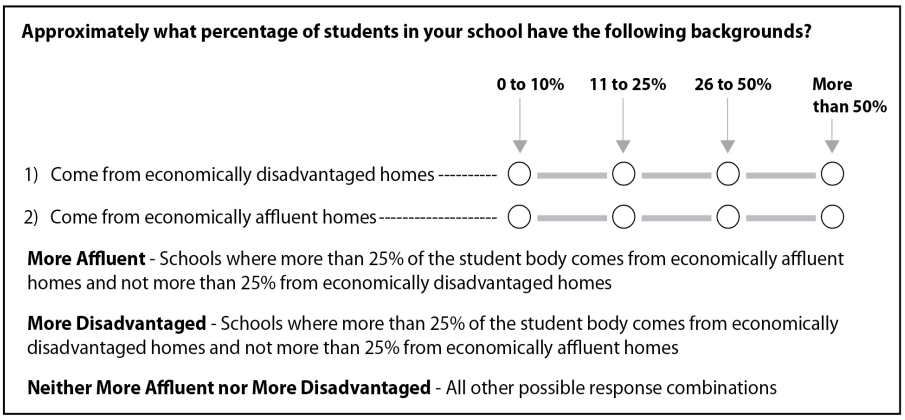
Learners from Quintile 5 achieved significantly higher results than those from all other quintiles and 100 points more than learners in Quintile 4 and 127 points more than those in Quintile 1. Learners in Quintile 4 (15% of the schools) achieved significantly higher results than learners in Quintiles 1-3 (58% of learners). No significant differences were found between learners in Quintiles 1-3.

School funding in South Africa is allocated according to a poverty index, known as the quintile system. Based on the perceived poverty of the area in which the school is located, schools are allocated a quintile classification. Quintiles 1, 2 and 3 are the most impoverished and receive larger government funding and are non-fee paying schools, whereas Quintiles 4 and 5 are considered to be located in more privileged areas, receive less funding but are fee-paying schools. Even though this sample was not specifically selected based on quintiles, it is reported as it has equity implications. Most of the schools in the sample were classified as Quintile 1 schools, the most impoverished. Only 12% of schools were in the Quintile 5 category, the schools in areas which are classified as being more affluent (see Chapter 4 and 9).

7.2.1.2 School Composition by Student Economic Background

South Africa's socio-economic background is of importance to educational research as it has been found to have an association with learner achievement (see Visser, Juan & Feza, 2015; Bayat, Louw & Rena, 2014). Internationally, the Coleman Report (Coleman et al., 1966) first highlighted the importance of compositional characteristics of a school's learner population and how these characteristics tend to affect academic achievement.

School principals were asked to indicate the percentage of learners in their schools who come from economically disadvantaged homes or economically affluent homes. The question comprised four categories as indicated in the Information Box below:



Information Box 1: School Composition by Learner Economic Background

The PIRLS study found that 76% of learners come from *More Disadvantaged* backgrounds (see Figure 7.1). Almost one in five learners came from *More Affluent* backgrounds.

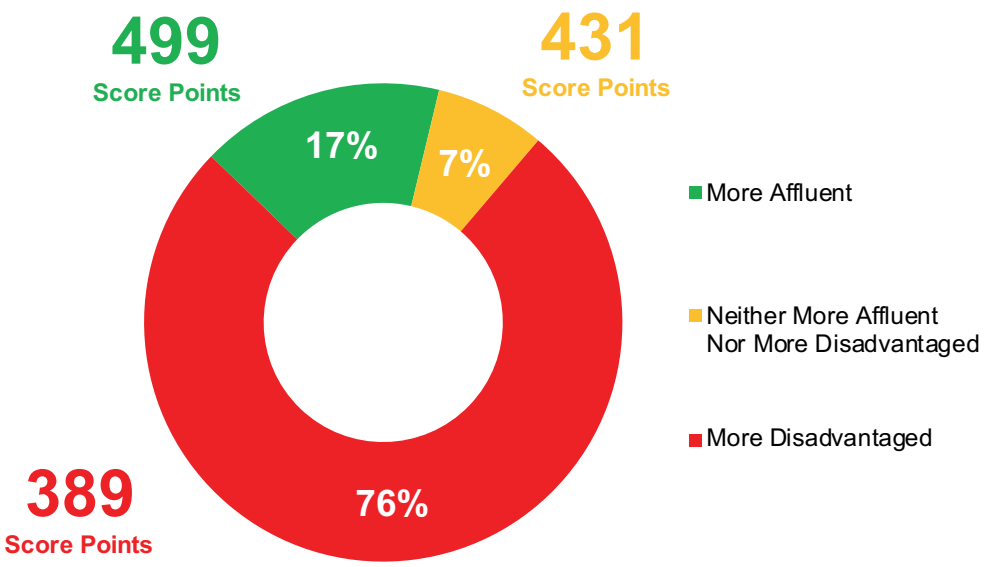


Figure 7.1: South African School Composition by Learner Economic Background and Grade 5 Learner Achievement

Learners from *More Disadvantaged* communities achieved an average reading literacy score of 389 (SE=8.4) whereas learners from *More Affluent* communities reached an average score of 499 (SE=17.4). There is a 110-point difference between the two aforementioned categories which means that learners from *More Disadvantaged* communities lag by almost two-and-a-half years.

7.2.1.3 Schools with Learners having the Language of Test as Home Language

In previous cycles of PIRLS, it was found that in most languages learners achieved a higher mean score if the test language was the same as the language the learner spoke at home (see Howie et al., 2012). Principals were asked to categorise the composition of their schools in terms of the proportion of learners learning in a language which is different to their home language. Options given to principals included *More Than 90%*, *51-90%*, *50% or Less* of learners who had the language of the test as their home language.

Internationally, school principals reported that 63% of Grade 4 learners were in schools where most learners (*More Than 90%*) spoke the language of the test as their home language. Nationally, school principals reported that 43% of South African Grade 5 learners writing in Afrikaans, English and isiZulu were in schools where most (*More Than 90%*) of the learners spoke the language of the test as their home language. Figure 7.2 displays the percentage of South African Grade 5 learners that spoke the language of the test as their home language.

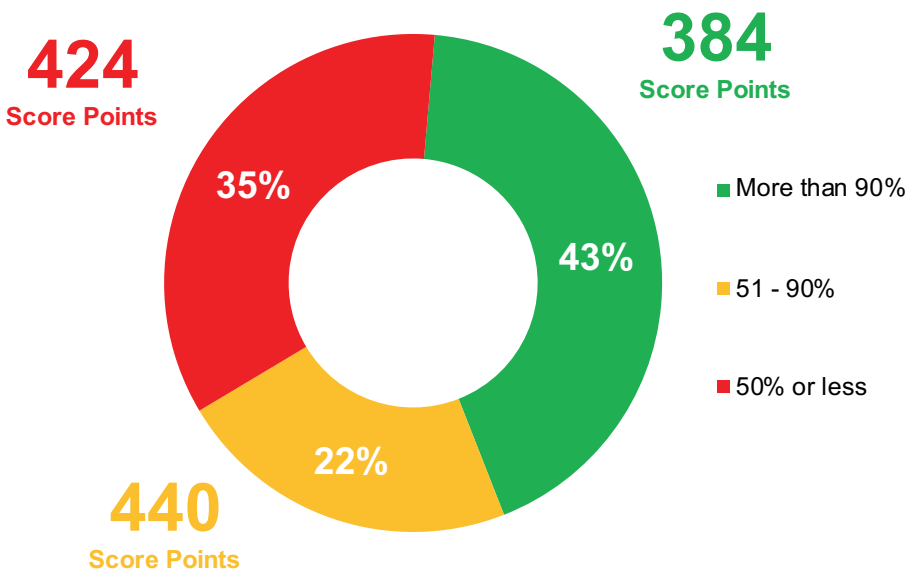
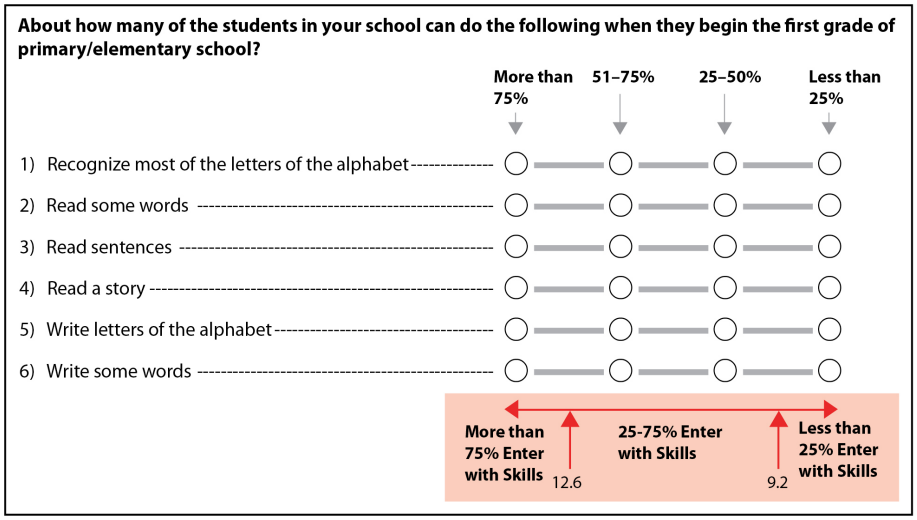


Figure 7.2: Test Language of learners the same as their Home Language and Learner Achievement

Contrary to the international findings and similar to the PIRLS Literacy South African results, the South African group of Grade 5 learners that achieved the lowest average score of 384 (SE=6.7) were in schools where most (90% and more) of the learners spoke the test language as the home language spoken at home. The highest performing group of South African Grade 5 learners attended schools where between 51% and 90% spoke the test language as their home language (440 points, SE=18.4).

7.2.1.4 Schools where Learners enter the Primary Grades with Early Literacy

One of the most important factors influencing reading achievement is learners' school readiness when entering school at Grade 1 (see Chapter 9 for more information about preschool and preschool attendance). The PIRLS *School Questionnaire* asked the school principals about learner proficiency for each of the six early literacy skills when entering schools. Information Box 2 presents how the scale was created:



Information Box 2: Schools Where Learners enter Primary School with Literacy Skills Scale

Figure 7.3 shows the percentage of learners, as categorised by the school principal that enter school with early literacy skills and the figure also includes learner achievement scores associated with each category of learner.

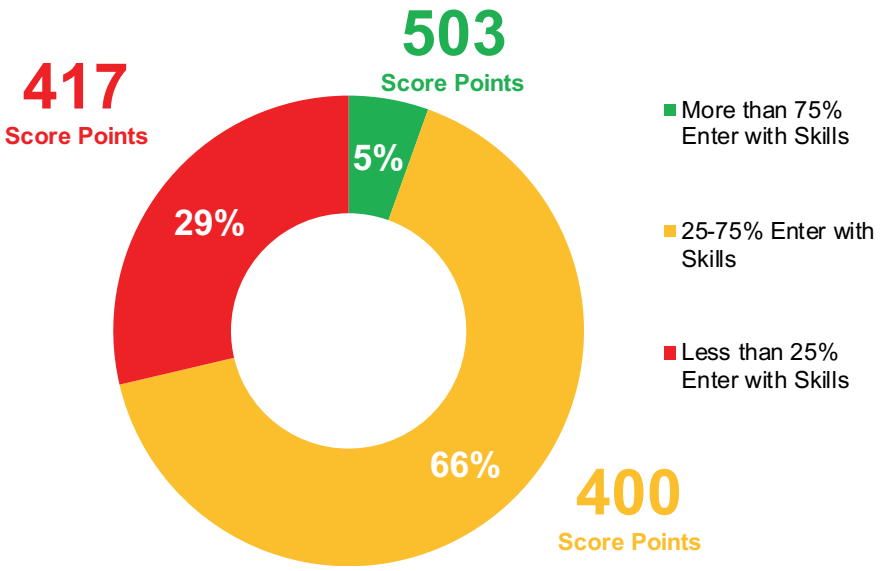


Figure 7.3: Grade 5 Learners entering Primary School with Early Literacy Skills and Learner Achievement

Internationally, principals reported that about one-fifth (22%) of learners are in schools that have more than 75% of learners who entered school with literacy skills. These learners achieved the highest reading score of 516 (SE=1.6). However, in South Africa only five percent of Grade 5 learners being taught in Afrikaans, English and isiZulu are in schools where the majority of learners (more than 75%) enter with early literacy skills. Similar to the international finding, this is also the highest performing group of learners (503 points, SE=24.7)[19].

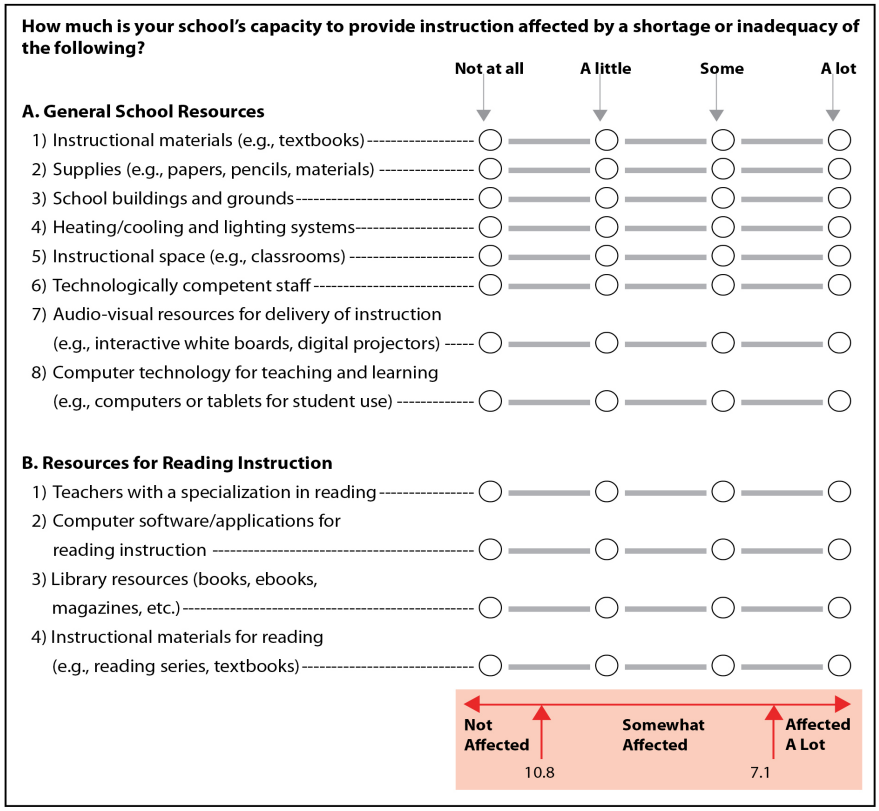
[19] The Standard Error (SE) is large and should be interpreted with caution.

7.2.2 School Facilities and Resources

Instructional materials and resources are crucial for teaching and learning, especially in developing countries where there is a scarcity of teaching resources or in some cases, where schools do not even have adequate school structures. The focus in the PIRLS *School Questionnaire*s was on facilities, the school library and computers available for teaching. This section describes the availability of school and educational resources, the extent to which the school was affected by shortages of the resources and the relationship with South African learner achievement in Grade 5.

7.2.2.1 Instruction affected by Reading Resource Shortages

An important factor for teaching and learning is the extent to which shortages of school resources affect learner achievement. The PIRLS *School Questionnaire* asked school principals about the extent of shortages in their school as well as about resources that are specifically aimed at supporting reading instruction; for example, the number of library books available. Principals were asked specifically about 12 school and classroom resources, which included very basic items such as lighting, heating and cooling facilities, instructional space, staff, instructional materials, library materials and about information and communications technology. Information Box 3 indicates the items used to create the scale.



Information Box 3: Instruction affected by Reading Resource Shortages Scale

The figure (7.4) below shows percentage of learners whose schooling is affected by resource shortages in Grade 5 classes and the associated learner reading achievement score.

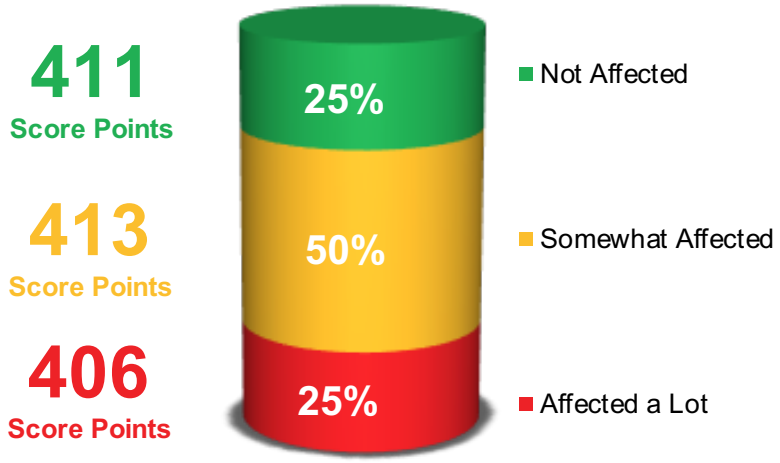


Figure 7.4: Grade 5 Learner Instruction affected by Resource Shortages and Learner Achievement

Internationally 31% reported that they were *Not Affected by* resource shortages compared to 25% of South African schools. Half (50%) of South African schools reported that the shortages affect their instruction to *Some* extent and one-quarter (25%) indicated that it *Affected A Lot*. Internationally, learners attending schools *Not Affected by* resource shortages achieved the highest average reading achievement (521, SE=1.4). However, Grade 5 learners who attended schools *Somewhat Affected* by resource shortages achieved the highest average score of 413 (SE=9.5). There is no difference significant difference among the groups.

7.2.2.2 Teacher Working Conditions

In some countries, it has emerged that teacher shortages may be a result of poor working condition. The PIRLS *Teacher Questionnaire* asked teachers about their working conditions, with a specific focus on the school building, workspace and resources. Almost three-quarters (70%) of the teachers indicated that they have *Minor to Moderate Problems* with their working conditions (see Figure 7.5) and these conditions seem to correlate with achievement.

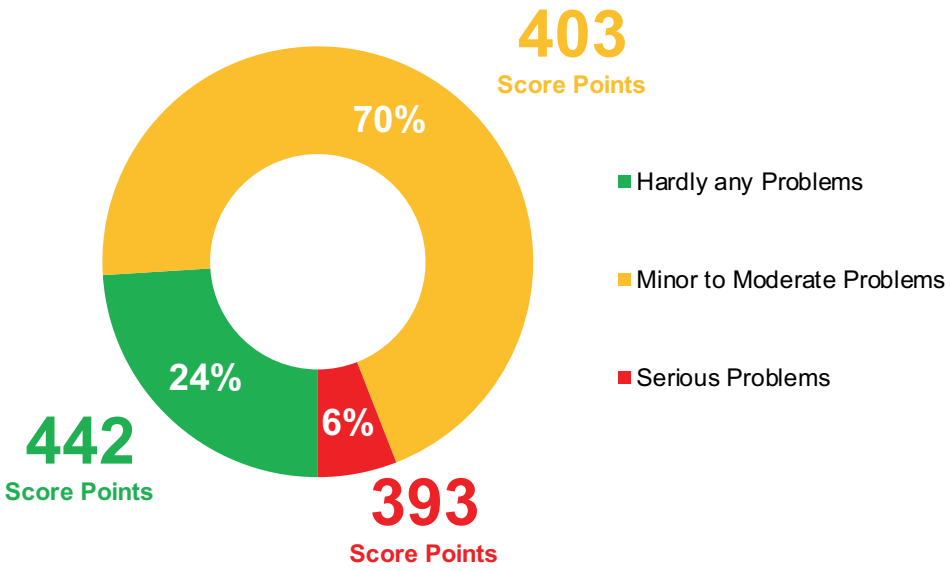


Figure 7.5: Teacher Working Conditions and Grade 5 Learner Achievement[20]

[20] Data from Teacher Questionnaire.

South African learner achievement scores on the PIRLS study seem to vary considerably when associated with teacher working conditions. Learners taught by teachers reporting *Serious Problems* had the lowest performance (393, SE=13.6), which was almost 50 points lower than those whose teachers reported *Hardly Any Problems* (442, SE=18.1).

7.2.2.3 Existence of a School Library and Size of the School Library

Libraries are regarded internationally as an essential educational resource at schools and for society in general. Research indicates that school libraries with appropriate staffing, adequate funding, and a rich collection of materials in a variety of formats impact positively on literacy as well as on overall academic achievement (see California Department of Education, 2017). In many parts of the world, libraries have increasingly been equipped with technology to become media centres that offer not only hard copy resources such as books and posters but also Internet connection, online books, magazines and journals, interactive boards and more. Even though fully-equipped libraries (both hard copy and electronic) are to be found, they are in limited numbers particularly in rural schools and within rural communities in South Africa.

According to the principals, many (45%) learners do not have a school library (see Figure 7.6) in their school. A similar situation was reported in both 2006 and 2011, with little improvement being seen over the past decade. In contrast, internationally only 13% of learners attended schools with no library. Only Morocco reported having as many learners without access to school libraries internationally.

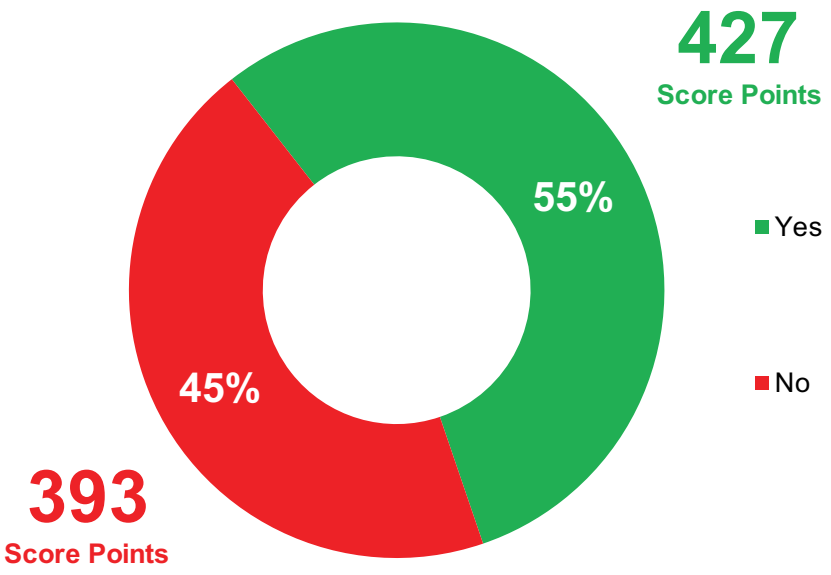


Figure 7.6: Grade 5 Learners in Schools with Libraries and Learner Achievement

In addition to having a space dedicated to books, the quantity and quality of the materials are important including the variety, age and numbers of books. PIRLS 2016 restricted questions to those of the quantity of the books and asked principals to categorise the number of books approximately.

Table 7.4 shows that of the schools that have an established library, 28% of Grade 5 learners attended a school with libraries having *More Than 5 000 Book Titles* compared to 32% internationally. In South Africa, it appears that almost half (46%) of learners are in schools with libraries that have *500 or Fewer Book Titles* compared to 15% internationally.

Table 7.4: School Library Books Available and Learner Achievement

	% of Learners	SE of %	Mean Score	SE
More than 5,000 Book Titles	28	8.1	444	28.3
501-5,000 Book Titles	27	5.5	443	17.4
500 or Fewer Book Titles	46	8.2	407	13.1

There appears to be a positive relationship between the extent of the resources in the school library and learner achievement. Table 7.4 shows that there appears to be a positive difference in learner achievement when schools have libraries and libraries are equipped with a large quantity and number of books. Learners who attend schools where there are *More Than 5 000 Book Titles*, achieved 444 points (SE=28.3)[21] whereas learners who attend schools with a small library of *500 or Fewer Book Titles* achieved a lower 407 (SE=13.1). Those learners in schools with no library, however, achieved only 391 points (SE=8.8), about 50 points below learners in schools with libraries that were better resourced. Internationally, the difference was also considerable at 31 points.

7.2.2.4 Schools with Computers available for Instruction

The advent of the Fourth Industrial Revolution (World Economic Forum, 2017) has significant consequences for education in preparing learners to participate effectively in a technologically-driven and innovative society. Electronic resources are seen as an emergent factor in literacy learning (see Kamil, Intrator & Kim, 2000) and information and communications technology (ICT) is increasingly used globally for modern teaching and learning. PIRLS 2016 included a number of questions regarding the availability of ICT and its utilisation in schools and classrooms as well as in home environments. Internationally, the relationship between the utilisation of ICT in education and achievement in large-scale assessments has been not been definitively ascertained, with earlier results indicating negative effects (Pelgrum & Plomp, 2002).

Principals were asked about the ratio of learners: computers available for instruction (Figure 7.7).

[21] The Standard Error (SE) is large and seems to have much variation in this category.

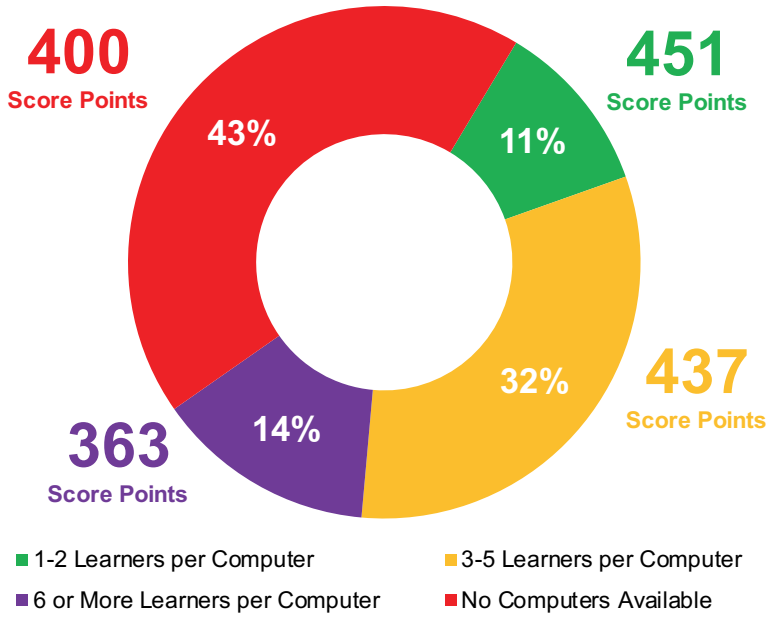


Figure 7.7: Learners in Schools with Computers available for Instruction and Grade 5 Learner Achievement

Almost half (43%) of the learners attend schools where school principals reported that no computers are available for use by learners. This percentage compares to only seven percent of learners internationally.

Generally, learners in schools with access to school computers have higher achievement scores than those who do not, although it appears that when learners have to share a computer between *6 or More Learners per Computer*, their reading achievement is lower (363, SE=19.0) than those who do not have access to a computer at school (400, SE=11.9). South African Grade 5 learners achieved a mean score of 451 (SE=29.3)[22] when they have at least one computer available for one to two learners, a substantial difference of 88 points more compared to those who have a computer for 6 or more learners.

7.3 School Climate

It is commonly known that a positive school climate is linked to higher educational achievement (see Brand, Felner, Shim, Seitsinger & Duman, 2003). Previous cycles of PIRLS found that learners with higher reading achievement usually attend schools that "emphasize academic success through rigorous curriculum goals, effective teachers and students that desire to do well, and parental support" (Mullis et al., 2012, p.161). Schools with a poor school climate, particularly those with discipline problems and concern about safety, may find that learner performance and achievement is affected.

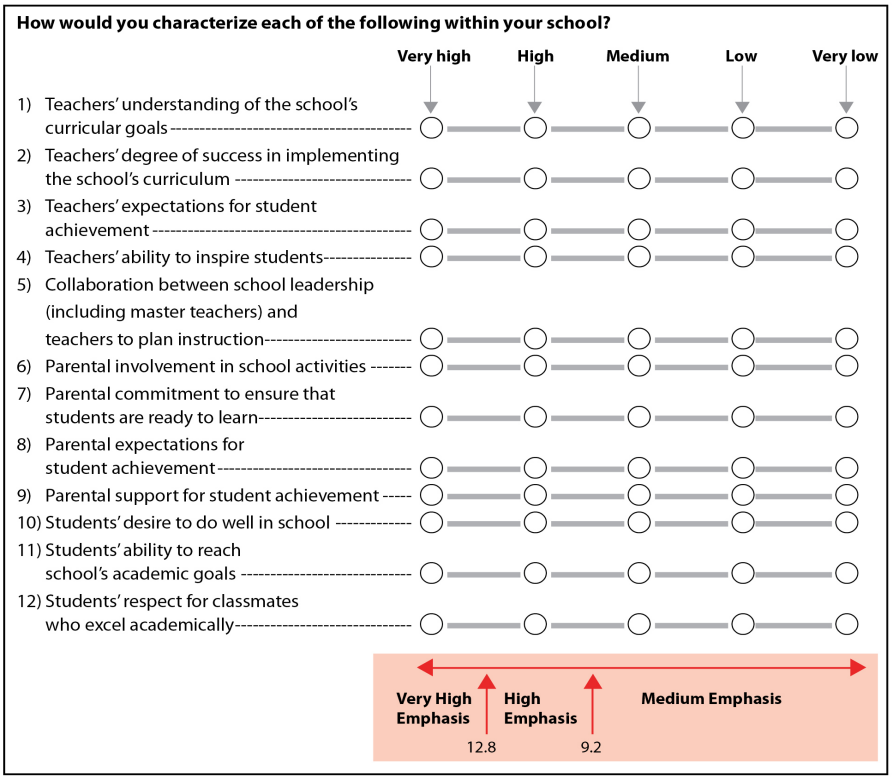
7.3.1 Schools Emphasis on Academic Success

Various studies have shown a strong relationship between positive school environments, which emphasise academic success, and learner achievement (Combrinck, Van Staden & Roux, 2014). Some studies have also found that in particular situations, a school that emphasises academic success can overcome socio-economic disadvantages (see McGuigan & Hoy, 2006).

[22] The Standard Error (SE) is large and seems to have much variation in this category.

7.3.1.1 Emphasis on Academic Success

The *School Questionnaire* asked the principals how they would characterise some academic success aspects such as teacher understanding of school curricular goals and parental involvement in school activities. Information Box 4 shows how the scale was created.



Information Box 4: School Emphasis on Academic Success Scale

Figure 7.8 presents the percentage of learners in schools where the school principals indicated the levels of emphasis on academic success as well as the Grade 5 learner reading achievement score.

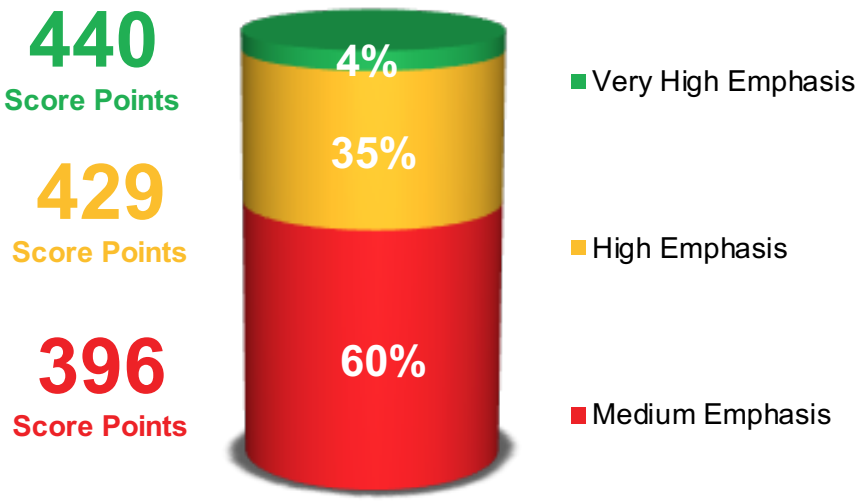


Figure 7.8: Principal Reports on School Emphasis on Academic Success and Grade 5 Learner Achievement

Internationally, eight percent of learners attended schools where the principals reported a *Very High Emphasis* on academic success whereas South African school principals reported only four percent. Of concern is that more than half of the learners (60%) attended schools with a *Medium Emphasis* on academic success and, as such, there appears to be a relationship with achievement. Schools where the emphasis was very high, achieved higher average reading achievement (440, SE=60.9)[23] in contrast to those with *Medium Emphasis* who achieved over 40 points less (396 points, SE=9.0).

Teachers were also asked to rate their school in terms of its emphasis on academic success. Whilst internationally the reports for all countries are "nearly identical" (Mullis & Martin, 2017, p.149), this is not the case in South Africa for the Grade 5 benchmarking participants as well as the national sample of Grade 4 learners (see Howie, Combrinck, Roux et al, 2017). According to teachers, 10% of learners attended schools with a *Very High Emphasis* with almost half (44%) attending schools where the emphasis is lower (medium)[24]. However, the point difference between teacher reports of very *High* and *Medium Emphasis* on success is small. Learners, whose teachers reported a *Very High Emphasis*, achieved an average of 435 points (compared with 440 points from the principal reports) and 418 points for those with the lowest emphasis on academic success.

7.3.1.2 Emphasis in Early Grades on Reading Skills and Strategies

School principals were provided with a list of reading skills and strategies assessed in PIRLS 2016, and were asked to indicate at which grades these reading skills and strategies are emphasised for at least 50% of the learners. The grade shown in the figure below is the median grade reported by principals. Overall, seven out of the 14 skills and strategies are taught in South Africa at the same grade level as internationally. The remaining skills and strategies (all seven) are taught nationally in later grades than those internationally.

The teaching of reading skills differs internationally and nationally. In particular, the differences are reading connected text which is an emphasis at Grade 2 level nationally but is covered in Grade 1 internationally. *Identifying the Main idea of a text,* Explaining or supporting understanding of a text and Comparing a text with personal experience are skills emphasised at Grade 3 level in South Africa but are taught at Grade 2 level internationally. Making predictions about what will happen next is emphasised in Grade 1 but is internationally taught at Grade 2 level. Comparing different texts is taught at Grade 4 level in South Africa but at Grade 3 level internationally.

An interesting finding is that the top performing country, the Russian Federation, completes all of the skills and strategies in Grades 1-3, whereas most countries are still emphasising at least two of the skills in Grade 4.

The teaching of various reading skills at particular grade-levels is elaborated on below.

Figure 7.9 shows the overall starting grade where schools emphasise reading skills and strategies.

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[23] The Standard Error (SE) is large and seems to have much variation in this category.
[24] Data from Teacher questionnaire.

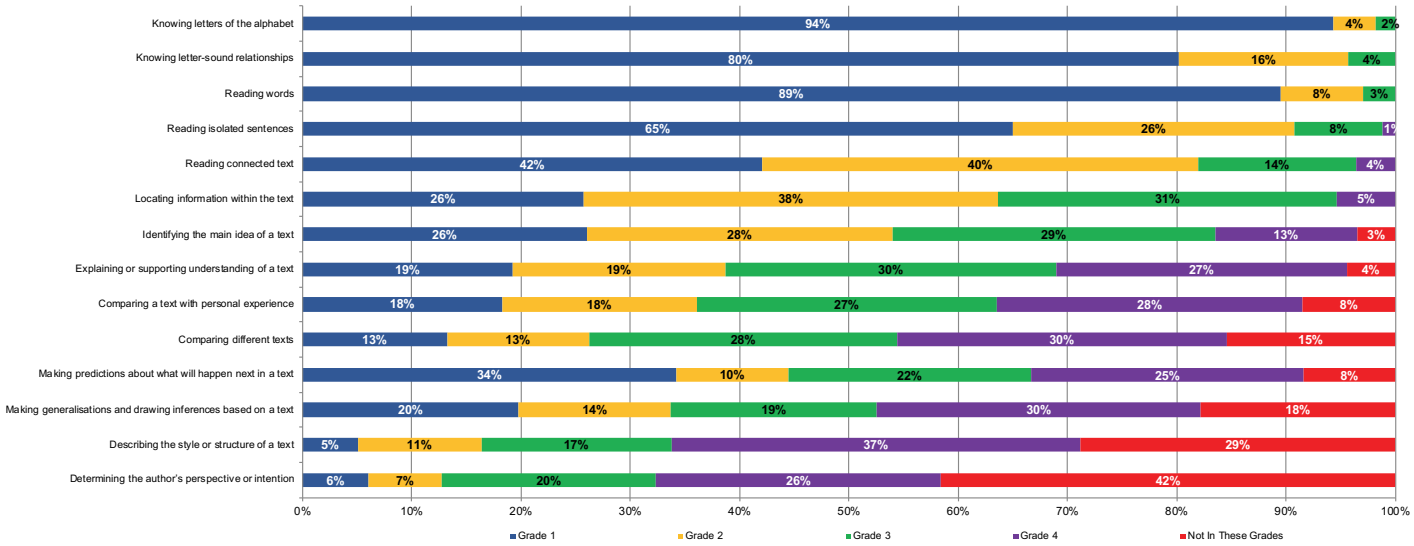


Figure 7.9: Emphasis on Reading Skills and Strategies

It seems that when emphasis is placed on the early teaching of reading skills, the learners achieve higher reading literacy scores. For example, when emphasis is placed on *Identifying The Main Idea of a Text* in Grade 1, learners achieve a reading score of 442 (SE=16.6) compared to if they only began learning this skill in Grade 4 (395, SE=15.1). Another example would be when emphasis is placed on *Knowing Letter-Sound Relationships* in Grade 1, the learners achieved an average score of 420 (SE=9.8) in comparison to learners who are exposed to this skill in Grade 3 (358, SE=16.8).

7.2.1.3 Parental Perceptions of their Child's School

The PIRLS *Parent Questionnaire* asked the parents of Grade 5 learners about their perceptions of their child's school. It appears that most parents, internationally and nationally, reported positive perceptions about their child's school.

Internationally about 65% of learners had parents who were Very Satisfied and only 5% who were *Less than Satisfied*. South Africa was the most satisfied group of parents of the benchmarking participants despite being the lowest achieving country, a similar pattern observed with the PIRLS Literacy study.

Figure 7.10 presents the South African parents' level of satisfaction with their child's school along with the learner reading achievement scores.

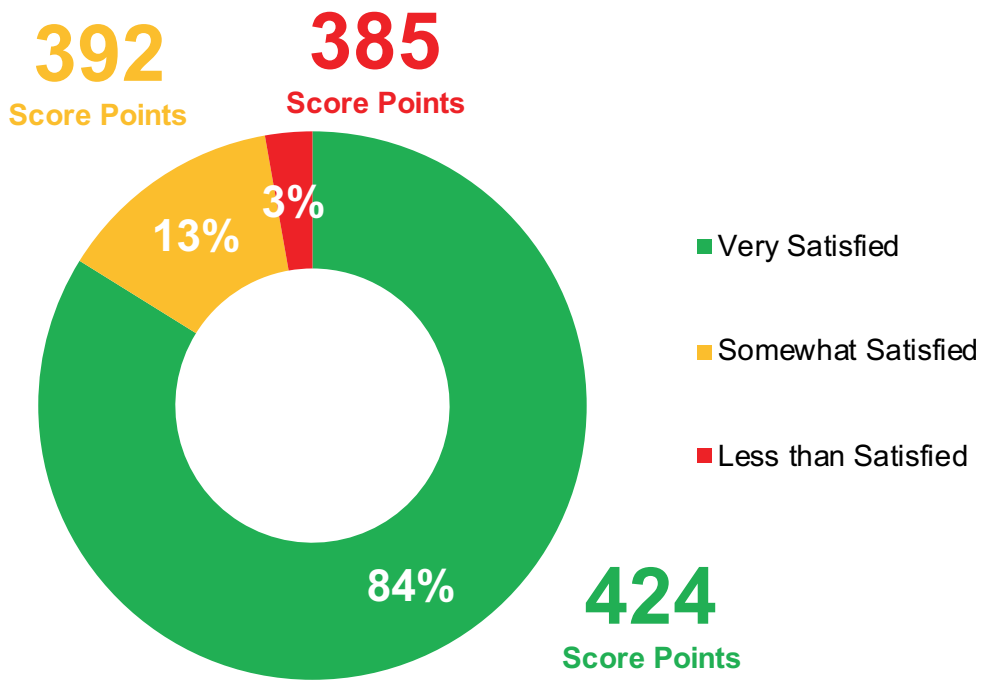


Figure 7.10: Level of Satisfaction with School and Grade 5 Learner Achievement according to Parents

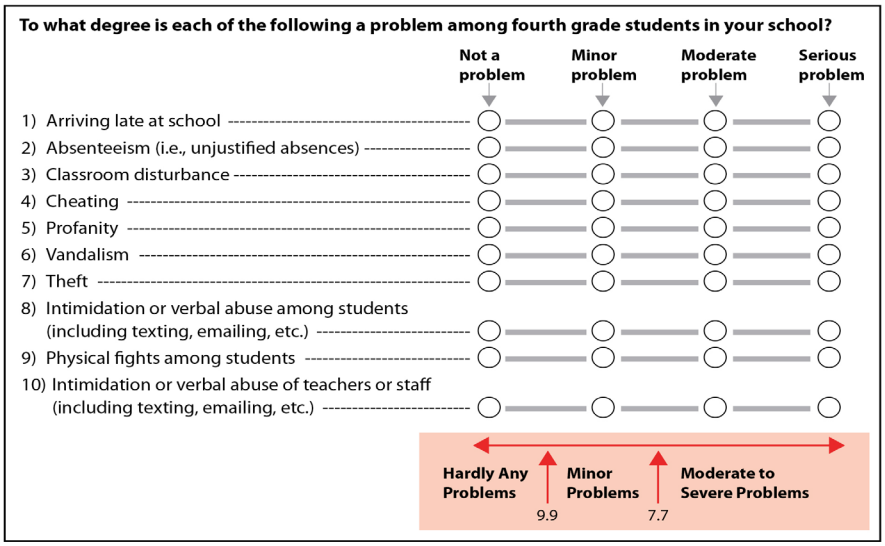
Figure 7.10 shows that more than three-quarters (84%) of South African learners' parents indicated that they were Very Satisfied and these learners also achieved higher reading achievement (424, SE=6.8) than learners of parents of those who were *Somewhat* or *Less than Satisfied*. There is a 39-point difference in Grade 5 learner reading literacy achievement if the parents were *Very Satisfied* compared to those who were *Less than Satisfied*.

7.3.2 School with Discipline and Safety Problems

PIRLS 2011 found that schools with problems related to discipline and safety problems were not conducive to high achievement in reading literacy. In addition, learners who attended schools with disorderly environments and more bullying had much lower achievement than their peers in safer and more orderly schools. A sense of security is important for a stable learning environment for staff and learners. In this section, the findings for PIRLS 2016 are presented on school discipline and safety, safe and orderly school and bullying of learners at school.

7.3.2.1 School Discipline and Safety

Previous cycles of PIRLS have reported on principal perceptions on the extent to which discipline, disorderly and bullying behaviours are a problem at their schools. South Africa previously revealed areas of concern and, as school discipline is important in maintaining a safe and orderly environment, it is important to continue to monitor this aspect in schools. School principals were asked to indicate the degree to which discipline, disorderliness and bullying are considered problems in their schools. Information Box 5 shows how the scale was created:



Information Box 5: School Discipline Scale

Figure 7.11 presents the South African school principal perceptions of the extent to which school discipline and safety is associated with Grade 5 learner reading achievement.

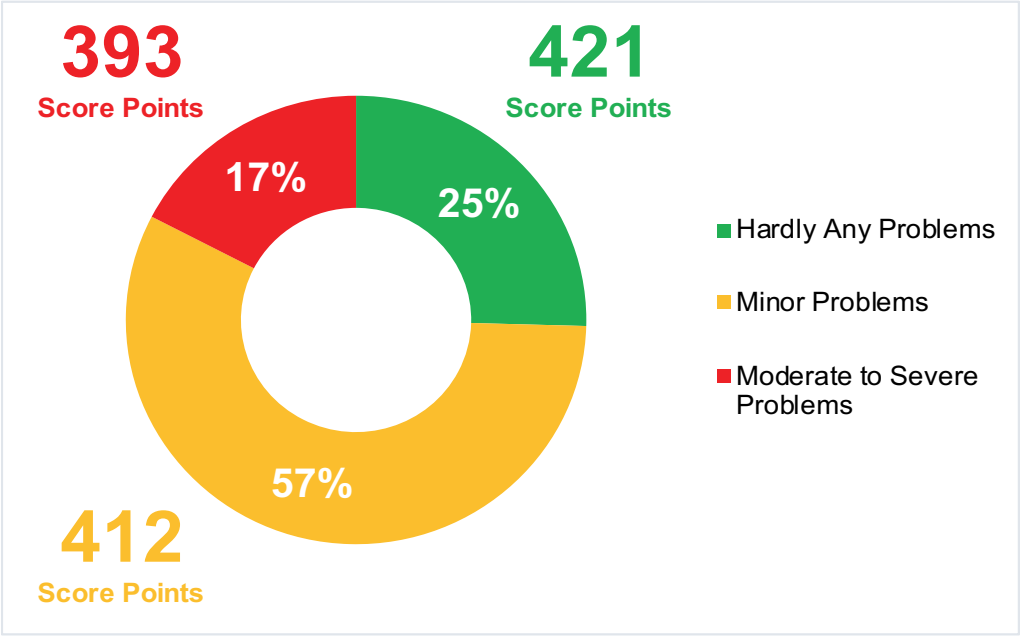


Figure 7.11: School Discipline and Safety and Grade 5 Learner Achievement

Only a quarter (25%) of South African principals reported *Hardly Any Problems* regarding School Discipline and Safety compared to 62% internationally. A higher percentage of learners in South Africa (75%) were in schools where principals reported more problems than internationally (38%) and it is important to bear in mind that perspectives on what constitutes a severe problem in a school may differ across countries and even within countries. More than half (57%) of the learners had school principals reported having *Minor Problems* whilst 17% reported having *Moderate to Severe Problems*.

There seems to be an association between school discipline and safety and South Africa Grade 5 learner achievement, as there is internationally. Learners achieved the highest score

of 421 (SE=14.4) when there were *Hardly Any Problems* with school discipline and safety reported by the school principal. In contrast, learners who attended schools where there were *Moderate to Severe Problems*, scored only 393 points (SE=16.1).

Table 7.5 depicts the learner reading achievement per province on the three categories regarding the extent of the problems for school discipline and safety.

Table 7.5: School Discipline and Safety and Grade 5 Learner Achievement by Province

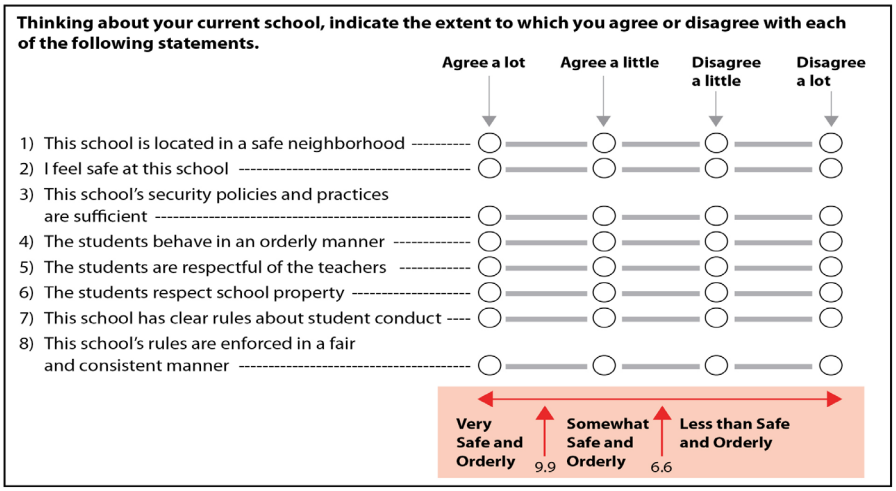
Province	School Discipline	% of Learners	SE of %	Mean Score	SE
Eastern Cape	Hardly Any Problems	26	16.3	393	96.7
	Minor Problems	34	17.9	442	30.7
	Moderate to Severe Problems	40	23.7	390	9.5
Free State	Hardly Any Problems	60	53.5	529	4.2
	Minor Problems	40	53.5	415	3.2
	Moderate to Severe Problems	~	~	~	~
Gauteng	Hardly Any Problems	24	9.2	476	41.6
	Minor Problems	61	9.3	425	29.9
	Moderate to Severe Problems	15	8.7	425	52.8
KwaZulu Natal	Hardly Any Problems	31	9.0	377	13.3
	Minor Problems	61	9.1	379	12.7
	Moderate to Severe Problems	8	5.1	369	9.8
Limpopo	Hardly Any Problems	100	70.7	485	4.8
	Minor Problems	~	~	~	~
	Moderate to Severe Problems	~	~	~	~
Mpumalanga	Hardly Any Problems	12	10.0	331	26.7
	Minor Problems	18	15.6	339	62.1
	Moderate to Severe Problems	70	17.5	410	49.7
North West	Hardly Any Problems	37	23.1	475	84.7
	Minor Problems	63	23.1	465	40.2
	Moderate to Severe Problems	~	~	~	~
Northern Cape	Hardly Any Problems	31	20.4	483	35.5
	Minor Problems	~	~	~	~
	Moderate to Severe Problems	69	20.4	352	17.1
Western Cape	Hardly Any Problems	12	6.8	449	35.4
	Minor Problems	84	5.8	442	20.6
	Moderate to Severe Problems	4	4.2	397	4.7

A tilde (~) means insufficient data.

The province with the highest percentage of *Moderate to Severe Problems* was Mpumalanga (70%) followed by the Northern Cape (69%) and the Eastern Cape (40%). The province reporting the largest percentage of learners in schools with *Hardly Any Problems* was Limpopo (100%) followed by the Free State (60%). Across most provinces, learners in schools where there were *Hardly Any Problems* achieved higher scores than those in schools where *Moderate to Severe Problems* were found, with one exception – Mpumalanga. However, in three provinces (Gauteng, Northern Cape and Western Cape), there were highly significant differences between learners attending schools with *Hardly Any Problems* and those in schools with *Moderate to Severe Problems* (over 100 points in the Northern Cape).

7.3.2.2 Safe and Orderly School

The PIRLS *Teacher Questionnaire* asked the teachers of Grade 5 learners the extent to which they agreed or disagreed with eight statements about school safety and orderliness (see the Information Box below):



Information Box 6: Safe and Orderly Schools Scale

Figure 7.12 presents the percentage of school safety and orderliness according to teachers' opinions about school safety and includes learner reading literacy scores.

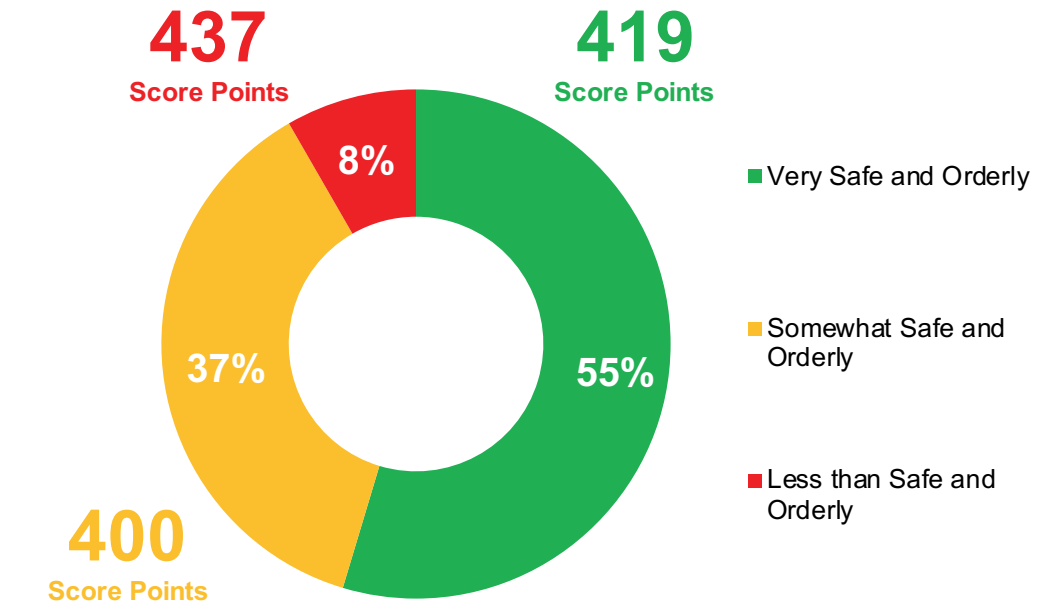


Figure 7.12: Teacher Reports on School Safety and Orderly and Learner Achievement

More than half (55%) of South African Grade 5 learners were in classes where teachers indicated that their school is *Very Safe and Orderly* whereas internationally most learners (62%) were in schools judged by their teachers to be *Very Safe and Orderly*. On average, 3% of learners were in schools judged internationally to be *Less than Safe and Orderly* compared to 8% of South African learners. However, the sample of South Africa teachers was the only country where fewer than 85% of teachers returned the questionnaire and it is not clear to what extent this low return rate impacts these findings.

Internationally, there appears to be a relationship between learner achievement and school safety (difference of 50 points); however, the opposite is true for South African Grade 5 learners' schools. Nationally learners seem to perform similarly if the schools are reportedly *Less than Safe and Orderly* (437, SE=33.7)[25] compared to *Very Safe and Orderly* (419, SE=11.5). There is no difference as the standard error is large and if statistically tested would reveal no significance in achievement.

Figure 7.13 presents the percentage of teacher reports on school safety and orderliness by language (LoLT) of the school.

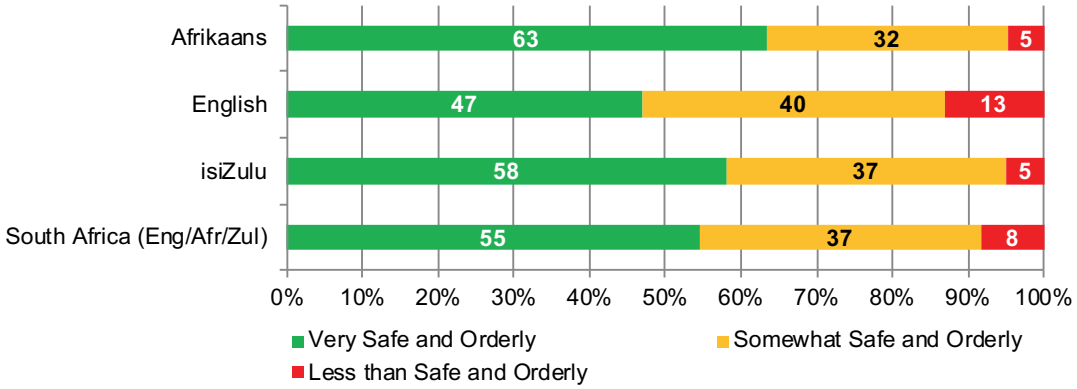


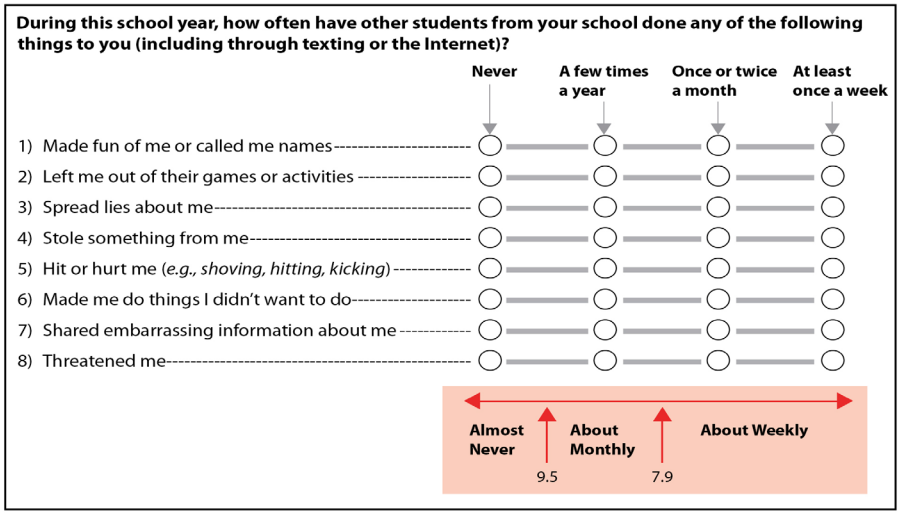
Figure 7.13: Teacher Reports on School Safety and Orderly by Language

[25] The Standard Error (SE) is large and seems to have much variation in this category.

The majority of learners' teachers in Afrikaans (63%) and isiZulu (58%) schools indicated that their schools are *Very Safe and Orderly* with very few (5%) learners' teachers reporting that their schools are *Less than Safe and Orderly*. Almost half (47%) of learners' teachers in English LoLT schools reported that they experienced their schools as *Very Safe and Orderly*. Interestingly, a larger percentage (13%) of learners' teachers in English LoLT schools reported that their schools are *Less than Safe and Orderly* than the other two languages.

7.3.2.3 Learners bullied at School

PIRLS 2011 presented data on bullying as a problem in South Africa for the first time in an international study when South Africa was found to have the highest reported bullying levels. Whilst bullying occurs universally, monitoring bullying has become more challenging to counter the advent of cyber bullying. In South Africa, learners become aware of the concept of bullying from the first grades as this topic is included in the Life Orientation curriculum. It is not clear to what extent this has impacted on the reporting by learners, but increased awareness could have an effect. In order to determine how often Grade 5 learners were being bullied, a Learners Bullied at School scale was developed. The PIRLS Learner Questionnaire asked learners how often they experienced the following bullying behaviours (see Information Box 7) and for the first time included the notion of cyber bullying by including through texting and the Internet:



Information Box 7: Learners Bullied at School Scale

Internationally, it appears that bullying is less evident where most (57%) of the learners indicated that they are *Almost Never* bullied compared to 27% of South African learners. However, 34% of South African Grade 5 learners reported that they are being bullied *About Weekly* compared to only 14% internationally. Figure 7.14 presents the percentage of South African learners being bullied.

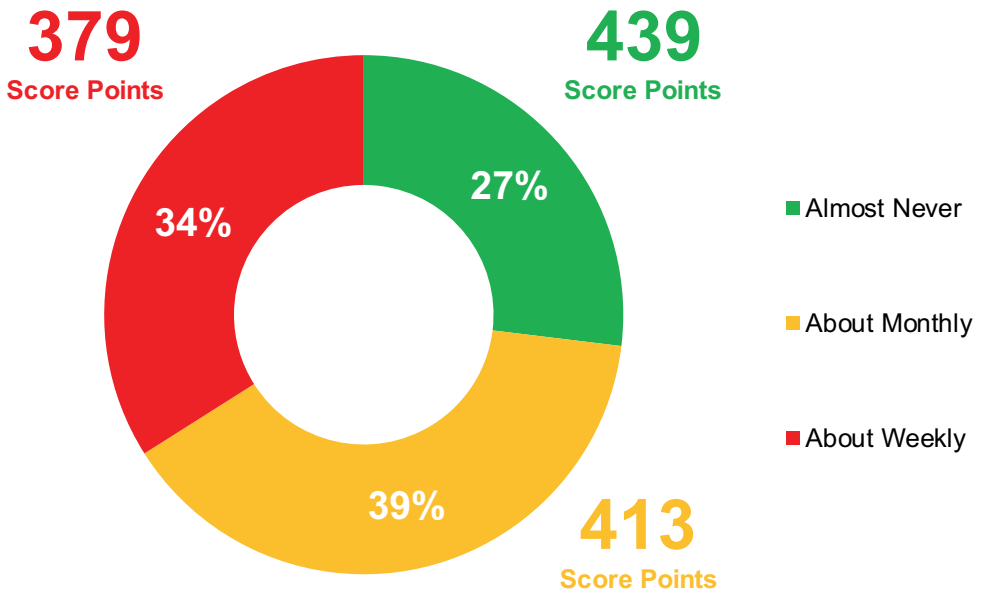


Figure 7.14: Grade 5 Learners Bullied at School and Learner Achievement

Internationally and nationally, there appears to be a negative relationship between the frequency of bullying and achievement in reading. In South Africa, learners who are bullied weekly achieve significantly lower reading scores (379, SE=6.1) (59 points lower) than learners who are *Almost Never* bullied (439, SE=6.4). In general, South African Grade 5 learners who are *Almost Never* bullied achieve significantly higher reading scores compared to those who are bullied *About Monthly* and *About Weekly*.

Figure 7.15 indicates learner achievement when compared to the frequency of bullying by province.

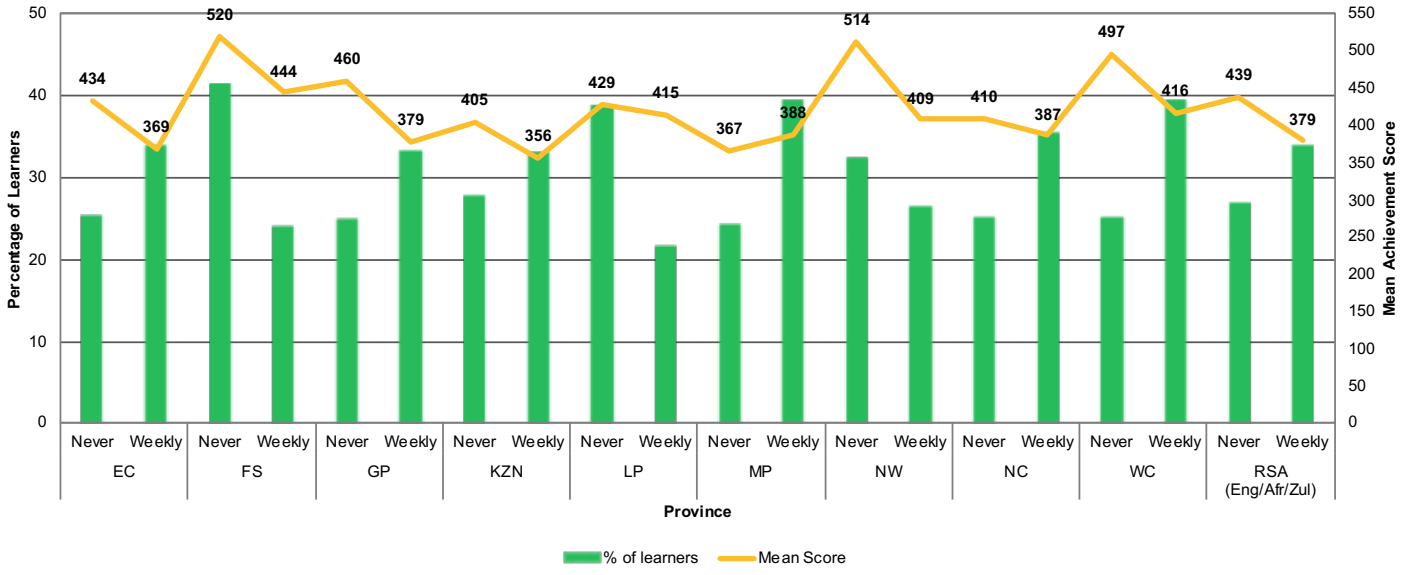


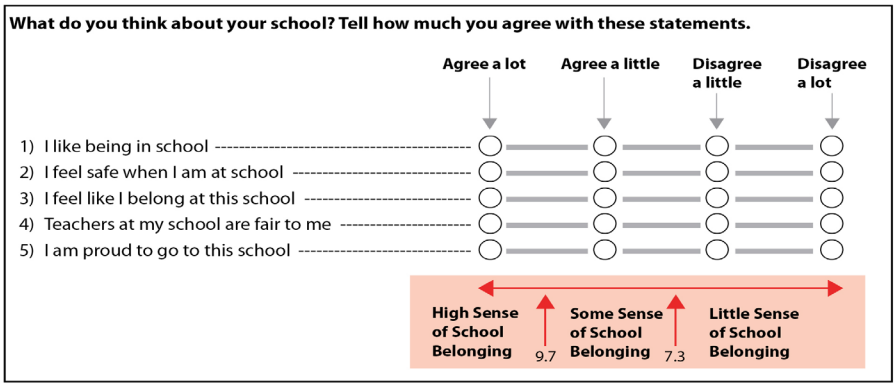
Figure 7.15: Learners bullied at School and Grade 5 Learner Achievement by Province

Within South African provinces, the percentage of learners bullied weekly varies from the lowest in Limpopo at 22% of learners to the highest reported in Mpumalanga and Western

Cape, both at 39%. In eight out of nine provinces, the reading achievement scores are higher when the learners are *Almost Never* bullied (the exception being Mpumalanga). In most of the provinces, where bullying was reported weekly, this group of learners achieved the lowest scores. The difference in scores between learners who *Almost Never* got bullied compared to those who were bullied on a weekly basis, varied from 13 points in Limpopo to 105 points in the North West, the equivalent of about two-and-a-half educational years.

7.3.2.4 Learner Sense of Belonging

The PIRLS *Learner Questionnaire* asked Grade 5 learners about how much they agreed with statements about their attitude toward school. Information Box 8 shows how the Learner Sense of Belonging scale was created.



Information Box 8: Learner Sense of Belonging Scale

On average, most learners (internationally and nationally) responded very positively. Internationally, more than half (59%) the learners had a *High Sense of Belonging* and very few (8%) reported *Little Sense of Belonging*. South African learners mirrored the international profile with 60% of South African Grade 5 learners reporting that they have a *High Sense of Belonging* with only 9% having a *Little Sense of Belonging*. Figure 7.16 shows the percentage of South African learners' sense of belonging and its associated achievement.

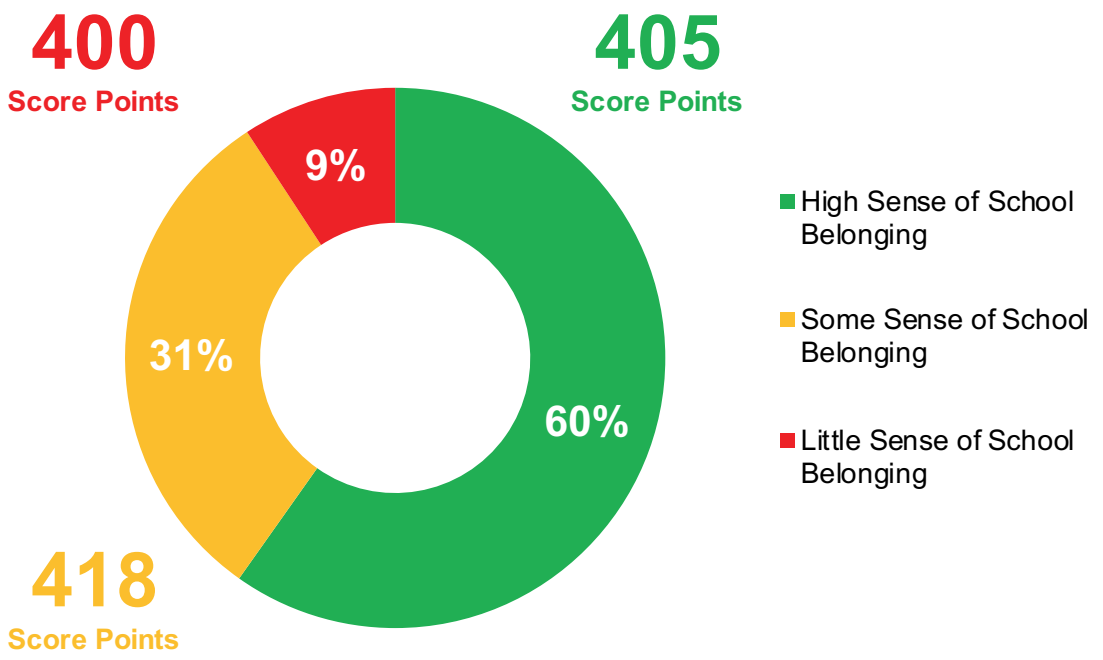


Figure 7.16: Grade 5 Learners' Sense of School Belonging and Learner Achievement

Internationally, it appears that a higher sense of school belonging was related to higher learner reading achievement. However, there is no clear linear relationship and only a slight point difference between South African learners who indicated a *High Sense of Belonging* (405, SE=5.1) compared to those who indicated *Little Sense of Belonging* (400, SE=12.5).

7.3.3 Teacher Behaviour

Whilst teachers are key to successful learning, negative behaviours may have detrimental effects on learning and achievement. Within this study, teacher behaviour is seen as the certain actions of a teacher that could have a negative effect on learner achievement. When teachers are often late or absent from work, learner achievement lowers (see Miller, Murnane & Willett, 2007). The South African NEEDU (2013) report also found that a substantial amount of educational time was lost due to learner and teacher lateness and this loss of time on task could result in lower learner achievement. The PIRLS *School Questionnaire* asked school principals to what extent the school experienced problems related to teachers arriving late, leaving early, absenteeism or failure to complete the curriculum.

Figure 7.17 illustrates the percentage of teachers with behavioural problems and the associated Grade 5 learner reading achievement scores.

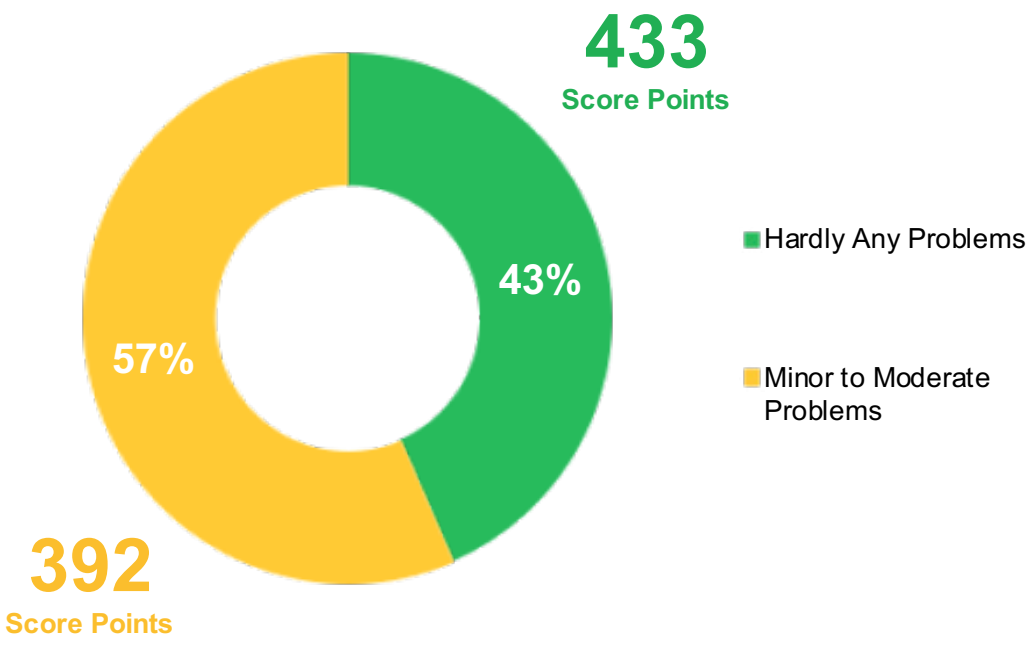


Figure 7.17: Teacher Behavioural Problems and Grade 5 Learner Achievement

More than half (57%) of the learners were in schools where the principals reported that there are *Minor to Moderate Problems* with the teachers. None of the principals indicated that they experience serious behavioural problems with teachers. In particular, absenteeism and failure to complete the curriculum were a problem in some of the schools. For example, 57% of school principals in the Eastern Cape reported *Minor Problems* with teacher absenteeism and 20% of school principals in KwaZulu Natal indicated that teachers fail to complete the curriculum.

An association between teacher behaviour and learner reading literacy achievement was observed both internationally and nationally: those schools where there were more serious problems with teacher behaviour reported that learner achievement tended to be lower. There was a 41-point difference between learners in schools, where *Minor to Moderate Problems* occur: learner achievement was 392 (SE=10.0) compared to those learners (433, SE=12.1) in schools whose teachers had *Hardly Any Problems* with school attendance and completing the curriculum.

The next table shows the percentage of learners affected by teacher behaviour and their average reading achievement scores by province.

Table 7.6: Learners affected by Teacher Behavioural Problems and Learner Achievement by Province

Province	Teacher Behaviour	% of learners	SE of %	Mean Score	SE
Eastern Cape	Not a problem	40	17.8	476	8.1
	Minor to Moderate problem	60	17.8	387	6.8
Free State	Not a problem	100	70.7	415	3.2
	Minor to Moderate problem	~	~	~	~
Gauteng	Not a problem	72	7.2	451	26.5
	Minor to Moderate problem	28	7.2	390	15.6
KwaZulu Natal	Not a problem	30	8.7	399	11.6
	Minor to Moderate problem	70	8.7	366	12.5
Limpopo	Not a problem	100	0.0	419	48.4
	Minor to Moderate problem	~	~	~	~
Mpumalanga	Not a problem	22	17.0	426	71.7
	Minor to Moderate problem	78	17.0	381	46.1
North West	Not a problem	35	22.5	488	76.4
	Minor to Moderate problem	65	22.5	459	41.2
Northern Cape	Not a problem	31	20.4	483	35.5
	Minor to Moderate problem	69	20.4	352	17.1
Western Cape	Not a problem	35	12.3	414	13.3
	Minor to Moderate problem	65	12.3	450	27.2

A tilde (~) means insufficient data.

Grade 5 learners from the Northern Cape achieved the lowest average reading achievement score (352, SE=17.1) when their teachers' behaviour was a Minor to Moderate Problem. It should be noted that none of the provinces reported having any *Serious Problems* with teacher behaviour. Interestingly, learners in the Western Cape, whose principals reported that teacher behaviour created *Minor to Moderate Problems*, achieved a higher mean score of 450 (SE=27.2) than those whose teachers did not have any problems (414, SE=13.3).

7.4 Conclusion

This chapter was devoted to describing the findings related to the environment of South African schools. About a quarter (23%) of Grade 5 learners were found in schools in remote rural areas and very few learners came from medium-sized cities. The learners from remote rural areas also achieved considerably lower than their peers in other areas (see also Chapter 4). More than half of the school principals indicated that in their schools only about a quarter of learners entered school with early literacy skills. There was a substantial difference (86 points) in achievement scores if learners entered school with almost all expected early literacy skills compared to those who come to school with few early literacy skills.

A quarter of school principals reported that their schools were not affected by resource shortages. Three out of four school principals indicated that the inadequacy of the school resources hampered the teaching and learning process to *Some* extent. Interestingly, Grade 5

learner average reading achievement was only slightly higher if there are no resource shortages compared to a large number of shortages. Just over half of Grade 5 learners attended schools with libraries and achieved on average 36 points higher than schools with no libraries. Less than half of the learners (43%) attended school with no computers available for instruction. About one out of ten school principals reported that they have a computer available for every one to two learners. These learners also achieved 51 points higher than their peers who did not have access to computers.

More than half of the learners attended schools that were considered safe and orderly and a quarter of school principals indicated that there were *Hardly Any Problems* with school discipline and safety. Grade 5 learners achieved on average 28 points higher if they attended schools with little or no problems compared to learners who attended schools with *Moderate to Severe Problems*. In schools where bullying occurred *About Weekly*, the learners achieved 59 points lower than their peers who reported that they are *Almost Never* bullied at school. Learners were also asked to report on their sense of belonging at school. It would appear that sense of school belonging may not have been understood by learners consistently and therefore was not related to learner reading literacy achievement.

A number of factors relating to the school environment, and the climate specifically seem to be significant in the PIRLS study and were found to be positively associated with the Grade 5 learner reading literacy performance. In particular, further investigation should be initiated to examine the effects of school discipline and safety, school bullying and learner sense of belonging.


PIRLS
2016

CHAPTER 8: INSIDE THE CLASSROOM WITH PIRLS 2016: TEACHER PREPARATION AND THE CLASSROOM ENVIRONMENT

Karen Roux and Sarah Howie

8.1 Introduction

This chapter investigates what happens inside the classroom providing further insight into the actors and environment where the majority of teaching and learning takes place. Whilst many factors are associated with learner achievement, the classroom environment is one of the foremost important. Teachers have a variety of teaching styles and methods based on their background, education and experiences and as a result, learning is influenced by the type of environment created by the teacher and the type of activities used by the teacher (see Hattie, 2009). Teachers are the facilitators of learning new knowledge, skills, values as well as the assessors of learner performance and progress continuously throughout the year. For these reasons, PIRLS has a number of questions in its *Teacher, Principal* and *Learner Questionnaires* probing the conditions in the classroom as well as describing the teacher profiles, resourcing, instructional strategies and activities enacting the curriculum.

The chapter consists of two main sections, Teacher Preparation and Experience (8.2) and the Classroom Environment (8.3). The former will focus on teacher educational background, age, experience and professional development. The second section will describe learner attitude toward reading, instructional time, teaching approaches and classroom resources.

This chapter intends to describe the South African classroom found during the PIRLS 2016 and identify possible factors that may have relationship with South African Grade 5 learner reading literacy achievement.

8.2 Teacher Preparation and Experience

Teachers' professional background is crucial to the successful development of learner reading literacy. One of the foremost factors of learner achievement, especially in Southern Africa is teacher preparation and competence (Croninger, Rice, Rathbun & Nishio, 2007; Passos, 2009). All teachers need to have sound knowledge in their respected fields, in this case language and reading, as well as effective pedagogy in teaching these subjects (Mullis & Martin, 2015). In PIRLS, teachers were asked specific questions regarding their formal education, years of experience, professional development and career satisfaction to gain insight into their teaching milieu. As explained in Chapter 3, the teachers who responded to the questionnaires were the home language teachers of those learners tested in PIRLS 2016.

8.2.1 Teachers' Formal Education, Age and Years of Experience

The PIRLS *Teacher Questionnaire* asked the teachers about their formal education, age and years of experience.

8.2.1.1 Teachers' Formal Education

In the questionnaire, a number of options were included regarding teacher education to recognise the complex developments in teacher education over time. One option included in the South African questionnaires, and not internationally, was *Honours Degree*[26]. The international options[27] were *Did Not Complete Grade 12/Standard 10, Grade 12/Standard 10, Post-Secondary Education, Technikon Diploma, Bachelor's Degree, Master's Degree* and *Doctoral Degree*.

Table 8.1 presents teachers' highest level of formal education reported by the teachers, in conjunction with Grade 5 learner reading achievement.

Table 8.1: Highest level of Teachers' Formal Education

Teacher Education	% of Learners	SE of %	Mean Score	SE
Grade 12/Standard 10	7	2.7	349	12.0
Post-Secondary Education	38	5.7	424	10.3
Bachelor's Degree	55	5.9	428	10.6

Internationally, most (60%) learners were taught by teachers who had obtained a Bachelors' Degree with a further 26% having completed a *Postgraduate Degree*. South Africa follows a similar pattern where the largest group of teachers teaching 55% of learners had completed a *Bachelor's Degree* (see Table 8.1). Just over a third had completed *Post-Secondary Education* (38%), most of which are the former College of Education qualifications. No Grade 5 learners had teachers who reported having *Postgraduate Degrees*. Whilst this appears unusual and contrary to the Grade 4 data, it may be explained by the relatively high percentage of teachers who did not complete the *Teacher Questionnaire* (23%) (see Chapter 3). In both PIRLS and PIRLS Literacy studies, seven percent of South Africa learners are taught by teachers not meeting the minimum requirements for appointment as a teacher compared to three percent internationally.

South African Grade 5 learners achieved similar scores when their teachers had a *Post-Secondary Education* (424, SE=10.3) compared to those whose teachers had a *Bachelor's Degree* (428, SE=10.6). There is a substantial 79-point difference in learner achievement when comparing teachers who had a completed a *Bachelor's Degree* to those who had completed *Grade 12/Standard 10*.

Figure 8.1 shows the teachers' highest level of formal education level across provinces.

[26] The option Honours Degree was included in the Postgraduate Degree for reporting purposes.
[27] The international options were contextualised for all participating countries.

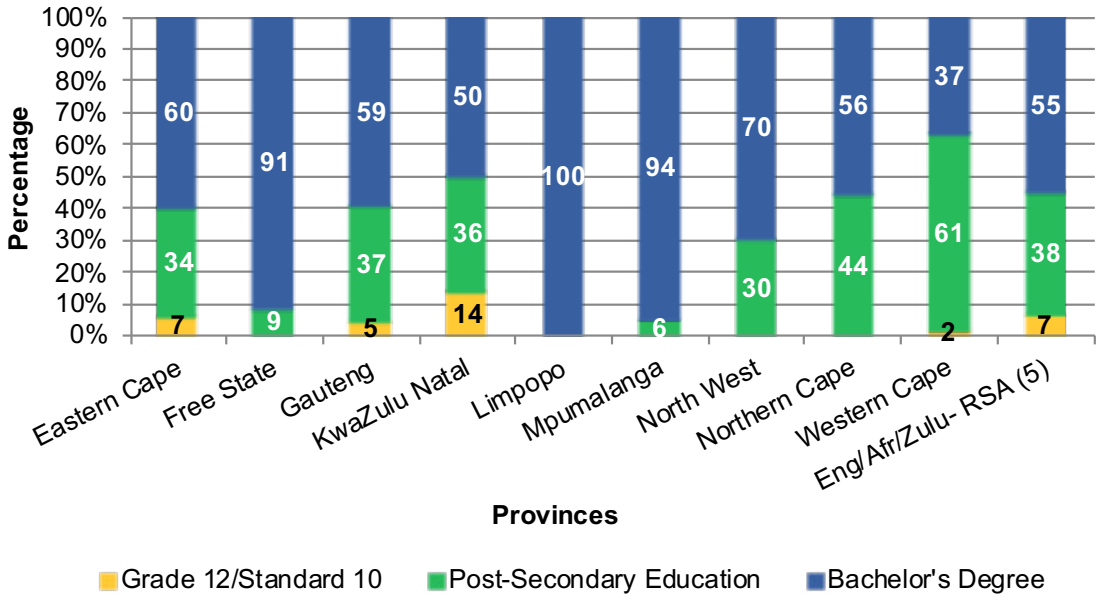
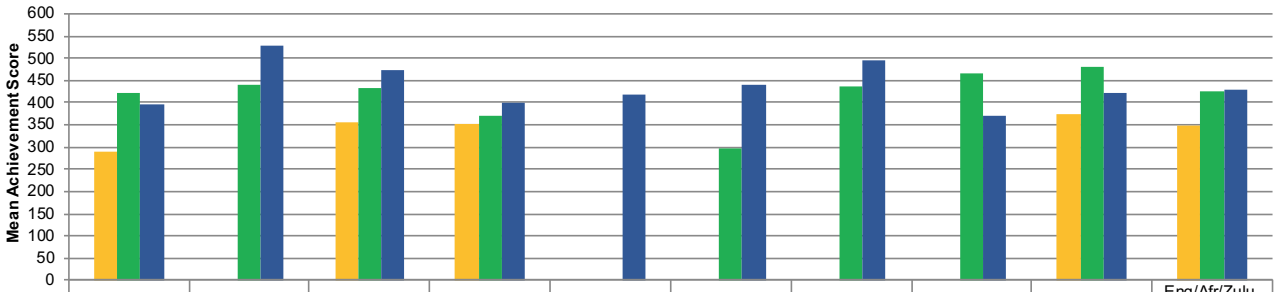


Figure 8.1: Highest Level of Formal Education reported by Teachers across Provincesa

The largest group in almost all provinces was *Bachelors' Degree*, where between 37-100% of learners had teachers who had obtained undergraduate degrees. Interestingly, most learners (61%) in the Western Cape had teachers whose highest qualification was *Post-Secondary Education*, the largest percentage of all provinces. All learners in Limpopo and 91% in Free State had teachers with *Bachelors' Degrees*.

Of concern regarding all provinces is that learners are being taught by teachers who do not meet the minimum requirements for teachers as their highest level of qualification was *Grade 12/Standard 10*. Whilst they represented 7% of learners nationally, they represented from 0% in five provinces to 14% in KwaZulu Natal with the other provinces being Eastern Cape, Gauteng and Western Cape.



	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape	Eng/Afr/Zulu-RSA (5)
Grade 12/Standard 10	288		355	352					373	349
Post-Secondary education	422	439	432	372		299	435	465	479	424
Bachelors' Degree	396	529	472	401	419	440	493	371	422	428

Provinces

Note: Cells are empty when option was not chosen in province.

Figure 8.2: Teacher Education and Learner Achievement across Provinces

In five provinces, South African Grade 5 learners, taught by teachers with a *Bachelor's Degree* achieved higher results. Learners in the Free State achieved the highest reading achievement when their teachers had a *Bachelor's Degree* (529, SE=4.2) followed by Grade 5 learners from the North West province whose teachers had completed a *Bachelor's Degree* (493, SE=38.6[28]). The lowest performance was found amongst 7% of Grade 5 learners in the Eastern Cape (288, SE=2.6), taught by teachers who had only completed *Grade 12/Standard 10* followed by 6% of Grade 5 learners in Mpumalanga (299, SE=15.1) who were taught by teachers with a *Post-Secondary Education* qualification. Table 8.2 presents the teachers' type of teaching qualification and learner achievement.

Table 8.2: Type of Teaching Qualification and Learner Achievement

Teacher Qualification	% of Learners	SE of %	Mean Score	SE
No teacher qualification	4	2.2	333	16.6
Primary Education				
Junior Primary Teachers' Certificate (JPTC)	3	2.0	377	22.4
Senior Primary Teachers' Certificate (SPTC)	3	1.5	367	25.0
3-year Diploma in Education	19	5.1	390	14.4
4-year Diploma in Education	14	4.6	446	20.3
Bachelor of Primary Education (BPrimEd)	2	0.7	411	24.5
Bachelor of Education (BEd Intermediate Phase)	12	4.2	398	19.0
Bachelor of Education (BEd Senior Phase)	9	3.9	395	31.2
Higher Diploma of Education (HDE)	3	2.5	519	47.3
Postgraduate Certificate of Education (PGCE)	6	3.2	463	45.2
Advanced Certificate of Education (ACE)	4	2.4	358	17.0
Further Diploma of Education (FDE)	3	2.6	401	1.5
Secondary Education				
4-year Diploma in Education	2	1.2	472	92.7
Bachelor of Education (BEd Languages)	7	3.8	446	30.5
Higher Diploma of Education (HDE)	0	0.4	504	5.9
Postgraduate Certificate of Education (PGCE)	6	3.3	429	32.0
Further Diploma of Education (FDE)	1	0.5	382	4.4
National Professional Diploma in Education (NPDE)	1	1.5	395	7.0

Very few (5%) teachers indicated that they did not have a teaching qualification. However, interestingly nearly 20% have teaching qualifications for secondary school. One-third of the

[28] The exceptionally large Standard Error (SE) indicates the variation within this category and therefore these findings are treated cautiously.

learners were taught by teachers with Diplomas (3-and 4-year) obtained from the former Colleges of Education, whilst six percent were taught by those having the old Junior and Senior Primary Certificates in Education. It would further appear that fewer than half of the learners were taught by teachers trained specifically for Intermediate Phase.

The highest performances (over 500 points) were achieved by learners taught by the University-trained teachers who had a postgraduate qualification in teaching *Higher Diploma of Education* (HDE) but who had first done a degree, regardless of whether this was done at primary or secondary level. Their learners achieved more than 100 points higher than those learners whose teachers had a *3-year Diploma in Education* and 186 points higher than those learners whose teachers did not have a teacher qualification.

8.2.1.2 Emphasis on Language and Reading Areas in Teachers' Formal Education

The PIRLS questionnaire also asked teachers about their areas of specialisation in their formal training, specifically *Language, Pedagogy/Teaching Reading* and *Reading Theory*. Internationally, the majority (70%) of teachers indicated that their education included an emphasis on *Language*. Most (77%) of South African teachers reported that emphasis was placed on *Language* during their formal education training and 40% of learners are taught by teachers who also indicated that *Reading Theory* was emphasised during their training.

Table 8.3: Language and Reading Areas Emphasised in Teachers' Formal Education

	Reading Area	Area Emphasised		Area Emphasised		Area Not Emphasised	
		% of Learners	SE	Mean Score	SE	Mean Score	SE
Eng/Afr/Zulu-RSA (5)	Test Language	77	4.8	423	8.4	403	14.8
	Pedagogy/ Teaching Reading	61	6.5	406	12.0	440	14.9
	Reading Theory	40	6.3	387	11.4	440	11.0
International Average	Test Language	70	0.4	512	0.5	510	1.1
	Pedagogy/ Teaching Reading	64	0.5	512	0.6	509	0.9
	Reading Theory	32	0.5	511	0.8	511	0.6

The international results do not reveal a relationship between an emphasis on these specialisation areas and learner average reading achievement. However, the South African findings shows that of the specialisations, the highest scores (440 points) were obtained by learners whose teachers had received training in *Pedagogy/Teaching Reading* or *Reading Theory* emphasis but whose courses did not emphasise those two topics (see Table 8.3). In contrast learners, whose teachers studied *Language*, achieved higher scores when the topic was emphasised. Table 8.4 gives a breakdown of the areas emphasised in teachers' formal education by province.

Table 8.4 Language and Reading Areas Emphasised in Teachers' Formal Education by Province

Province	Reading Area	Area Emphasised		Area Emphasised		Area Not Emphasised	
		% of Learners	SE	Mean Score	SE	Mean Score	SE
Eastern Cape	Test Language	74	18.0	432	25.6	397	17.4
	Pedagogy/ Teaching Reading	27	27.4	380	4.7	442	30.7
	Reading Theory	~	~	~	~	442	30.7
Free State	Test Language	100	70.7	439	12.8	~	~
	Pedagogy/ Teaching Reading	~	~	~	~	439	12.8
	Reading Theory	~	~	~	~	439	12.8
Gauteng	Test Language	87	6.5	448	23.7	394	33.7
	Pedagogy/ Teaching Reading	59	10.3	420	29.5	470	39.1
	Reading Theory	47	11.0	395	25.3	481	33.2
KwaZulu Natal	Test Language	84	8.1	386	10.2	377	17.1
	Pedagogy/ Teaching Reading	73	10.6	382	11.8	382	9.9
	Reading Theory	48	11.4	379	16.8	375	7.9
Limpopo	Test Language	82	60.4	405	6.2	485	4.9
	Pedagogy/ Teaching Reading	82	60.4	405	6.2	485	4.9
	Reading Theory	82	60.4	405	6.2	485	4.9
Mpumalanga	Test Language	44	21.2	442	54.1	358	24.0
	Pedagogy/ Teaching Reading	55	20.0	351	38.9	383	20.1
	Reading Theory	60	30.8	330	14.0	414	81.9
North West	Test Language	63	39.5	423	32.0	545	9.7
	Pedagogy/ Teaching Reading	46	31.2	423	32.0	546	7.1
	Reading Theory	~	~	~	~	469	44.8
Northern Cape	Test Language	72	29.1	420	53.6	330	4.3
	Pedagogy/ Teaching Reading	54	31.6	415	85.0	371	50.1
	Reading Theory	38	34.9	495	4.2	371	50.1
Western Cape	Test Language	71	13.5	461	21.8	448	21.6
	Pedagogy/ Teaching Reading	55	20.4	452	39.6	462	29.5
	Reading Theory	19	15.4	385	23.1	476	13.9
Eng/Afr/ Zulu- RSA (5)	Test Language	77	4.8	423	8.4	403	14.8
	Pedagogy/ Teaching Reading	61	6.5	406	12.0	440	14.9
	Reading Theory	40	6.3	387	11.4	440	11.0

A tilde (~) means insufficient data.

In seven provinces, the emphasis was stronger on *Language*; however, in Mpumalanga, the emphasis was greater for *Reading Theory*. In Limpopo, teachers indicated equal emphasis across all three areas.

Overall, South African Grade 5 learners achieved an average score of 423 (SE=8.4) and 17-36 points more when *Language* was emphasised during their teachers' formal training. Even though most teachers' formal education had an emphasis on *Language, Pedagogy/Teaching Reading* and *Reading Theory*, there only seems to be a positive association between training where *Language* was emphasised and learner achievement. One exception is the Northern Cape where learners achieved reading scores of 495 (SE=4.2) when the emphasis was on *Reading Theory*. Across provinces, the highest scores were achieved by learners whose teachers had specialised in *Language* (six provinces). In Limpopo, the highest scores were achieved by learners whose teachers had dedicated training in all three specialisation areas but these were exceptions given that all had *Bachelor's Degrees*.

8.2.1.3 Teachers' Age Profiles

PIRLS 2011 raised the concern about the ageing teaching force in 2012 and the small number entering teaching as teacher replenishment is a critical issue in South Africa. Figure 8.3 shows that 65% of the learners were taught by teachers over 40 years of age with 25% being over 50 years and as a result, teachers were older in comparison to their peers internationally.

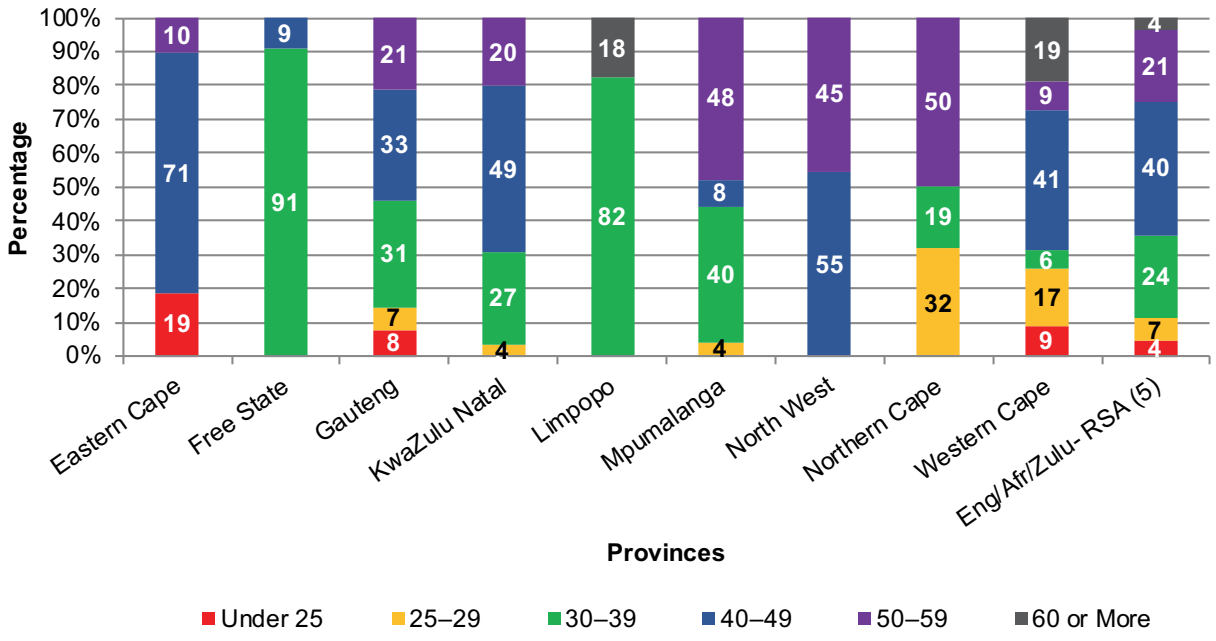


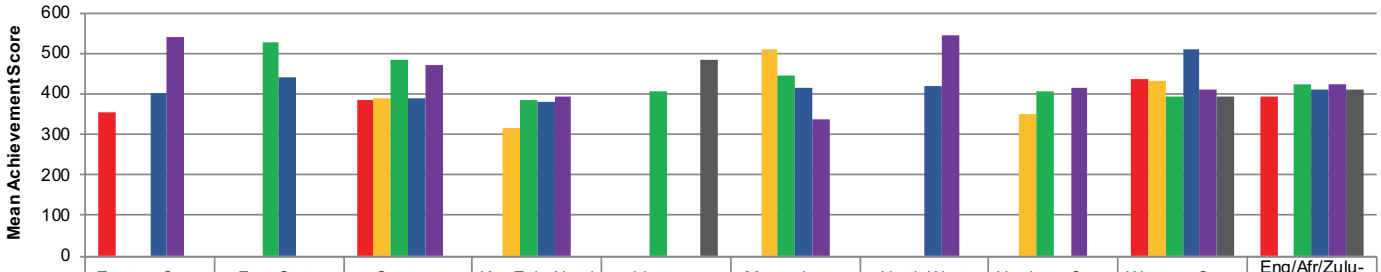
Figure 8.3: Teachers' Age Profile across Provinces

The majority of learners in five provinces were taught by teachers older than 40 years and only the Free State and Limpopo had very large groups (more than 80%) younger than 40 years. Of concern is that in general, very few learners were taught by teachers in the under-25 group.

The Western Cape was the only province where learners were taught by teachers from all six age categories, closely followed by Gauteng (five age groups). However, this may also be a manifestation of the location of languages (see Chapter 3).

In the Eastern Cape, 71% of learners were taught by teachers between the ages of 40 and 49. This province had the largest group (19%) of the youngest teachers, namely under 25 years. Half (50%) of the learners in the Northern Cape were taught by teachers between the ages of 50 and 59. In two provinces, learners were taught by teachers older than 60. A very large percentage (91%) in the Free State was taught by teachers who were aged between 30 and 39 years of age.

In five provinces, the largest group of teachers found in each province was in the 40-49 years age-bracket, with the exception of the Free State, Limpopo, Mpumalanga and the Northern Cape.



	Eastern Cape	Free State	Gauteng	KwaZulu Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape	Eng/Afr/Zulu-RSA (5)
Under 25	353		384						439	394
25–29			389	317		509		352	434	
30–39		529	484	385	405	447		407	392	426
40–49	403	439	389	379		418	418		510	410
50–59	542		470	393		337	546	415	410	422
60 or More					485				395	409

Provinces

Note: Cells are empty when option was not chosen in province

Figure 8.4: Teachers' Age Profile and Learner Achievement across Provinces

In general, learners whose teachers were aged between 30 and 39 years achieved the highest reading achievement (426, SE=17.9), followed by teachers who were aged between 50 and 59 (422, SE=16.2). It should be noted that the Standard Errors are quite large for both these categories. Overall, learners, taught by teachers who are between the ages of 25 and 29 years, achieved the lowest reading achievement (394, SE=22.1), although in the Western Cape this was the second highest category. There was no discernible pattern across the provinces.

8.2.1.4 Teachers' Years of Experience

It has been found that teacher experience can have a considerable impact on the effectiveness of teaching during the first couple of years (Mullis & Martin, 2017; Harris & Sass, 2011). Figure 8.5 presents Grade 5 teachers' years of experience as well as Grade 5 learner achievement.

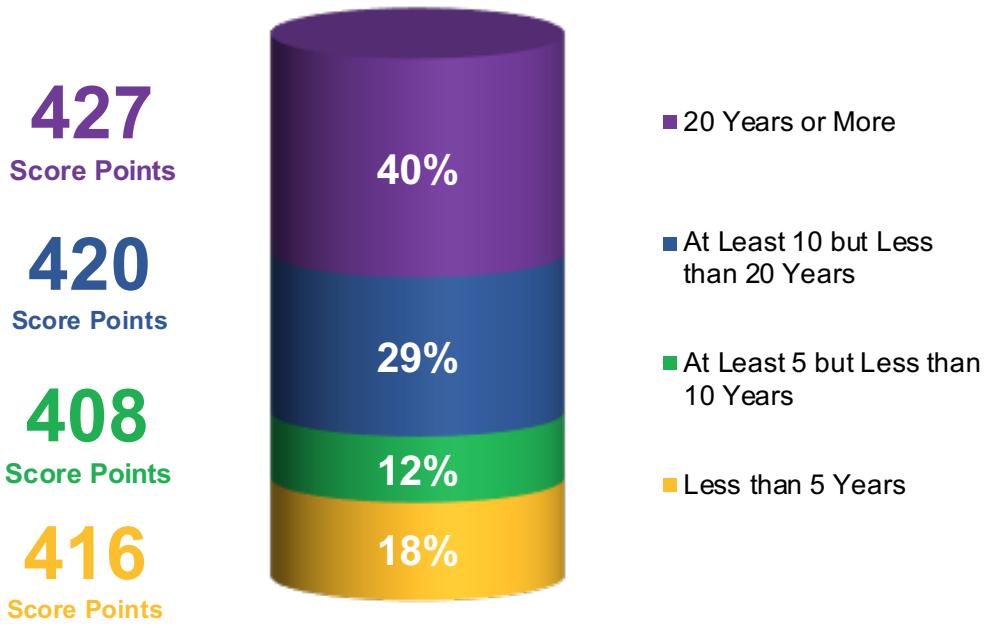


Figure 8.5: Teacher Experience and Learner Achievement Scores

Internationally about 42% of learners had very experienced teachers with *20 Years or More* of experience and South Africa follows a similar pattern (40%). On average, teachers internationally have 17 years of experience compared to South Africa at 16 years. The PIRLS 2016 teacher experience average for South Africa at the Grade 5 level is reduced by one year from 17 years in PIRLS 2011 (see Howie et al., 2012), suggesting there are fewer experienced teachers in the system than five years ago and is back to the levels seen in PIRLS 2006 at Grade 5 (p.93).

No statistically significant differences were found globally between experience and learner achievement. In South Africa, Grade 5 learners seem to achieve higher average achievement when their teachers have either *20 Years or More* of experience (427, SE=10.3) or between 10 and 20 years of experience (420, SE=15.6). A curvilinear pattern is observed when teachers have between 5 and 10 years of experience and those who have *Less than 5 Years* of experience and learner achievement.

8.2.2 Teacher Professional Development

Harris and Sass (2011) found that junior and senior primary school children learn more when their teachers have participated in content-focused professional development. Professional development is included as part of national policies and legislation, specifically with the South African Council of Educations (SACE) Act No. 31 of 2000. South African teachers are awarded Continuing Professional Development (CPD) points for certain training completed, which is aimed at enhancing their teaching effectiveness within the classroom. The following table (8.5) presents the teachers of PIRLS Grade 5 learners and their reports on time allocated to professional development relating to reading.

Table 8.5: Time spent on Teacher Professional Development and Reading Achievement

Teacher Professional Development	% of Learners	SE of %	Mean Score	SE
None	6	2.7	429	35.2
Less Than 6 Hours	17	4.0	410	20.6
6–15 Hours	44	5.0	430	10.2
16 or More Hours	33	5.6	397	8.6

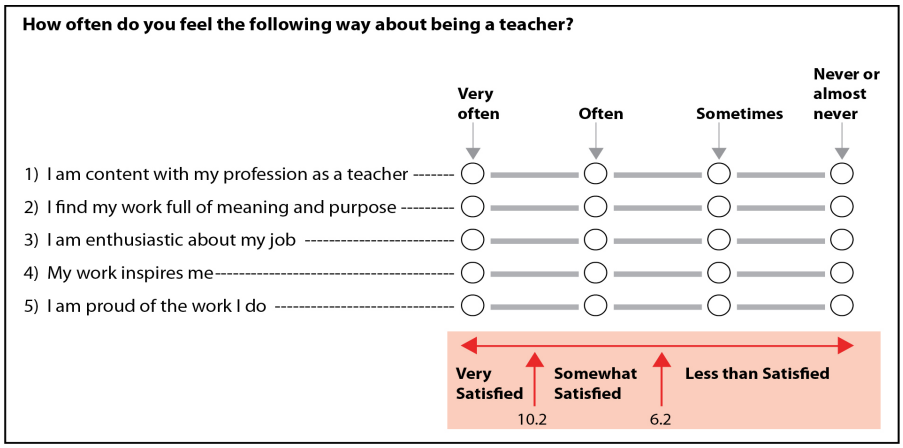
Internationally fewer learners had teachers (84%) who spent time on professional development compared to teachers in South Africa (94%). Most teachers did not spend much time on professional development and only 36% of learners internationally were taught by teachers who spent the equivalent of two working days (*16 Hours or More*) on professional development. South Africa followed a similar pattern where 33% of learners' teachers spent *16 Hours or More* on professional development.

Internationally, there was no discernible relationship between time spent and achievement and a similar observation was made in South Africa. Grade 5 learners whose teachers attend *16 Hours or More* of professional development achieved average reading scores of 397 (SE=8.6) compared to learners of teachers who do not attend any professional development, and whose learners reached an average score of 429 (SE=35.2). A possible reason for the anomaly could be that the teachers, who do not attend any professional development, read additional development materials on their own. Alternatively those teachers attending these courses may be doing so for remedial reasons.

8.2.3 Teacher Career Satisfaction

Generally, teachers who are more satisfied with their career and working conditions at their schools are more motivated to prepare lessons and teach more effectively. Teachers with career satisfaction might be more committed to the profession, and as a result, may be more likely to continue teaching. The PIRLS *Teacher Questionnaire* asked teachers to respond to five statements related to job satisfaction: I am content with my profession as a teacher, I find my work full of meaning and purpose, I am enthusiastic about my job, My work inspires me, I am proud of the work I do. They were asked to rate them from *Very Satisfied*, *Somewhat Satisfied* and *Less Than Satisfied*.

The information box below indicates how the scale was created.



Information Box 1: Teacher Career Satisfaction Scale

Contrary to what might have been expected, given the many schools with difficult conditions in South Africa, teachers reported relatively higher levels of satisfaction with more than half (56%) of South African teachers being *Very Satisfied*, similar to of teachers internationally (57%). Whilst internationally this group of teachers had learners with higher results than those who were *Somewhat Satisfied*, the group of South Africa teachers who were *Less than Satisfied* had learners achieving the highest results (436, SE=46.5[29]). This was also the case internationally. A closer look at this seeming anomaly is needed. Figure 8.6 shows the percentage of teachers' career satisfaction along with the associated learner achievement.

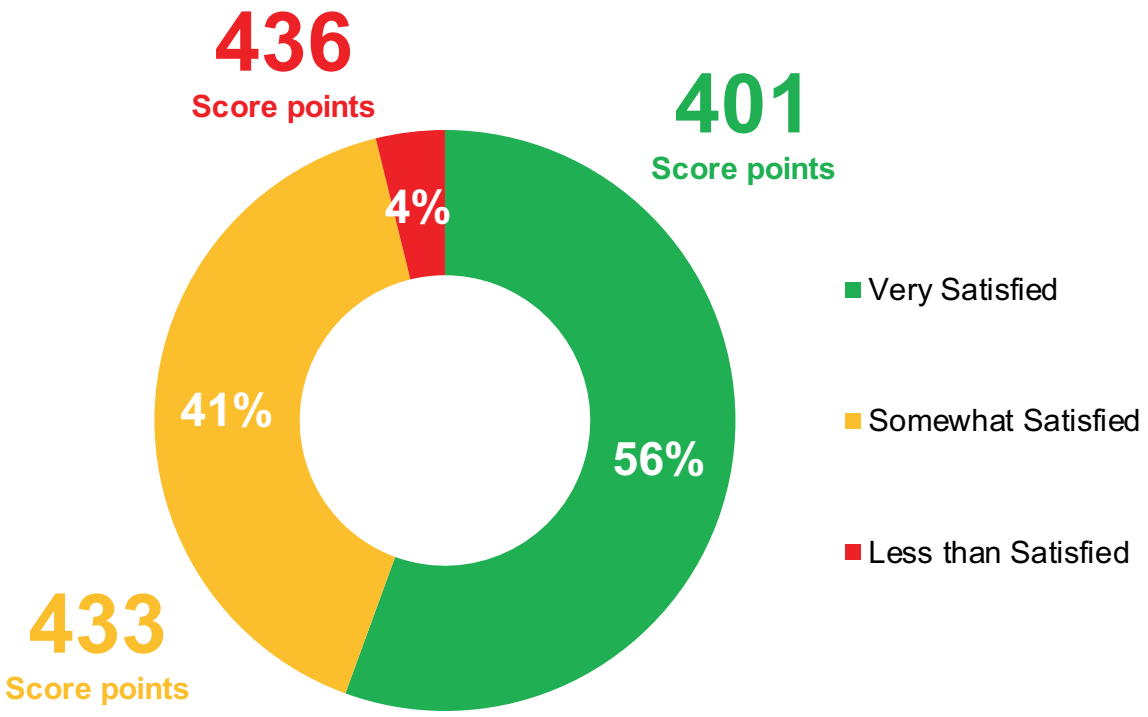


Figure 8.6: Teacher Career Satisfaction and Learner Achievement

[29] The large Standard Error (SE) suggests that whilst there are many higher achieving learners with teachers who are less than satisfied, that there are also several low achieving learners with teachers in that group.

Grade 5 learners whose teachers reported to be *Very Satisfied* with their careers attained reading literacy achievement scores of 401 (SE=8.7) whereas learners whose teachers were *Less than Satisfied* achieved the highest scores[30] (436, SE=46.5). Overall, teachers seem to be satisfied within the teaching profession.

8.3 Classroom Environment

Usually when learners have a more positive attitude towards reading, achievement scores are higher, although fluent readers may also have more confidence and thus are more positive. There are a number of other factors that could impact learner achievement, which include good nutrition, adequate levels of sleep and classroom resources. This section specifically investigates the classroom environment since it is at the core of learning and describes learner attitude towards reading, absenteeism, readiness to learn as well as instructional times and approaches as well as classroom resources.

In PIRLS 2016, the average class had 39 learners per Grade 5 class which is well above the international average of 24 learners in a class. However, class sizes differed greatly between the language groups (see Table 8.6) and provinces (see Table 8.7).

Table 8.6: Average Class size by Language for South Africa PIRLS Grade 5 Study

	Average Class Size
Eng/Afr/Zulu- RSA (5)	39
Afrikaans	32
English	36
isiZulu	46

The languages with the most learners on average per class were isiZulu (46 learners) followed by English (36 learners) and then Afrikaans (32 learners). Table 8.7 shows the average class size by province.

Table 8.7: Average Class size by Province for South Africa PIRLS Grade 5 Study

	Average Class Size
Eng/Afr/Zulu- RSA (5)	39
Eastern Cape	34
Free State	33
Gauteng	38
KwaZulu Natal	44
Limpopo	47
Mpumalanga	42
North West	30
Northern Cape	31
Western Cape	34

[30] The Standard Error (SE) is large and seems to have much variation within the category.

Most language groups and provinces had class sizes of 39 or more learners per class. Limpopo province had the largest class sizes in the Grade 5 PIRLS study with 47 learners on average per class, followed closely by KwaZulu Natal (44) and Mpumalanga (42). North West had the smallest class size (30 learners).

8.3.1 Learner Attitude towards Reading

Every cycle of PIRLS has shown a strong positive relationship between learner attitude toward reading and their reading achievement (see Howie et al., 2012, Howie et al., 2009). However, the relationship is bidirectional (Mullis et al., 2012) as these two aspects, enjoying reading and reading achievement, mutually influence each other. As such, learners who like reading tend to achieve higher reading achievement scores. Figure 8.7 shows the percentage of Grade 5 learners who like reading and their average achievement.

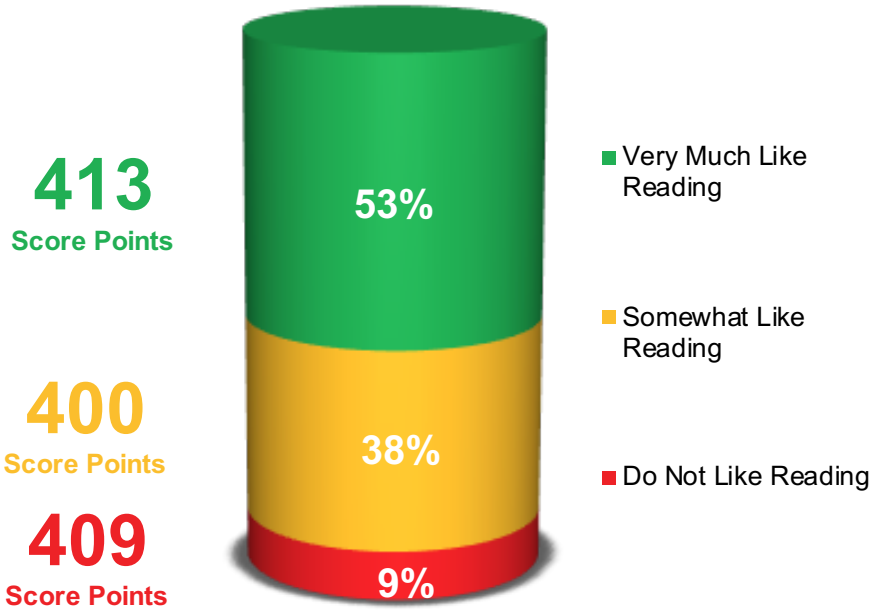


Figure 8.7: Learners who like Reading

Internationally, almost half of the learners (43%) reported that they liked to read compared to more than half (53%) of South African learners who liked to read. South African learners who indicated that they liked to read achieved higher average reading achievement (413, SE=5.4) than those who *Somewhat Like Reading* (400, SE=7.7). A curvilinear pattern is observed as learners who *Do Not Like Reading* scored slightly higher than learners who *Somewhat Like Reading*. Table 8.8 shows a breakdown of the South African Grade 5 learner achievement and the extent which they like reading across languages.

Table 8.8: Learners who like reading and Achievement across Languages

	Very Much Like Reading		Somewhat Like Reading		Do Not Like Reading	
Language	Mean Score	SE	Mean Score	SE	Mean Score	SE
Afrikaans	434	10.8	427	16.5	437	11.5
English	444	11.8	431	14.1	420	16.3
isiZulu	373	5.0	342	5.2	298	12.4

In general, when learners like to read, they also achieved higher reading scores; however, whilst there appeared to be a linear relationship with achievement in English and isiZulu, this was not the case for Afrikaans. Grade 5 learners, who indicated that they *Very Much Like Reading* and wrote the PIRLS assessment in English, achieved the highest mean score (444, SE=11.8), whereas learners who wrote the assessment in isiZulu, obtained the lowest mean score (373, SE=5.0). Learners who wrote the PIRLS assessment in Afrikaans and indicated that they *Do Not Like Reading* achieved a slightly higher mean score (437, SE=11.5) than those who indicated that they *Very Much Like Reading* (434, SE=10.8). But the difference is not statistically significant due to the large standard errors (variance around the mean).

8.3.2 Learner Absenteeism

A study conducted by Gottfried in 2009 has examined how learner absences affect their academic achievement. The aforementioned study did, however, split learner absence into excused and unexcused and explained that learners who are not excused from being absent from school, tend to be “at-risk academically” (Gottfried, 2009, p.410). However, when learners are absent more often than not, it is negatively associated with their academic achievement.

Learners were asked to indicate to what extent they were absent from school (see Figure 8.8).

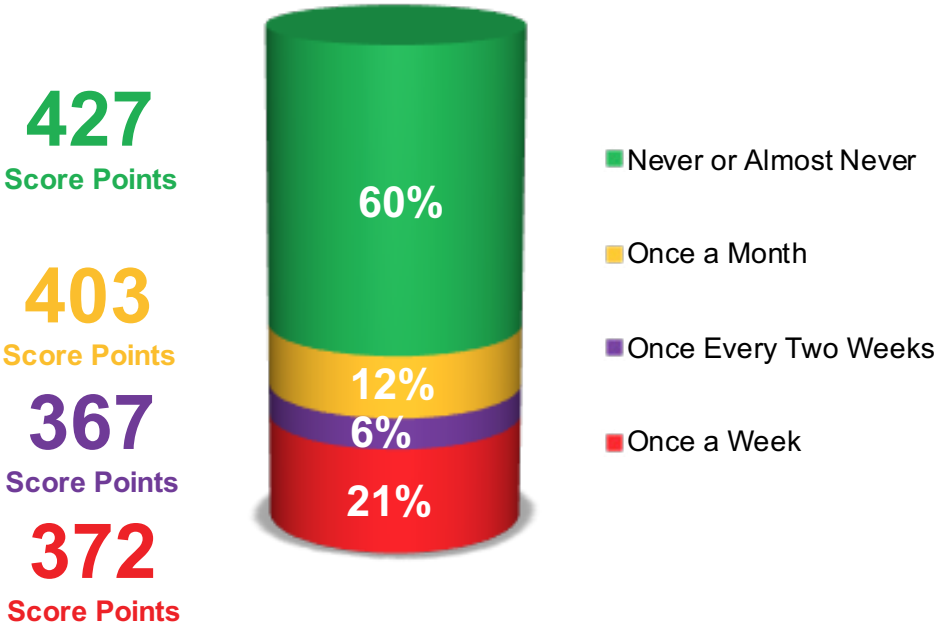


Figure 8.8: Learner Absenteeism and Learner Achievement

Internationally, 70% of learners were never or *Almost Never* absent from school, a greater proportion of learners than in South Africa as on average, most learners (51%) are Never or *Almost Never* absent from school. Furthermore, twice as many learners in South Africa (21%) were absent on a weekly basis compared to their international peers (9%).

Internationally, the frequency of being absent is related to lower average reading achievement and learners, who are frequently absent, score more than 60 points less than those who are not. South Africa follows a similar pattern with a difference of 55 points. The average reading achievement for Grade 5 learners who are Never or *Almost Never* absent from school was 427 (SE=6.4). In comparison, learners achieved a reading score of 367 (SE=9.2) if they were absent *Once Every Two Weeks*.

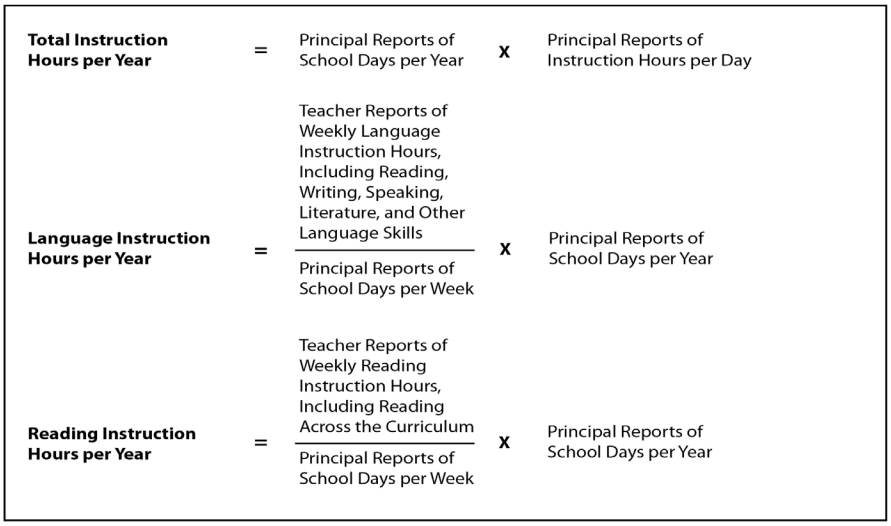
8.3.3 Instructional Time and Approaches

Opportunity to learn has been a key factor studied in many IEA studies (Howie, in press). Whilst many factors may influence the relationship between instructional time and achievement, including the quality of the instruction and the learning motivation and preparedness to learn, time on task (instructional time) is central. This sections relates to teacher reports on instructional time spent on language and reading, as well as approaches or strategies used for enhancing learner reading skills.

8.3.3.1 Instructional Time

The current national curriculum document has clear guidelines for the language class. *Reading Instruction* forms part of the language curriculum for the Intermediate Phase (Grades 4 to 6). For Home Language, the Curriculum and Assessment Policy Statement (CAPS) states that six hours should be spent per week and five hours for First Additional Language (FAL). Of the initial six hours spent on language in a week; however, only two and a half hours are allocated to reading (DBE, 2011).

Teachers reported on the amount of time spent on language and *Reading Instruction*. This information was combined with the data provided by school principals to estimate yearly amounts of instructional time, based on language and *Reading Instruction* per year. Below is an information box depicting how the estimations were calculated:



Information Box 2: Instructional Time Spent per Year

Internationally, on average, learners received 898 hours of instruction per year across all subjects. About 27% of that time was allocated to *Language Instruction* and 18% was dedicated to reading. South African teachers and principals reported that a total of 1 195 instructional hours is spent per year on all subjects.

Table 8.9 presents the number of hours per week spent on language and *Reading Instruction* as reported by the teachers on Grade 5 level, across countries, participating in PIRLS.

Table 8.9: Instructional Time Spent on Language and Reading by PIRLS benchmarking participants

Country	Total Instruction Hours per Year All Subject	Language Instruction, Including Reading Writing, Speaking, Literature, and Other Language Skills		Reading Instruction, Including Reading Across the Curriculum	
		Hours per Year	Percent of Total Instruction Time	Hours Per Year	Percent of Total
Eng/Afr/Zulu- RSA (5)	1195 (17.5)	223 (8.7)	19 (0.8)	97 (7.0)	8 (0.7)
Dubai,UAE	1013 (0.9)	220 (8.7)	22 (1.0)	135 (7.4)	12 (0.8)
Abu Dhabi, UAE	1012 (8.5)	280 (20.3)	27 (2.2)	156 (11.5)	15 (1.2)
Buenos Aires, Argentina	994 (26.4)	228 (10.6)	24 (1.2)	188 (19.9)	19 (1.9)
Ontario, Canada	973 (9.9)	290 (8.2)	31 (1.0)	234 (12.5)	24 (1.7)
Denmark	915 (12.9)	278 (4.0)	31 (0.5)	158 (11.2)	17 (1.2)
Quebec, Canada	906 (6.1)	305 (8.5)	34 (1.1)	145 (7.7)	16 (0.9)
Madrid, Spain	878 (7.5)	203 (6.8)	23 (0.8)	141 (12.1)	17 (1.5)
Andalusia, Spain	844 (9.0)	229 (6.3)	28 (0.8)	170 (11.6)	21 (1.5)
Norway (4)	825 (11.2)	233 (8.7)	29 (1.2)	176 (10.9)	22 (1.5)
Moscow City, Russian Fed	621 (3.8)	260 (5.3)	42 (0.9)	178 (7.0)	29 (1.1)
International Average	898 (1.6)	242 (1.4)	27 (0.2)	156 (1.5)	18 (0.2)

(Standard errors in parentheses)

In South Africa, of the 1 195 total hours spent on all subjects, 19% (223 hours) of these hours are spent on *Language Instruction* and 8% (97 hours) are spent on *Reading Instruction*. It is important to note that out of all participants internationally, South Africa reported the most time spent on all subjects compared to Denmark and Moscow City, whose teachers only spent 915 and 621 hours, respectively, on all subjects.

In contrast, Eastern European and Scandinavian teachers reported spending far less time overall on instruction, but a greater proportion of time on language, and a significantly higher proportion of time on reading. The top performing country in PIRLS, the Russian Federation, spent only 652 instructional hours per year but 41% was on language and 27% specifically on reading compared to South Africa's 19% on language and 8% on reading.

8.3.3.2 Teachers Develop Learner Reading Comprehension Skills and Strategies

Reading comprehension is crucial for successful reading progression. Research has found that even if only one reading comprehension strategy is taught, it can improve learner comprehension (Gill, 2008). Zimmerman (2010) found that comprehension skills and strategy instruction had not been sufficiently foregrounded in the South Africa curriculum, and that comprehension practices in the classroom were weak.

The following table displays the percentage of Grade 5 learners whose teachers were asked about the reading skills and strategies emphasised during *Reading Instruction* at least weekly. The table also indicates learner average achievement score per reading skill and strategy.

Table 8.10: Reading Skills and Strategies and Learner Achievement

Reading Skills and Strategies	% of Learners whose teachers ask them to do the following at least weekly			
	% of South African Learners	SE of %	% of International Learners	SE of %
Locate information within the text	96	2.3	96	0.2
Identify the main ideas of what they have read	93	3.1	94	0.2
Explain or support their understanding of what they have read	96	2.1	95	0.2
Compare what they have read with experiences they have had	91	3.2	83	0.4
Compare what they have read with other things they have read	87	4.1	75	0.4
Make predictions about what will happen next in the text	89	3.1	77	0.4
Make generalizations and draw inferences	92	3.2	82	0.4
Describe the style or structure of the text	77	5.0	69	0.4
Determine the author's perspective or intention	71	5.2	66	0.4

In comparison to learners internationally, a higher percentage (8% more) of South African learners are exposed to *Compare what they have read with experiences they have had* as well as *make generalisations and draw inferences*. A higher percentage of learners is being taught four of the strategies weekly in comparison to their international peers on average. Interestingly, 100% of

learners in the Russian Federation are taught four of the strategies on a weekly basis and other strategies are taught to larger percentages of learners than in South Africa and internationally.

The least emphasis in South Africa, reflected by a smaller percentage (71%) of learners, *is determining the author's perspective or intention* followed by *describing the style or structure of the text* (77%). Learner average achievement seems to be similar across the different reading skills and strategies.

8.3.4 Learner Readiness to Learn

Within these sections, the characteristics of the learners will be explored, as these affect learning and achievement. In this section, learner prerequisite knowledge and skills, nutrition and sleep are described.

8.3.4.1 Learner Prerequisite Knowledge and Skills

Research has shown a strong relationship between prior knowledge and attainment on large-scale assessments (Howie, 2002). Lack of the required knowledge and skills affects not only the individual learner's educational progress, but also class pace, depth of learning and general classroom atmosphere. Figure 8.9 shows the percentage of South African Grade 5 learners, as reported by their teachers, who have a lack of prerequisite knowledge and skills.

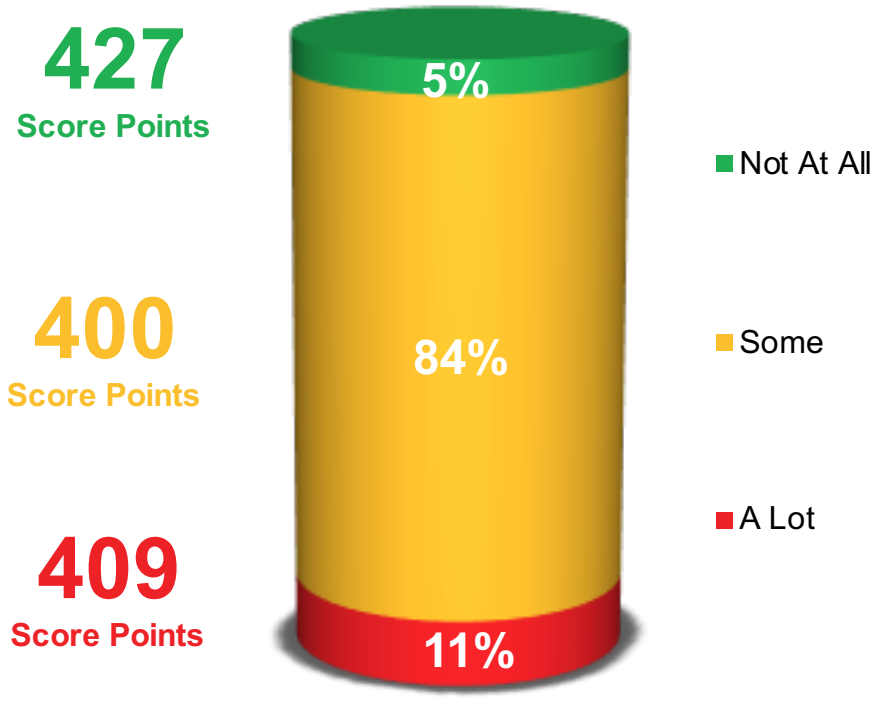


Figure 8.9: Learners who have Lack of Prerequisite Knowledge and Skills and Learner Achievement

The majority of Grade 5 teachers (84%) reported that learners, to *Some* extent, lack the prerequisite knowledge and skills required to fully cope with the curriculum demand. This is substantially higher than their international peers (67%). Furthermore, fewer classrooms internationally are not limited at all by the learners' lack of prerequisite knowledge and skills affecting their ability to cope, compared to those in South Africa.

This result could be one of the contributing factors to learner poor performance in the PIRLS assessments. A relationship can be observed where learners who, reportedly, do not have any lack in the prerequisite skills and strategies performed higher (443, SE=44.7) than those who have a greater lack (397, SE=21.2) in these skills. Note that the Standard Error (SE) for both these categories is large and seems to display much variation within the category.

The Figure 8.10 shows the percentage of learners who reportedly enter primary school with a lack of prerequisite knowledge and skills by language.

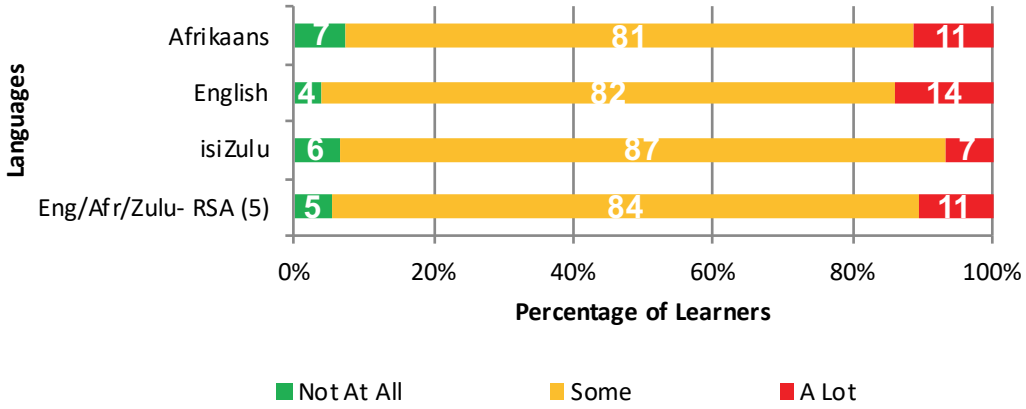


Figure 8.10: Learners who have Lack of Prerequisite Knowledge and Skills by Language

According to teacher reports on Grade 5 learners who enter school with a lack of prerequisite knowledge and skills, all language groups had learners who have *Some Lack* of prerequisite knowledge and skills. The largest percent of learners who lack *A Lot* of prerequisite knowledge and skills were tested in English (14%). Overall very few (5%) Grade 5 learners entered school with no lack of prerequisite knowledge and skills.

8.3.4.2 Teachers report teaching limited by lack of nutrition and sleep

Nutrition and sufficient sleep are two key contributing factors for a child's healthy development (see UNESCO, 2017). South Africa has a Gini Coefficient of 0.65 and as many as 25% of the population live below the poverty line (World Bank, 2014). South Africa has one of the highest inequality rates in the world, perpetuating both inequity and exclusion (World Bank, 2017), many children go hungry and live in poor conditions. It has been found that nutrition and sleep result in better performance at school (see Lemma, Berhane, Worku, Gelaye, Williams, 2014 &Taras, 2005) or conversely the lack thereof has a negative impact on learner achievement (see Glewwe, Jacoby & King, 2001). Figure 8.11 shows the percentage of South African Grade 5 learners whose teachers report that their teaching is limited due to learners suffering from a lack of nutrition, and the associated mean scores.

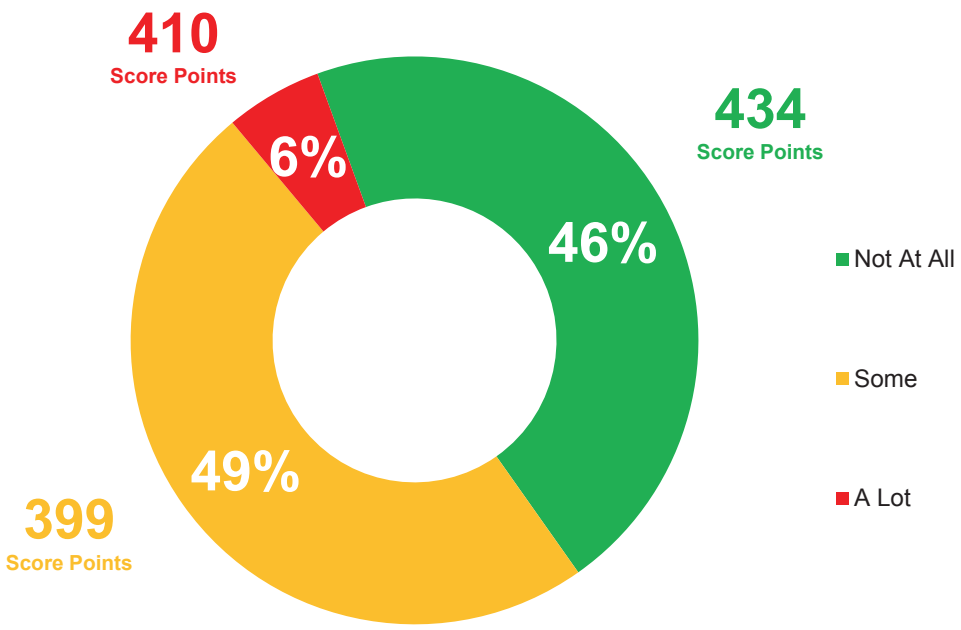


Figure 8.11: Lack of Nutrition and Learner Achievement

Teachers of more than half (55%) of South African Grade 5 learners reported that they were limited in their teaching by children coming to school suffering from a lack of nutrition. These learners achieved a mean score of 399 (SE=7.5) compared to 46% of learners whose teachers reported that their teaching is *Not At All* limited by the nutritional problems of learners (434, SE=10.9). There is a 35-point difference between the two groups which translates to almost one full year of schooling.

The next figure shows the percentage of learners, in classes where teachers' instruction is limited by learners who suffer from a lack of nutrition, by province.

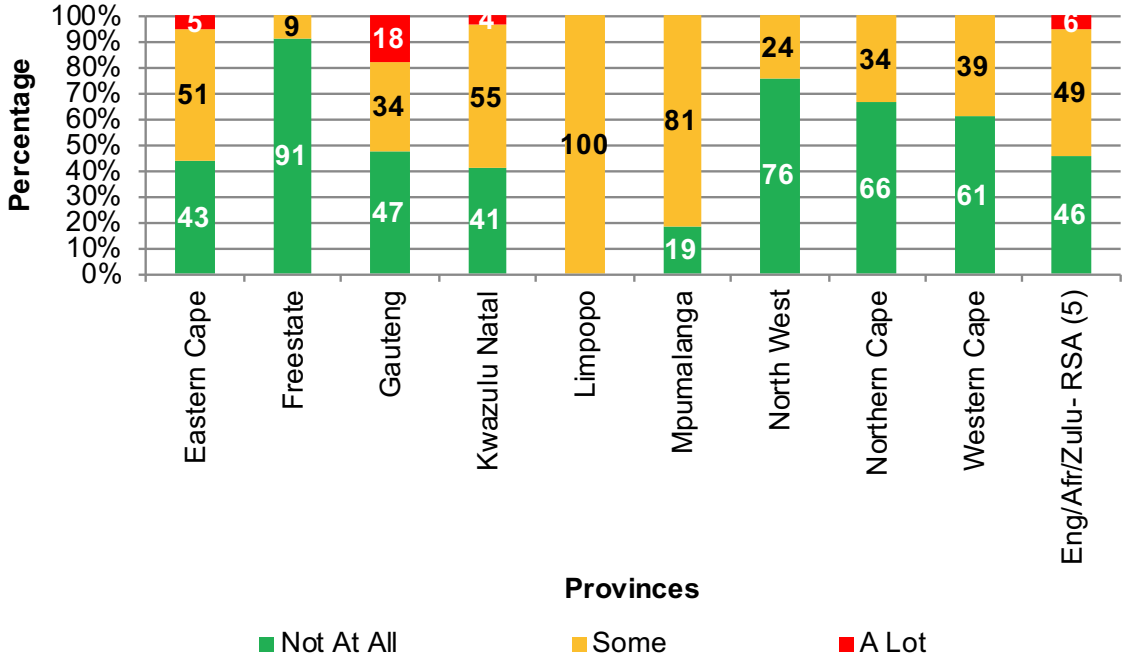


Figure 8.12: Teaching affected by Learners' Lack of Nutrition by Province

Across all the provinces, teachers indicated that their teaching is affected by Grade 5 learners suffering from a lack of nutrition. Interestingly, in Limpopo all learners were in classes where teachers reported that their teaching is affected to *Some* extent by learners who suffer from a lack of nutrition in contrast to the Free State where 91% of learners were in classes where teaching was *Not At All* affected. Almost one-fifth (18%) of learners in Gauteng reported that teaching was *Affected A Lot* by learners' lack of nutrition.

Table 8.11 shows the proportion of South African Grade 5 learners, living in different residential areas[31], where teaching is limited by a lack of nutrition and their reading achievement.

Table 8.11: Teaching limited by Learners' Lack of Nutrition and Learner Achievement by Location

Area	Lack of Nutrition	% of Learners	SE of %	Mean Score	SE
Urban- densely populated	Not at all	43	13.8	471	40.5
	Some	47	12.9	438	18.2
	A lot	10	9.3	486	4.0
Suburban- on fringe or outskirts of urban area	Not at all	46	21.4	528	11.7
	Some	54	21.4	415	13.3
	A lot	~	~	~	~
Township near urban area	Not at all	49	14.7	389	12.9
	Some	51	14.7	397	25.4
	A lot	~	~	~	~
Medium size city or large town	Not at all	45	22.1	532	12.8
	Some	55	22.1	455	20.7
	A lot	~	~	~	~
Small town or village	Not at all	55	13.3	409	27.0
	Some	33	10.8	393	12.5
	A lot	12	11.2	384	6.2
Remote rural	Not at all	46	12.2	363	8.3
	Some	48	11.6	362	13.8
	A lot	6	4.8	364	12.2
Eng/Afr/Zulu- RSA (5)	Not at all	46	5.1	434	10.9
	Some	49	5.0	399	7.5
	A lot	6	2.5	410	30.2

A tilde (~) means insufficient data.

In almost all areas, learners in classes *Not At All* affected had higher scores, except in urban areas where teaching was limited *A Lot* but achieved scores were slightly (15 points) higher.

In conjunction with the above, teachers also reported on learner sleep deprivation. Table 8.12 shows the percentage of South African Grade 5 learners who suffer from not enough sleep and their reading achievement by residential area[32].

[31] Note that the sampling was not done by residential area specifically. See Chapter 3 for further detail.
[32] Note that the sampling was not done by residential area specifically. See Chapter 3 for further detail.

Table 8.12: Teaching limited by Lack of Sleep and Learner Achievement by Location

Area	Lack of Sleep	% of Learners	SE of %	Mean Score	SE
Urban- densely populated	Not at all	27	12.7	461	43.4
	Some	63	13.3	450	25.4
	A lot	10	9.2	486	4.0
Suburban- on fringe or outskirts of urban area	Not at all	8	6.2	507	115.7
	Some	87	8.9	464	28.6
	A lot	6	5.8	403	5.8
Township near urban area	Not at all	42	14.2	387	14.8
	Some	58	14.2	397	22.0
	A lot	~	~	~	~
Medium size city or large town	Not at all	45	22.0	532	12.8
	Some	42	22.5	466	21.5
	A lot	12	11.4	417	9.6
Small town or village	Not at all	34	12.7	420	45.7
	Some	66	12.7	391	6.6
	A lot	~	~	~	~
Remote rural	Not at all	64	10.4	355	9.2
	Some	33	10.0	378	13.0
	A lot	3	3.4	354	2.9
Eng/Afr/Zulu-RSA (5)	Not at all	40	5.6	407	13.6
	Some	56	5.7	421	9.6
	A lot	4	2.0	422	34.9

A tilde (~) means insufficient data. Take note of large standard errors.

Almost half of teachers (45%) internationally felt that sleep deprivation was *Not At All* a limitation factor for their teaching. However, it seemed to be more of a limitation in South African classes where 60% of learners were affected by this to *Some* extent. Learners in densely populated areas seemed to be most affected.

Internationally there appeared to be an association with achievement with learners Not Affected achieving the highest scores. In South Africa, the association was not consistent across areas or nationally. In Suburban areas and medium sized cities the association was similar to that found internationally.

Interestingly, it appears that learners whose teachers are *Not At All* limited in their teaching by learners' lack of sleep achieve a lower reading achievement of 407 (SE=13.6) compared to learners in classes where teachers feel limited to *Some* extent (421, SE=9.6). This seemingly contradictory finding may be indicative of the teachers' perceptions but it also perhaps indicates that despite some difficulties due to learners' backgrounds, some teachers are able to overcome such obstacles.

8.3.5 Classroom Resources for Teaching Reading

Having access to and utilising a variety of resources is a critical aspect of teaching particularly with enhancing the reading skills of Grade 5 children. The richness of the reading resources in the classroom is crucial for learner reading literacy development. A variety of resources could

be used in the classroom; for example, children's books, posters, comic strips, newspapers and more recently, reading resources on the computer. If learners have the opportunity and regular access to books in the classroom library, they tend to have a more positive attitude towards reading (Mullis & Martin, 2015).

8.3.5.1 Types of Texts Used in Classrooms

Utilising a variety of reading resources enables the teacher to enhance the teaching and learning of reading literacy skills. The PIRLS *Teacher Questionnaire* asked teachers how frequently they used different types of literary and informational texts as these were the two purposes assessed in PIRLS. Previously children's books were a very popular choice in PIRLS 2011 (see Howie et al, 2012).

Table 8.13 shows information about the different literary texts teachers used in the classroom. Both nationally (89%) and internationally (78%) *Short Stories* were the most popular type of literary text assigned on a weekly basis. Internationally when these and longer fiction books were assigned weekly, learners achieved higher scores compared to those who were not. It is notable that when these types of literary texts are used *Less than Once a Week* learners in South African classes seem to achieve higher mean scores. However, it is not clear why South African learners do better when these texts are assigned less often.

Table 8.13: Teachers Utilise Literary Texts for Reading Instruction and Learner Achievement for PIRLS Benchmarking participants

Country	Short Stories				Longer Fiction Books with Chapters				Plays			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score
Buenos Aires, Argentina	89	479	11	474	54	480	46	478	20	479	80	479
Ontario, Canada	76	543	24	547	69	548	31	535	4	539	96	545
Quebec, Canada	87	547	13	546	58	552	42	539	0	~	100	547
Denmark (3)	77	503	23	496	57	504	43	497	1	~	99	501
Norway	78	518	22	513	69	518	31	514	4	525	96	517
Moscow City, Russian Fed	87	613	13	607	55	616	45	607	7	616	93	612
Andalusia, Spain	83	526	17	516	55	525	45	524	10	510	90	526
Madrid, Spain	86	549	14	550	59	548	41	552	5	550	95	549
Abu Dhabi, UAE	87	413	13	435	36	428	64	409	15	403	85	419
Dubai, UAE	85	519	15	513	49	531	51	505	24	517	76	518
Eng/Afr/Zulu-RSA (5)	89	412	11	425	34	403	66	421	32	394	68	424
International Avg.	78	512	22	508	41	516	59	508	9	501	91	512

A tilde (~) means insufficient data.

The next table shows the type of literary texts used by teachers for *Reading Instruction* and their associated learner achievement by province.

Table 8.14: Teachers Utilise Literary Texts for Reading Instruction and Learner Achievement across Provinces

Province	Short Stories				Longer Fiction Books with Chapters				Plays			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score
Eastern Cape	75	394	25	449	15	288	85	436	46	405	54	421
Free State	~	~	100	439	~	~	100	439	~	~	100	439
Gauteng	88	436	12	432	26	448	74	431	13	385	87	443
Kwazulu Natal	92	380	8	394	44	372	56	390	42	376	58	386
Limpopo	100	419			100	419	~	~	100	419	~	~
Mpumalanga	95	390	5	504	52	352	48	442	57	416	43	367
North West	100	476	~	~	23	545	77	455	15	403	85	489
Northern Cape	74	415	26	330	~	~	100	393	~	~	100	393
Western Cape	86	458	14	467	17	527	83	446	15	431	85	464
Eng/Afr/ Zulu- RSA (5)	89	412	11	425	34	403	66	421	32	394	68	424
International Average	78	512	22	508	41	516	59	508	9	501	91	512

A tilde (~) means insufficient data.

All (100%) of the learners in Limpopo and the North West provinces were in classes where teachers indicated that they used *Short Stories* on weekly basis; however, in Limpopo it also appeared that all learners also used Longer Fiction Books and Plays on a weekly basis and there was no variation in achievement. Learners in the Western Cape achieved a higher mean score if their teacher used Longer Fiction Books with Chapters at least once a week (527, SE=67.9) than on a weekly basis (446, SE=22.7), this was also the case in North West. Whilst there was no clear pattern for all provinces, there did seem to be some correlation with achievement in certain provinces (e.g.: Eastern Cape) when teachers reported using *Some Resources* less than weekly.

The next table presents information about the informational texts used during teaching. The most popular choice, nationally (74%) and internationally (71%), for *Reading Instruction* with regards to informational texts is Non-Fiction Subject Area Books.

Table 8.15: Teachers Utilise Informational Texts for Reading Instruction and Learner Achievement for PIRLS Benchmarking participants

Country	Non-fiction Subject Area Books				Longer Non-fiction Books with Chapters				Non-fiction Articles			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score
Buenos Air es, Argentina	72	477	28	486	28	481	72	478	58	476	42	483
Ontario, Canada	90	544	10	550	39	549	61	541	62	547	38	539
Quebec, Canada	81	545	19	556	28	544	72	548	30	544	70	548
Denmark (3)	56	499	44	503	13	504	87	501	20	496	80	502
Norway (4)	92	518	8	509	32	518	68	517	44	519	56	516
Moscow City, Russian Fed	86	613	14	605	39	615	61	610	37	618	63	609
Andalusia, Spain	90	526	10	519	42	525	58	524	36	525	64	524
Madrid, Spain	88	549	12	553	45	547	55	551	33	548	67	550
Abu Dhabi, UAE	76	408	24	438	29	418	71	415	48	412	52	420
Dubai, UAE	80	521	20	508	40	535	60	506	55	526	45	508
Eng/Afr/Zulu-RSA (5)	74	420	26	402	37	406	63	419	61	408	39	424
International Avg.	71	512	29	508	24	513	76	510	39	513	61	510

South African learners achieve higher reading scores when teachers use non-fiction subject area books *Once a Week or More*, (420, SE=7.3) and longer non-fiction books *Less than Once a Week* (419, SE=10.0) compared to those who use them *Once a Week or More* (406, SE=14.9). Overall, South African teachers seem to use non-fiction subject area books and non-fiction articles more often than longer non-fiction books with chapters. Furthermore, South African learners were apparently assigned non-fiction articles weekly (61%), more so than their peers (39%) internationally.

The next table shows the informational texts the teachers used for *Reading Instruction* across provinces.

Table 8.16: Teachers Utilise Informational Texts for Reading Instruction across Provinces

	Non-fiction Subject Area Books				Longer Non-fiction Books with Chapters				Non-fiction Articles			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
Province	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score	% of Learners	Mean Score
Eastern Cape	64	370	36	476	37	353	63	441	59	378	41	451
Free State	100	521	~	~	91	529	9	439	~	~	100	521
Gauteng	68	424	32	485	16	373	84	450	54	418	46	462
KwaZulu Natal	65	388	35	366	44	383	56	379	70	389	30	362
Limpopo	100	419	~	~	18	485	82	405	18	485	82	405
Mpumalanga	58	430	42	347	43	354	57	426	87	395	13	394
North West	91	485	9	382	91	485	9	382	68	464	32	500
Northern Cape	72	412	28	330	27	334	73	410	65	410	35	352
Western Cape	100	456	~	~	32	483	68	440	45	460	55	449
Eng/Afr/Zulu-RSA (5)	74	420	26	402	37	406	63	419	61	408	39	424
International Average	71	512	29	508	24	513	76	510	39	513	61	510

A tilde (~) means insufficient data.

Learners in the Free State, Limpopo and the Western Cape had teachers who reported using non-fiction subject area books on a weekly basis. Furthermore all learners in the Free State were assigned Non-fiction articles less than weekly and this group achieved an average reading score of (521, SE=58.8) and also achieved the same score when assigned the non-fiction subject area books weekly. The learners from Limpopo and the Western Cape achieved average reading scores of (419, SE=48.4) and (456, SE=16.0) respectively when using non-fiction subject area books weekly. The exceptionally large Standard Error (SE) indicates the variation within these categories and therefore these findings are treated cautiously. The learners in Gauteng achieved a 44-point higher mean score if their teacher used non-fiction articles *Less than Once a Week* compared to those who use it at least weekly.

8.3.5.2 Classroom Libraries

The purpose of classroom libraries differs from school libraries. Having books and magazines in the class, as part of the lesson and activities, provide easier access. However, they may not provide sufficient enrichment and choice that the size and variety of reading levels present in a school library can provide. Classroom libraries should have a variety of different types of materials to assist in learner reading comprehension development.

Internationally, 72% of learners have a classroom library. A third of learners have more than 50 books and more than half are given class time to use the library weekly, borrow books and two-thirds are taken to another library monthly.

Almost two-thirds (62%) of South African Grade 5 learners have a classroom library. Nearly half (48%) of learners are given class time to use the classroom library once or twice a month. Almost two-thirds (63%) of learners can borrow books from that library. Eighteen percent of

learners are taken to other libraries (including school library) monthly and one-third (34%) never or *Almost Never* visit other libraries. Table 8.17 shows the learner average achievement score if there is a classroom library available per province.

Table 8.17: Availability of Classroom Library and Learner Achievement

Province	Classroom Library Availability	% of Learners	SE of %	Mean Score	SE
Eastern Cape	Yes	49	21.9	451	22.3
	No	51	21.9	368	29.1
Free State	Yes	100	0.0	521	58.8
	No	~	~	~	~
Gauteng	Yes	70	10.4	438	26.5
	No	30	10.4	430	30.3
KwaZulu Natal	Yes	63	9.3	380	8.0
	No	37	9.3	384	16.4
Limpopo	Yes	100	0.0	419	48.4
	No	~	~	~	~
Mpumalanga	Yes	19	13.5	422	86.6
	No	81	13.5	393	45.2
North West	Yes	61	26.6	510	38.3
	No	39	26.6	423	32.0
Northern Cape	Yes	31	27.3	355	62.5
	No	69	27.3	411	52.5
Western Cape	Yes	73	16.6	435	25.4
	No	27	16.6	524	35.8
Eng/Afr/Zulu- RSA (5)	Yes	62	5.8	417	9.6
	No	38	5.8	411	13.7

A tilde (~) means insufficient data.

Across the provinces, there is a wide variation in the provisioning of classroom libraries in Grade 5. Whilst only 19% of learners in Mpumalanga have a classroom library, 100% of learners in the Free State and Limpopo have classroom libraries available.

Internationally, learners in schools with classroom libraries achieve higher scores with the difference being 25 points. However, there is not a consistent pattern across provinces in South Africa. Four provinces follow the international trend of higher performance (Eastern Cape, Gauteng, Mpumalanga and the North West).

Overall in South Africa, there does not seem to be a direct relationship between having a classroom library and learner average achievement. Learner reading scores are slightly higher (417, SE=9.6) when there is library in the classroom compared to when there is not a classroom library in place (411, SE=13.7). However, in a few provinces, it appears that when there is not a classroom library in place, learner achievement is somewhat higher than where libraries are established in classrooms. For example, in KwaZulu Natal, the Northern Cape and the Western Cape provinces, learners achieved higher scores if the classroom does not have a

library. This anomaly should be further investigated to determine why learners are performing somewhat better if no classroom library is available.

8.3.5.3 Instruction for Online Reading

In the Second International Technology in Education Study 2006, only 38% of South African schools were found to have ICT available for pedagogy at secondary school level (Howie & Blignaut, 2009) with fewer primary schools than secondary schools having ICT. Amongst other general reading skills, learners need to become equipped with ICT-related additional skills (Coiro, 2003) in order to successfully access information from the Internet (Leu et al., 2007). Internationally, almost half of the learners have access to computers to use for reading lessons at school, although only 10% have a computer for each learner. Only 10 countries in the study have two-thirds of their learners or more having computers available for reading lessons. South Africa has one of the lowest rates of access to computers (17%) in the study compared to Denmark which has an access rate of 89%. Very few South African Grade 5 learners have access to school computers or tablets for reading or as part of their reading lessons, as reported by teachers (see Table 8.18).

Table 8.18: Access to School Computers for Reading Lessons and Learner Achievement by Province

Province	Tablet/ Computer Availability	% of Learners	SE of %	Mean Score	SE
Eastern Cape	Yes	38	20.4	435	76.8
	No	62	20.4	392	28.3
Free State	Yes	91	64.8	529	4.2
	No	9	64.8	439	12.8
Gauteng	Yes	17	10.1	532	18.8
	No	83	10.1	415	19.2
KwaZulu Natal	Yes	13	7.0	464	43.4
	No	87	7.0	369	7.4
Limpopo	Yes	~	~	~	~
	No	100	0.0	419	48.4
Mpumalanga	Yes	27	23.3	484	2.7
	No	73	23.3	362	24.3
North West	Yes	~	~	~	~
	No	100	0.0	476	31.8
Northern Cape	Yes	25	26.2	334	6.6
	No	75	26.2	413	46.6
Western Cape	Yes	16	11.4	538	63.3
	No	84	11.4	444	22.4
Eng/Afr/Zulu- RSA (5)	Yes	17	4.8	484	21.0
	No	83	4.8	402	7.5

A tilde (~) means insufficient data.

Internationally, there is a relationship between access to computers and achievement. In South Africa, it is stronger and represents a difference of 82 points and is probably related to higher socio-economic status of the composition of the school. In general, when South African learners have access to computers at school for reading lessons or instructions, their average reading achievement is 484 (SE=21.0)[33] compared to those who do not have access (402, SE=7.5).

Across the provinces, access ranges greatly from no access (100%) in Limpopo to 9% in the Free State. It is notable that teachers from both Limpopo and the North West indicated that none of the learners have access to a computer or tablet for their reading lessons. It seems that learners from the Free State (91%) have the most access to computers or tablets for their reading lessons followed by learners from the Eastern Cape (38%) and Mpumalanga (27%). Low percentages were found in KwaZulu Natal and the Western Cape.

In some provinces the difference in achievement is considerably large; for example 122-point difference in Mpumalanga, whilst in others there appeared to be a negative relationship (-79 points North West).

Table 8.19 depicts information about the availability of school computers per learner in South Africa. Of the 17% of learners (see Table 8.18) in schools that reported having ICT available for reading lessons, only 15% have access to computers and tablets for each learner. However, some schools might have computers in classrooms as well as a computer room that the learners might use.

Table 8.19: Access to School Computers for Reading Lessons per Learner and Learner Achievement

Computer Availability		% of Learners	SE of %	Mean Score	SE
Each learner has a computer	Yes	15	10.9	521	51.2
	No	85	10.9	490	24.3
The class has computers that learners can share	Yes	29	14.1	500	17.7
	No	71	14.1	489	30.9
The school has computers that the class can use	Yes	82	12.0	500	25.5
	No	18	12.0	469	30.2

There appears to be a direct association between access to a computer or tablet for reading lessons and learner achievement. If there are computers available but not for every learner, learner achievement is somewhat higher than for those who do not have access. The largest differences were found where computers were available in the school for each learner. These learners achieved a mean score of 521 (SE=51.2[34]) compared to 490 (SE=24.3) where they were not. A similar pattern is observed when the school has computers available that the whole class can use.

[33] The Standard Error (SE) is large and seems to have great variation within the category.
[34] The exceptionally large Standard Error (SE) indicates the variation within this category and therefore these findings are treated cautiously.

8.4 Conclusion

This chapter presented the findings of the classroom-related factors. Just over half of the teachers who participated in the PIRLS study had completed a *Bachelor's Degree*, followed by teachers who had completed a Post-Secondary Education qualification such as a diploma. Unlike the PIRLS Literacy study, where one percent of learners were taught by teachers who had not completed Grade 12, none of the teachers of the Grade 5 learners had experienced this problem. Forty percent of the Grade 5 learners were taught by teachers who were aged between 40 and 49 and 21% were taught by teachers between the ages of 50 and 59. However, learners who were taught by teachers between the ages of 30 and 39 achieved slightly higher scores (16 points) than those taught by teachers between the ages of 40 and 49.

Most of the teachers had reported that they are *Very Satisfied* with their profession. Even though most teachers had indicated positive dispositions towards their career, there seems to be a curvilinear pattern where learners achieved 36 points higher if their teachers were *Not Satisfied* with their career.

More than half of the Grade 5 learners indicated that they *Very Much Like Reading* and achieved marginally higher scores than their peers. Additionally, almost two-thirds of the learners reported that they are never or *Almost Never* absent from school. These learners scored 55 points higher than those who were absent once a week.

For PIRLS, teachers indicated that they spent a total of 19% of their total instruction on *Language Instruction* which includes reading, writing, speaking, literature and other language skills. The teachers also reported that about 8% of their instructional time was devoted to *Reading Instruction*. Teachers were also asked to report on the type of literary and informational texts used in the classroom. As with PIRLS Literacy, *Short Stories* and non-fiction subject area books were the most popular type of literary and informational text, respectively, among the Grade 5 teachers.

The study also found that very few of the Grade 5 learners do not have a lack of prerequisite knowledge and skills. It would appear that the majority of learners have, to *Some* extent, a lack of prerequisite knowledge. Learners achieved 46 points higher if they do not lack of prerequisite knowledge compared to those who lack *A Lot* in these skills.

Teachers of more than half of the Grade 5 learners are limited to some extent in their teaching due to learners suffering from a lack of nutrition. These learners achieved 35 points lower than those in classes where teachers were limited by learners lacking nutrition. In conjunction with the aforementioned, most of the Grade 5 learners are taught by teachers who report that their teaching is affecting by their learners suffering from a lack of sleep.

CHAPTER 9: EXPLORING THE HOME ENVIRONMENT OF PIRLS 2016 LEARNERS

Karen Roux and Sarah Howie

9.1 Introduction

This chapter describes the home environment of the learners tested in PIRLS 2016. Research, both nationally and internationally, has found that the home environment plays a vital role in learner reading literacy development (see Howie et al, 2012; Mullis et al, 2012; McLeod Palane, in press; Roux, 2014) and therefore plays a prominent part in the conceptual framework for the design of PIRLS 2016. A supportive and constructive home environment fosters positive attitudes towards reading, which may, in turn, lead to higher learner reading literacy achievement (Mullis, Martin, Foy & Drucker, 2012).

The chapter comprises two sections, namely Learner Factors (9.2) and the Home Environment (9.3). The first section focuses on individual learner attitudes towards reading, motivation for reading as well as confidence in reading. The next section will explore the different aspects of the home environment as it encapsulates home resources, parents' education levels, early literacy activities and early literacy skills of learners.

This chapter will give an overall view of South African learner home background and the importance of having a strong reading literacy foundation and support from parents to enable learners to attain higher levels of reading comprehension.

9.2 Learner Factors

South African Grade 5 learners who participated in the PIRLS study were amongst the oldest in the study internationally, as the average age of the learners was 11.6 years compared to 10.2 years internationally. More than half of the learners were girls (51%). In Chapter 2, the multilingual context and the language in education policy were discussed as these aspects result in a complex environment for teaching and learning. In PIRLS 2016, 59% of the learners often spoke the language of the test at home (see Chapter 4).

A profile of the South African Grade 5 PIRLS learners writing in Afrikaans, English and isiZulu is presented in Figure 9.1. The largest percentage of learners was sampled in KwaZulu Natal (37%), followed by Gauteng (25%) and the Western Cape (15%). A breakdown of language per province can be seen in Appendix A, but analysis of reading achievement of languages within provinces is not recommended as sample sizes are not sufficient for this purpose.

The learners writing in English (46%), followed by those writing in isiZulu (37%), were the two test languages with the largest representation. Most of the learners came from remote rural areas (23%) and small towns or villages (18%). Principals reported that as many as 76% of learners came from economically disadvantaged backgrounds. The average class size was 39 learners per Grade 5 class in South Africa.

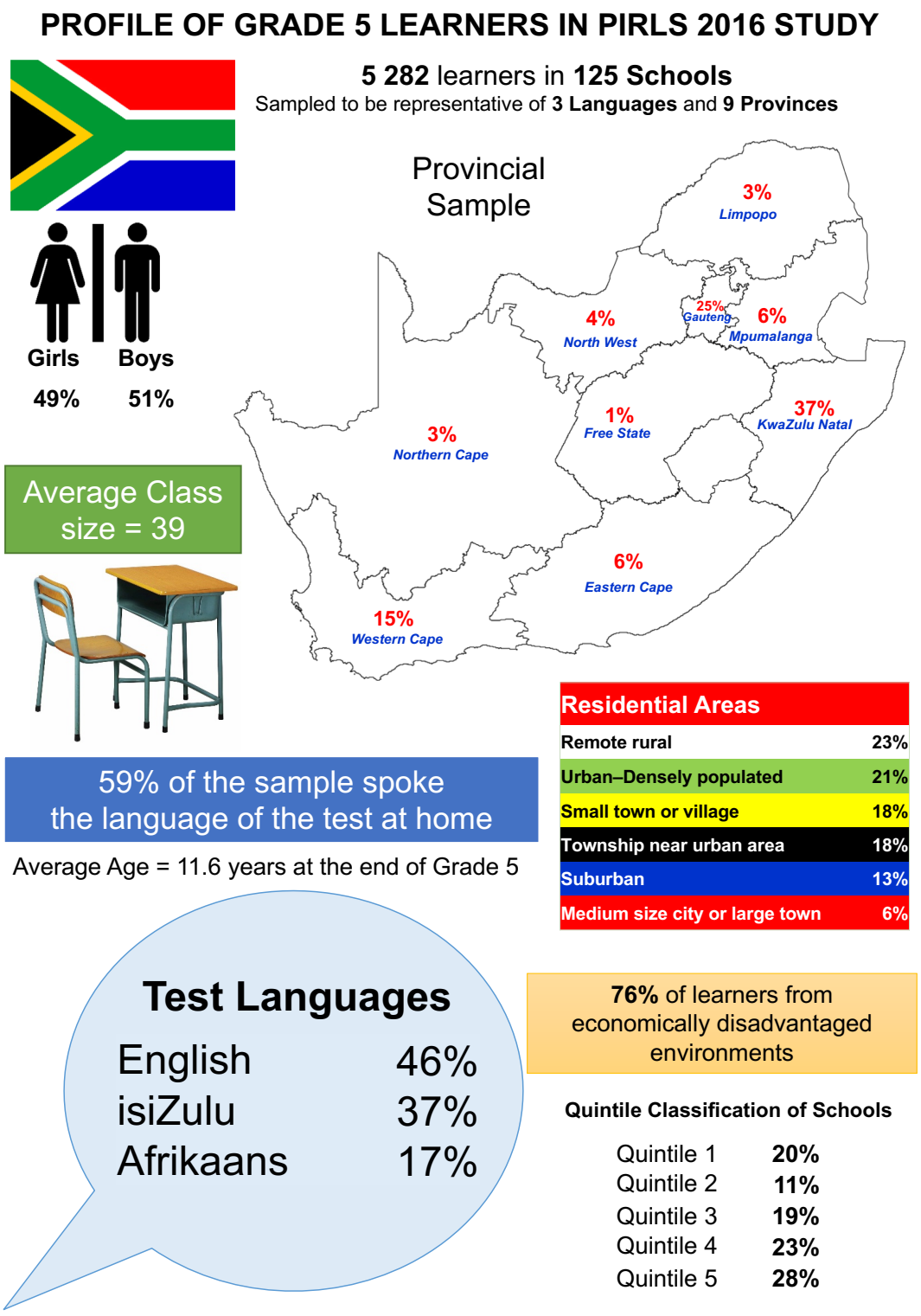
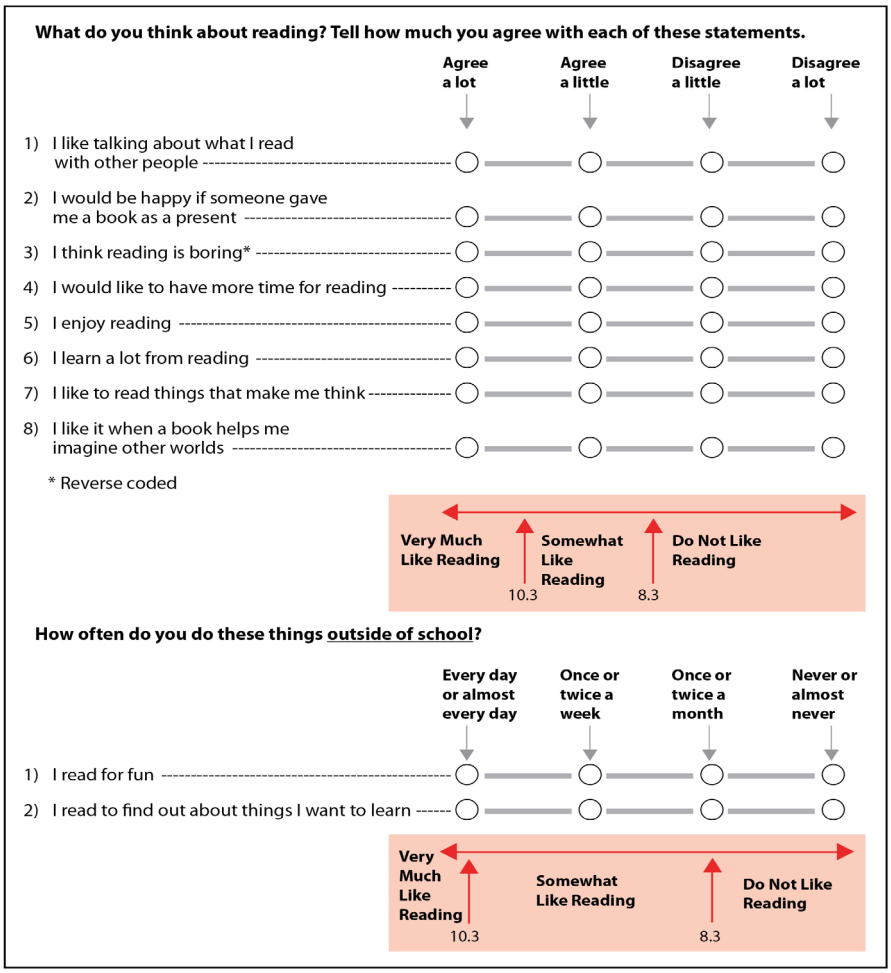


Figure 9.1: Profile of the South African Grade 5 PIRLS Learners

In the next section, learner attitude towards the test and confidence in their reading ability are described.

9.2.1 Learners Enjoy Reading

Grade 5 learners were asked to indicate to what extent they enjoy reading. They were asked a few questions about how much they agree to specific statements about reading. The Students Like Reading scale was created based on learner response. The responses were divided into three categories, *Very Much Like Reading*, *Somewhat Like Reading* and *Do Not Like Reading*. The information box below shows how the scale was created:



Information Box 1: Students Like Reading Scale

Figure 9.2 presents the percentage of Grade 5 learners who liked reading and their associated reading achievement. Only 9% of learners reported *Do Not Like Reading*. There appears to be a positive association between enjoying reading and reading achievement.

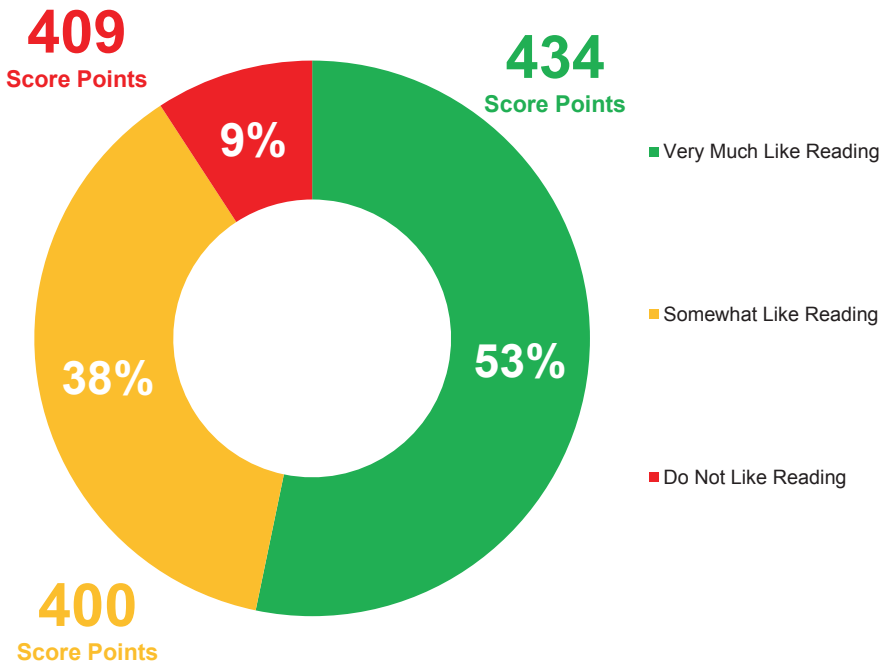


Figure 9.2: Grade 5 Learners who Like Reading and Learner Achievement

Internationally, 43% of learners *Very Much Like Reading*; however, a greater percentage (53%) of learners in South Africa reported that they *Very Much Like Reading*. They were also the highest achieving group with a reading score of 434 (SE=5.4) compared to a low percentage of learners (9%) who *Do Not Like Reading* (409, SE=11.7). The point difference between learners who *Very Much Like Reading* and those who *Do Not Like Reading* is considered to be marginal (25 points). Internationally the point difference was significantly higher (37 points).

Figure 9.3 presents the percentage of Grade 5 learners by the different language groupings and how much they like to read.

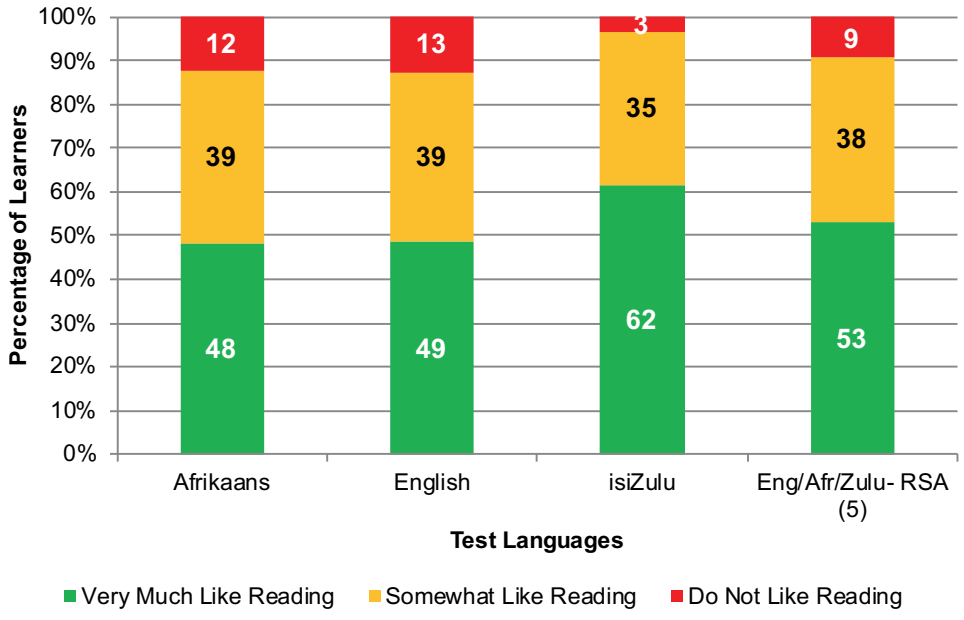


Figure 9.3: Grade 5 Learners who Like Reading by Test Language

The South African Grade 5 learners *Very Much Like Reading* across all three languages. The highest percentage of learners from the three languages who *Very Much Like Reading* was the group of learners tested in isiZulu (62%), followed by learners tested in English (49%) and Afrikaans (48%). As expected, learner reading achievement was the highest across the three languages when learners indicated that they *Very Much Like Reading* (Figure 9.4).

The next figure shows the Grade 5 learner average reading score per Like Reading category by language.

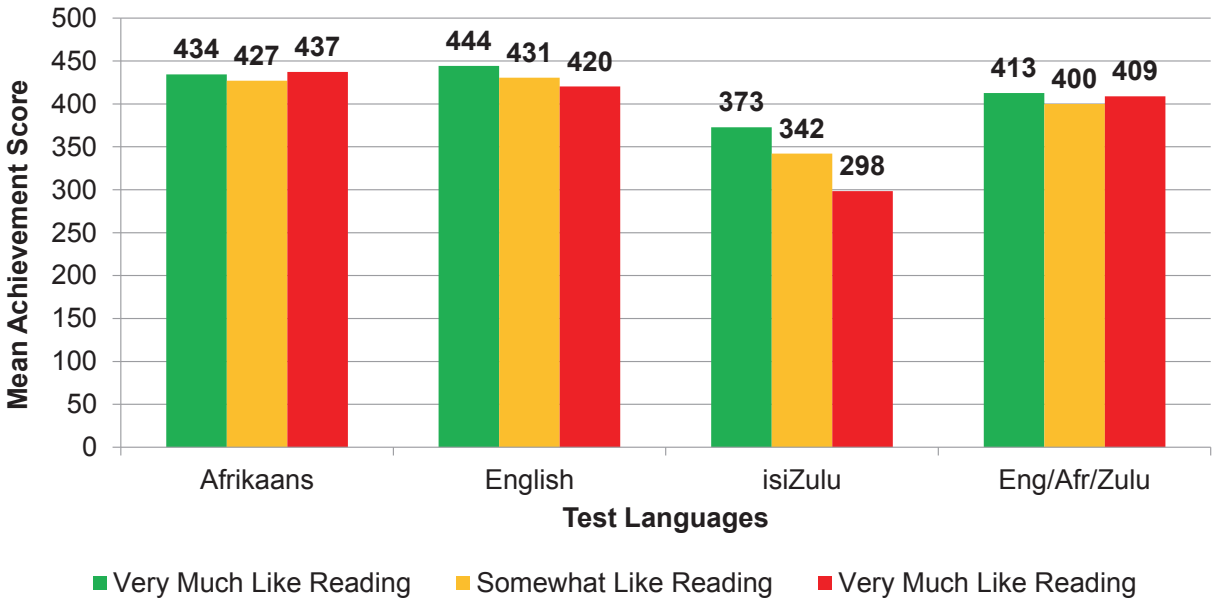


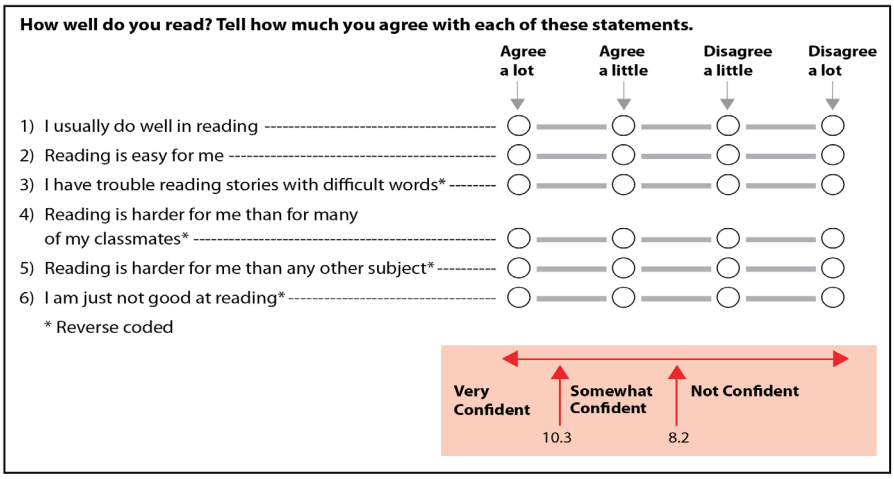
Figure 9.4: Grade 5 Learners who Like Reading and Learner Achievement by Test Language

Overall most (53%) South African learners who *Very Much Like Reading* achieved a score of 413 (SE=5.4) followed by learners who *Somewhat Like Reading* (409, SE=11.4). The largest point difference was in isiZulu (75 points) between *Very Much Like Reading* and *Do Not Like Reading*[35]. Interestingly learners who wrote the PIRLS assessment in Afrikaans and indicated that they *Do Not Like Reading* achieved a similar score to those learners who reported that they *Very Much Like Reading*.

9.2.2 Learner Confidence in Reading

Irrespective of whether learners enjoy reading and are motivated to read, learner confidence in their reading ability is based on their past experience (Thomson, Hillman, Wernert, Schmid, Buckley & Munene, 2012). In PIRLS 2016, learner confidence in their reading ability was measured by statements such as I usually do well in reading and reading is easy for me (see Box 2). The Students Confident in Reading scale comprises three categories, namely *Very Confident, Somewhat Confident* and *Not Confident*. Learner responses on the above statements were converted to one of these categories. See the box below for a depiction of how the scale was created:

[35] The point difference was statistically significant as the t-value is -7.57 (p<.05).



Information Box 2: Learner Confidence in Reading Scale

Internationally, 45% of the learners were *Very Confident* whereas South Africa had a much smaller percentage of *Very Confident* learners (29%) (see Figure 9.5), which is very telling given the low achievement of South African learners. Just over a third (36%) of South African learners indicated that they were *Not Confident* in their reading skills and abilities and there was a 110-point gap between the *Very Confident* and *Not Confident* groups (see Figure 9.6).

Figure 9.5 presents the percentage of learners in each category per language.

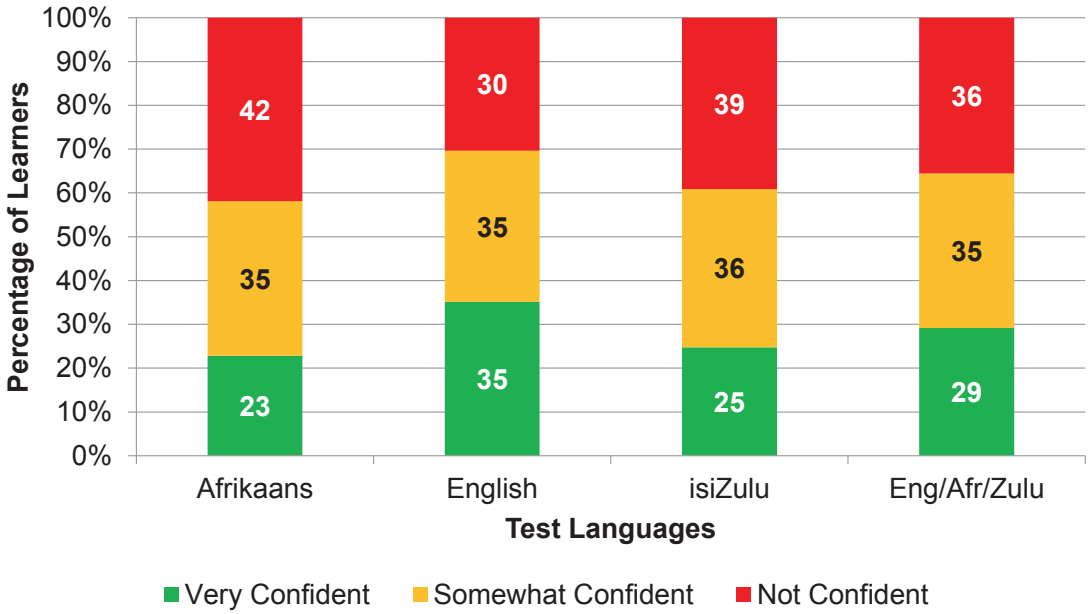


Figure 9.5: Grade 5 Learners and their Confidence in Reading by Test Language

Two out of the three test languages had the largest proportions responding that they were mostly *Not Confident*. This varied from 39% in isiZulu to 42% in Afrikaans. The largest proportion within a test language representing the most confident group were those tested in English (35%). These responses were consistent with how learners performed in these languages (see Chapter 4). Learners filled in the questionnaires after they had completed the assessment, and

given the low performance nationally, this may have had an impact on learner response. Figure 9.6 presents learner reading literacy mean score per category by test language.

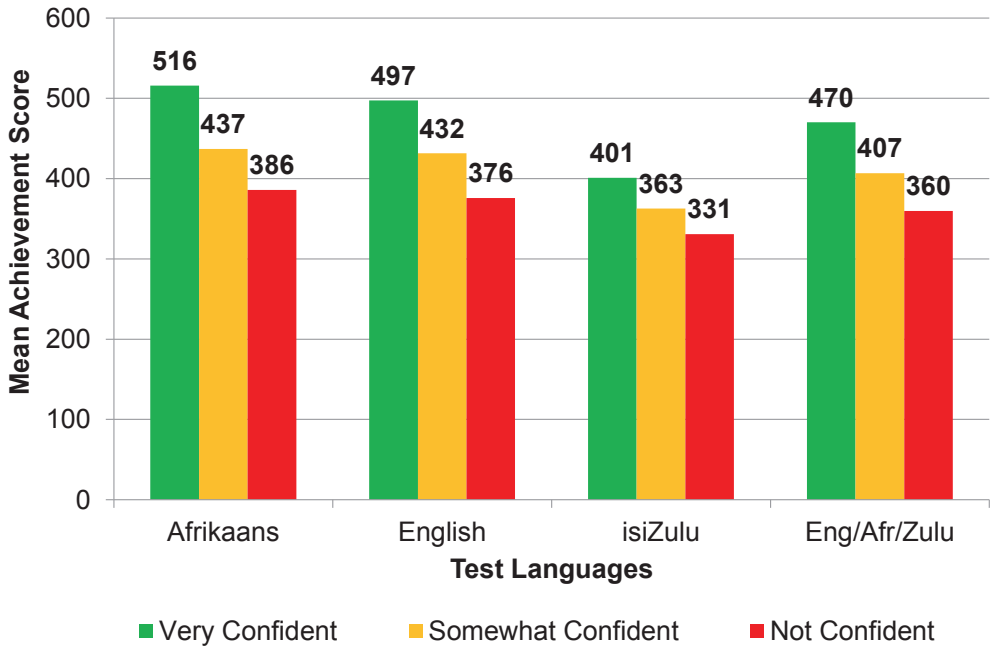


Figure 9.6: Grade 5 Learner Achievement and Confidence in Reading by Test Language

There is a direct, positive association between learner reading confidence and their reading literacy achievement. Across all languages the most confident learners achieved the highest scores. Without exception, the differences between the most confident and least confident groups exceeded 70 points with the smallest difference being 70 points (almost two years of schooling) and the largest difference being 130 points in Afrikaans (the equivalence of about three years of education). Whilst the greatest proportion of the most confident learners were those who wrote the assessment in English, the highest achievement was attained by the *Very Confident* group who wrote in Afrikaans and scored 516 points (SE=11.8) compared to the lowest achieving groups who wrote in isiZulu and were *Not Confident* who only achieved (331, SE=5.2). There was a substantial 185-point difference between these highest and lowest performing groups. The largest difference was found between learners who wrote in Afrikaans (130 points).

9.3 The Home Environment

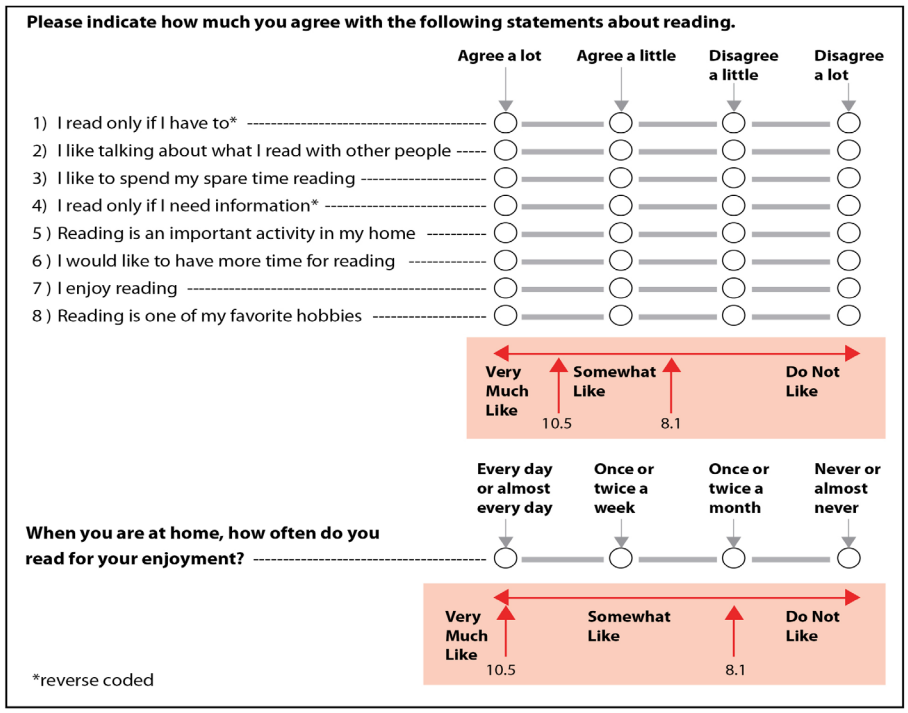
In this report, the Home Environment encapsulates three different aspects at the home level. These include Parental Factors (9.3.1), Early Literacy Experiences in the Home (9.3.2) as well as Educational Resources in the Home (9.3.3). Parental factors include aspects such as Parents Enjoy Reading and Conversations about Homework. This is followed by the type of literacy activities used before beginning primary school, type of tasks learners performed and preschool attendance of learners. The last section focuses on the availability of educational resources in the home, one of the most important factors relating to learner reading literacy (McLeod Palane, in press; Roux, 2014).

9.3.1 Parental Factors

The PIRLS *Parent Questionnaire* sought information about parental reading habits (9.3.1.1), whether they as parents or guardians conducted conversations with their child about school work (9.3.1.2) and finally, their educational aspirations for their child (9.3.1.3).

9.3.1.1 Parents Enjoy Reading

Parents are one of the first sources for children to learn and to appreciate reading and reading materials. Children may start modelling their parents' reading behaviours which in turn is likely to increase their language performance (Kloostermann, Notten, Tolsma & Kraaykamp, 2011). The Parents Like Reading (PLR) scale was created based upon parental responses to eight statements about reading as well as how often they read for their own enjoyment and their attitude to reading (see Information Box 3).



Information Box 3: Parents Like Reading Scale

Figure 9.7 presents the percentage of Grade 5 learners' parents who enjoy reading and the associated learner reading literacy score.

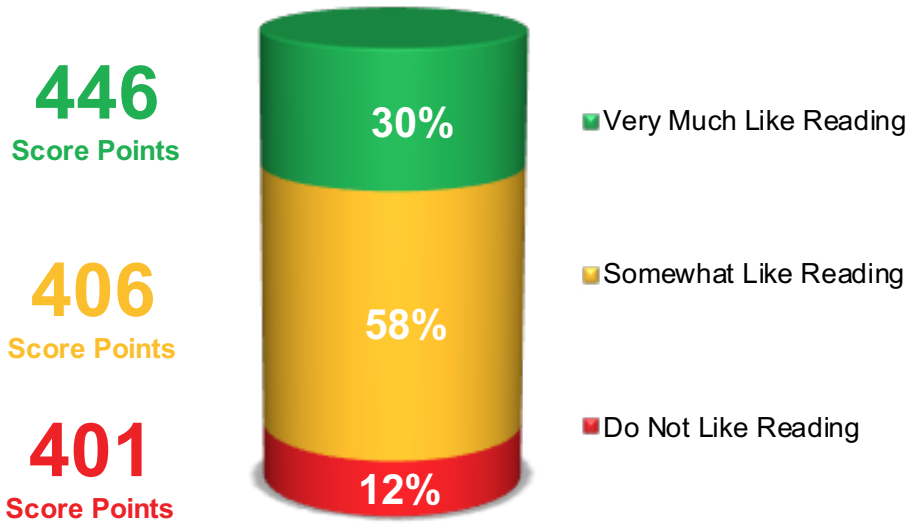


Figure 9.7: Learners' Parents Enjoy Reading and Learner Achievement

The parental responses are contrary to the children who were more positive than their parents towards reading. Internationally only 31% of learners' parents *Very Much Like Reading* and the largest group (51%) *Somewhat Like Reading*. South Africa followed the international pattern as most (58%) of the learners' parents only *Somewhat Like Reading*.

In addition to the overall learner reading achievement scores and parents enjoy reading, a figure is provided that indicates the percentage of learners per test language whose parents like reading for each language (see Figure 9.8).

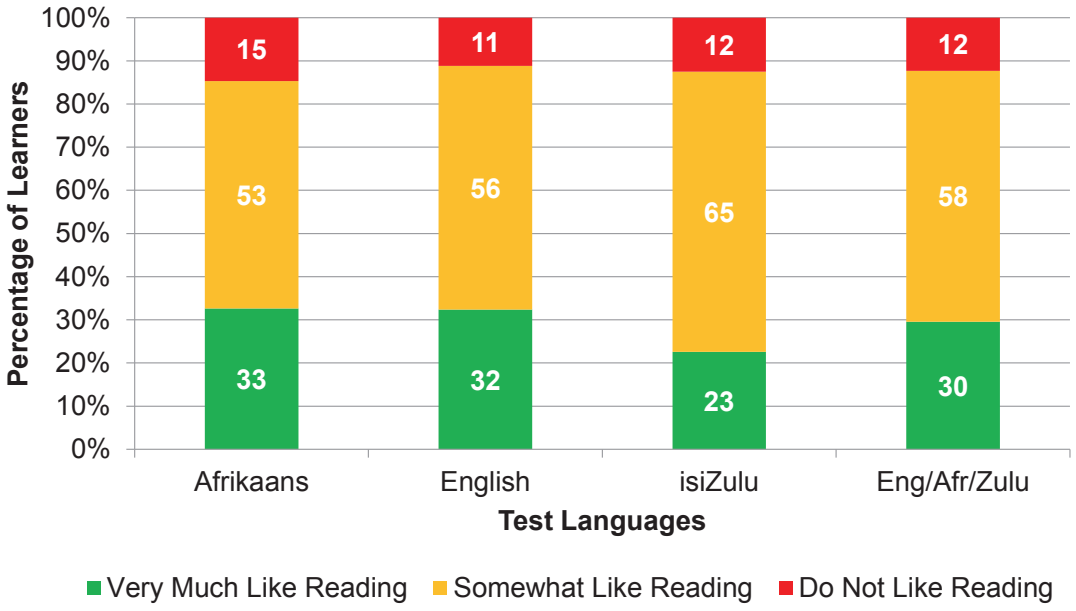


Figure 9.8: Grade 5 learners whose Parents Like Reading by Test Language

Almost two-thirds (65%) of isiZulu learners' parents reportedly only *Somewhat Like Reading* compared to 53% of Afrikaans learners' parents. The next figure shows learner average reading literacy score when compared to parental responses about like reading by language.

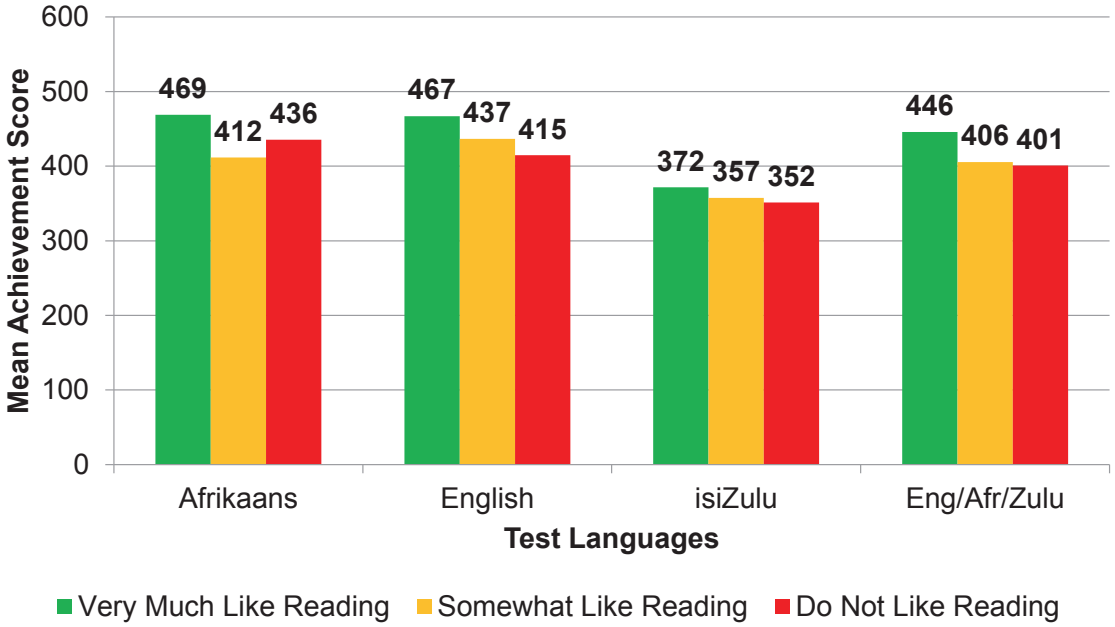


Figure 9.9: Grade 5 Parent who Like Reading and Learner Achievement by Test Language

It appears that when parents *Very Much Like Reading*, the learners obtained, on average, a higher reading literacy score. Nationally, there was a 45-point difference in learner achievement if parents enjoyed reading compared to those who did not. The variation across languages was considerable for English (52 points) and Afrikaans (33 points) but less pronounced for isiZulu (20 points).

9.3.1.2 Parent-Child Conversations about Homework and School

Parents who actively engage in conversations about their homework and school with their child provide an important support. In PIRLS 2016, parents were asked about the frequency of homework that their child receives. Secondly, parents were asked to indicate whether they discussed school and homework with their child.

Table 9.1 depicts the percentage of learners regarding the frequency of their homework and their associated reading achievement scores.

Table 9.1: Learner Homework and Achievement

	% of Learners	SE of %	Mean Score	SE
My child does not have homework do	3	0.4	372	14.8
Less than once a week	7	0.5	371	12.1
1 or 2 times a week	19	1.2	394	8.8
3 or 4 times a week	28	1.3	429	10.0
Every day	43	1.9	444	7.7

Ninety-seven percent of South African Grade 5 learners get homework, according to their parents. Almost half (43%) of the learners' parents reported that their child does homework daily. There is a positive association between learners doing homework and their reading achievement scores. For example, learners who do homework *Every Day* have an average score of 444 (SE=7.7) compared to those who do not have homework (372, SE=14.8). A 72-point difference exists between those learners who do homework every day and those who do not have homework.

Table 9.2 shows the significance per category for learner homework. For example, there is a significant difference in learner reading achievement scores between learners who have homework every day and most of the remaining categories except *3 or 4 times a week*.

Table 9.2: Significance Table of Learner Homework and Achievement

	Mean Score	SE	My child does not have homework to do	Less than once a week	1 or 2 times a week	3 or 4 times a week	Every day
My child does not have homework to do	372	14.8		●	●	▼	▼
Less than once a week	371	12.1	●		▼	▼	▼
1 or 2 times a week	394	8.8	●	▲		▼	▼
3 or 4 times a week	429	10.0	▲	▲	▲		●
Every day	444	7.7	▲	▲	▲	●	

▲ Significantly higher than ▼ Significantly lower than ● Not significantly different
Significance level < 0.05

Additionally, a few questions were selected from the *Parent Questionnaire* about conversations that parents have with their child about homework, these questions include:

- Ask if your child has done his/her homework
- Help your child with homework
- Review your child's homework to make sure it is correct
- Help my child practise his/her reading
- Talk to my child about what he/she is reading

Table 9.3 presents the percentage of learners whose parents indicated that these conversations about homework took place Very Often, Sometimes or *Never* or *Almost Never*. The table also shows learner achievement scores per category.

Table 9.3: Parents who Talk about Homework with their Child

	% of Learners	SE of %	Mean Score	SE
Very Often	82	1.0	414	6.8
Sometimes	17	1.1	431	13.5
Never or almost never	1	0.2	344	26.5

Most (82%) of the learners have conversations about homework Very Often with their parents. As with PIRLS Literacy, very few (1%) of the learners *Never* or *Almost Never* have discussions about homework with their parents. There is a 70-point difference between learners whose parents Very Often engage in discussions about homework compared to those who do not.

9.3.1.3 Parental Educational Expectations for the Learners

Research has found that parental aspirations for their child can have an impact on academic achievement (see Benner & Mistry, 2007). The *Parent Questionnaire* asked parents about the highest level of education that they expected their child to achieve. Table 9.4 shows the percentage of learners according to the educational level that parents expected their child to reach.

Table 9.4: Parental Educational Expectations and Learner Achievement

	% of Learners	SE of %	Mean Score	SE
Finish Grade 9/Standard 7	4	0.6	344	8.9
Finish Grade 12/Standard 10	16	1.0	378	6.0
Finish Post-Secondary Education	10	0.7	398	7.3
Finish Technikon Diploma	7	0.8	393	11.1
Finish Bachelor's Degree	11	0.9	434	12.0
Finish Honours Degree	10	0.9	443	9.8
Finish Master's or PhD Degree	42	2.0	445	9.3

In South Africa, 16% of learners had parents who expect their child to complete *Grade 12/ Standard 10*, while 42% of learners were expected by their parents to complete a *Master's* or *PhD Degree*. Only 11% of learners had parents who expect them to complete a *Bachelors' Degree*.

Moreover, it appears that there is some association between parents' educational aspirations and learner achievement. Learners whose parents expected them to obtain *Master's* or *PhD Degree*s (445 points) achieved higher scores than learners of parents aspiring to the lowest level of education (344 points), *Grade 9/Standard 7*. There does not seem to be a significant difference in learner achievement if parents' aspirations were for their child to complete tertiary qualification levels. For example, there is a 101-point difference in learner achievement between learners whose parents' aspirations are for them to complete *Grade 9/Standard 7* and a *Master's* or *PhD Degree*.

Figure 9.10 presents the parents' educational expectations and learner achievement per education level for each test language. Although there was a wider variation across languages, there seems to be a common pattern among parental responses.

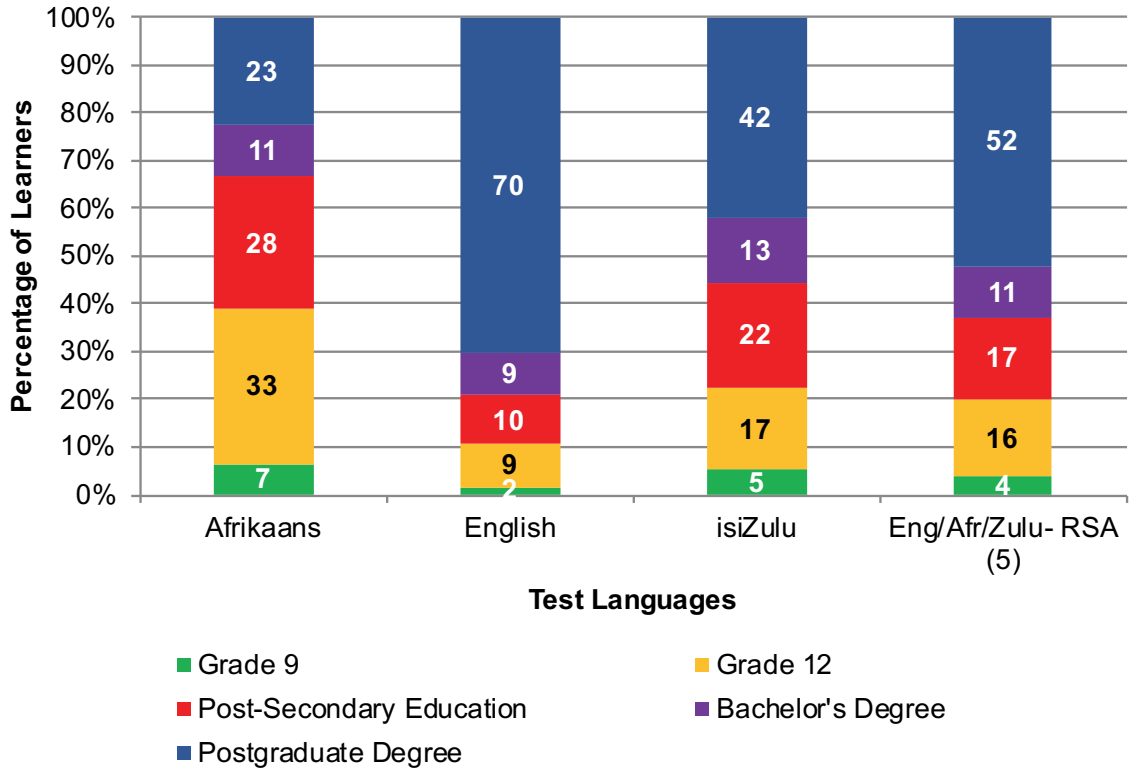


Figure 9.10: Parental Educational Expectations by Test Language

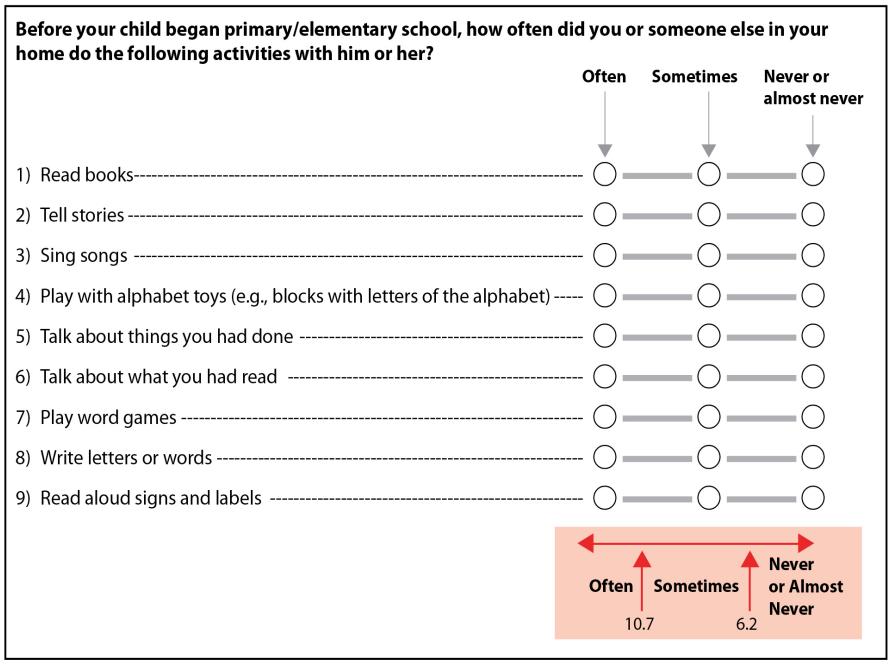
The parental aspirations were the highest for a *Postgraduate Degree* in the English group. Very few parents indicated that they aspire for their child to only complete Grade 9. Whilst a third (33%) of learners writing in Afrikaans had parents who expected their children to complete *Grade 12* only 9% of English parents expect their child to complete *Grade 12*. There was not a clear association between parental aspirations and achievement within each language group. Very rarely did the highest achieving group coincide with the highest parental aspirations.

9.3.2 Early Literacy Experiences in the Home

The PIRLS *Parent Questionnaire* asked parents to report on the early literacy experiences within the home (9.3.2.1), how well their child managed literacy tasks (9.3.2.2) and finally, whether they *Attended Preschool* (9.3.2.3).

9.3.2.1 Early Literacy Activities before Beginning Primary School

Early literacy activities are quintessential to a child's development. When parents engage in early literacy activities with their child, it has a "positive effect on the child's reading achievement" (Combrinck, van Staden & Roux, 2014, p.8). An Early Literacy Activity (ELA) scale was created to summarise parental responses to nine questions about the different types of early literacy activities in which parents participated with their children before they started primary school. The *Parent Questionnaire* asked parents to indicate how often they participated in early literacy activities with their child. The ELA scale comprises three categories, namely Often, Sometimes and *Never* or *Almost Never*. The information box below shows the cut-off points for the scale's categories.



Information Box 4: Early Literacy Activities Scale

Figure 9.11 shows the percentage of learners in each category of the ELA scale and Grade 5 learner average achievement in each category.

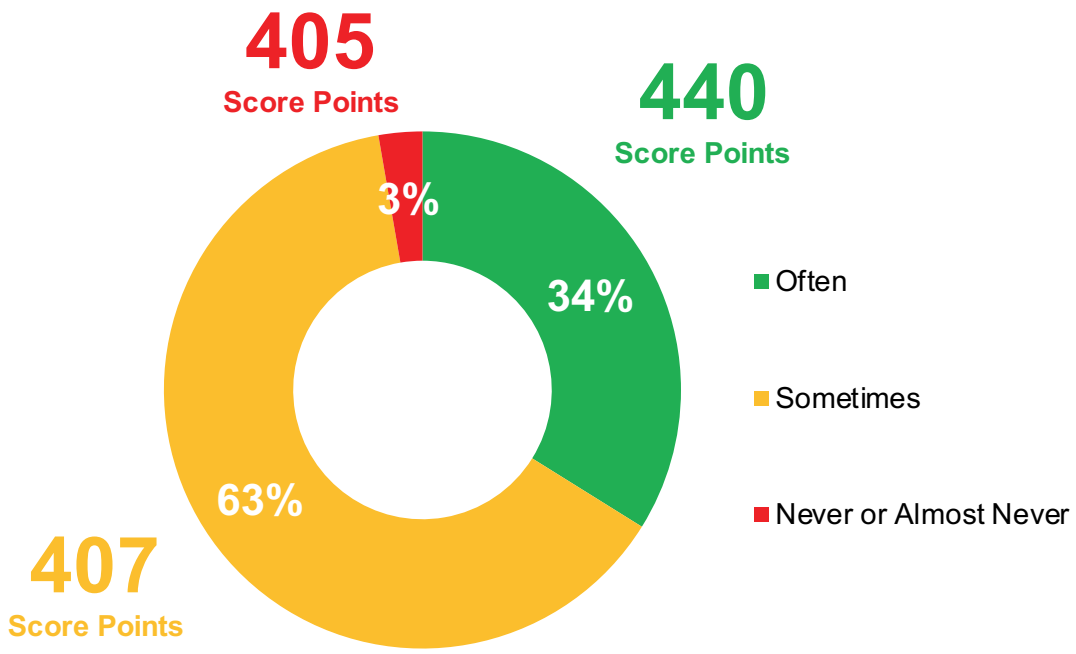


Figure 9.11: Early Literacy Activities and Learner Reading Achievement

Internationally, 39% of learners' parents often engaged them in early literacy activities; these learners also achieved higher reading scores (529, SE=0.5). Very few (3%) of learners had parents who *Never* or *Almost Never* engaged them in these activities.

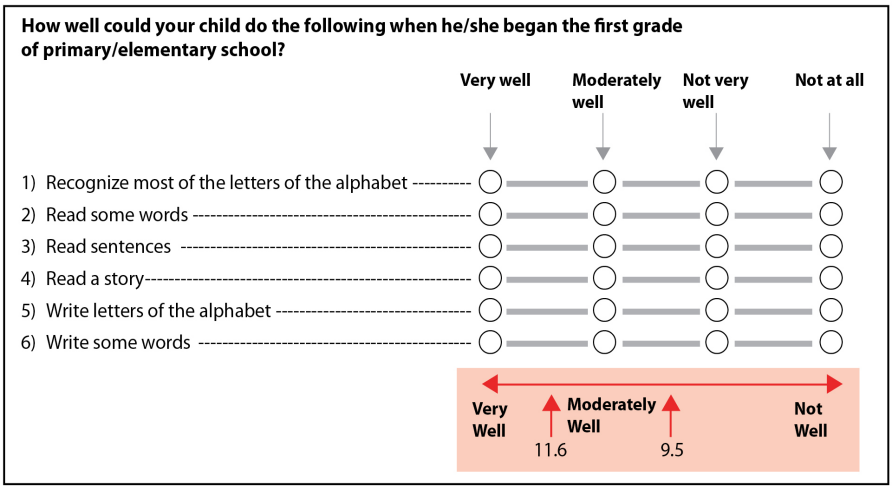
In South Africa, the majority (63%) of learners Sometimes did the early literacy activities with their parents. Similar to the international findings, only 3% of learners had parents who *Never* or *Almost Never* engaged them in those kinds of activities.

Internationally and nationally, learners achieved higher scores where parents reported their children did these activities often. Whilst internationally this difference was 110 points, nationally it was 35 points, indicating the importance of school readiness for later achievement at Grade 5. It appears that learners, whose parents often engaged them in early literacy activities, achieved significantly higher scores (440, SE=8.1) compared to learners whose parents *Never* or *Almost Never* (405, SE=21.2[36]) did so.

9.3.2.2 Early Literacy Tasks when Beginning School

An Early Literacy Task (ELT) scale was created to report parental responses to questions about the type of literacy tasks their children could do and how well they performed when they first started school. This scale showed (according to the parents) which tasks the learners could perform such as read some words or read sentences before they went to school and how well. The ELT scale categories included *Very Well, Moderately Well* and *Not Well*. Information about the scale is presented in the following information box.

[36] The large Standard Error (SE) indicates the variation within this category and therefore these findings are treated cautiously.



Information Box 5: Early Literacy Task Scale

Figure 9.12 shows the percentage of learners in each category of the ELT scale together with learner average reading achievement for each category.

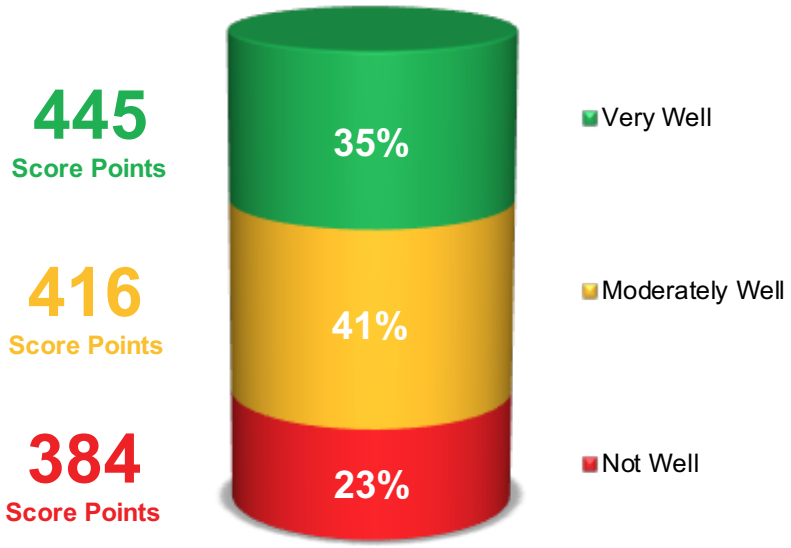


Figure 9.12: Grade 5 Learners' Early Literacy Skills and Learner Achievement

Internationally, almost one-third (29%) of learners entered school with the ability to perform the early literacy activities *Very Well*. A total of 35% of South African learners' parents reported that their child could perform early literacy activities *Very Well*. Learners achieved higher average achievement (445, SE=7.3) if they were able to do early literacy activities *Very Well* compared to *Not Well* (384, SE=8.2). It is noteworthy that more South African (35%) learners were reported to be well-prepared to enter primary school, in comparison to more than half of the other countries in the study. A significantly higher percentage of South African learners' parents reported their child doing these activities *Very Well* compared to reports in PIRLS 2011 (see Howie et al., 2012). These learners (445, SE=7.3) also outperformed their peers who were able to do these activities *Moderately Well* (416, SE=7.5).

9.3.2.3 Learner Preschool Attendance

The early years of the child (ages 0-8) are very important to lay a foundation for lifelong learning. Many educational researchers and practitioners agree that when children attend Early Childhood Development (ECD) or preschool[37], it assists in preparing them for primary school (Anderson, Shinn, Fullilove, Scrimshaw, Fielding, Normand & Carande-Kulis, 2003). White Paper 5 sets the goal for full coverage of Grade R by 2010 (DBE, 2014) as part of UNESCO's Education for All initiative. The National Development Plan (NDP) 2030 recognised that ECD is vital for later success and stipulated that there should be universal access to ECD for all children (SA Government, 2012).

Figure 9.13 presents the percentage and achievement scores of learners, who according to their parents, *Attended Preschool*.

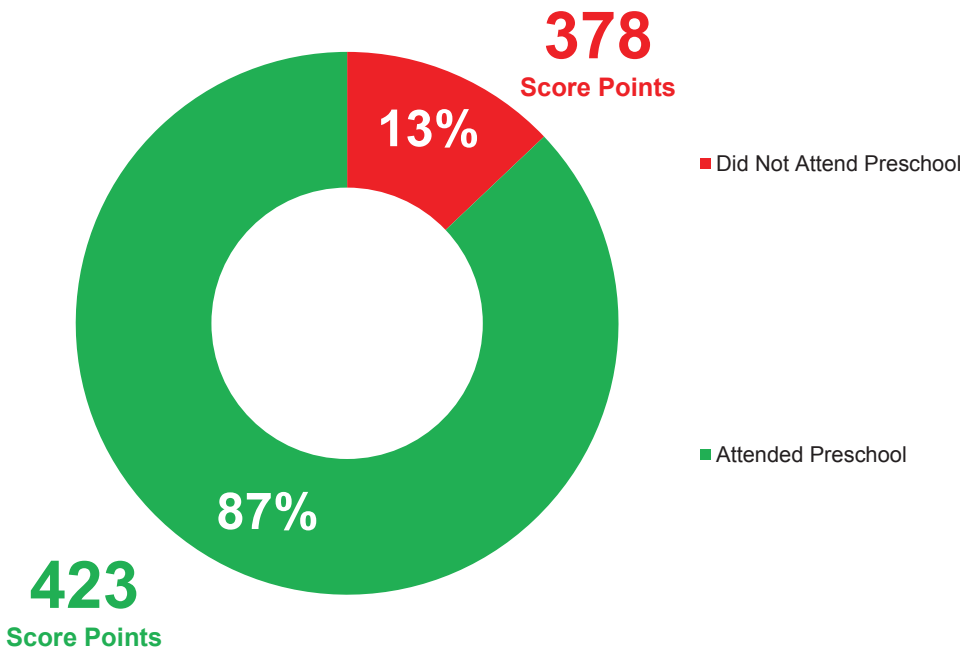


Figure 9.13: Grade 4 Learners who attended Preschool and Learner Achievement

Nationally, 87% of learners *Attended Preschool* compared to 89% internationally and these learners achieved substantially higher mean scores (423, SE=7.6) compared to learners who *Did Not Attend Preschool* (378, SE=7.6). There was an equivalent of more than one years' schooling difference between the two groups (45 points).

Table 9.5 depicts the number of years learners *Attended Preschool* as reported by the parents.

[37] Preschool is an umbrella term used for any formal schooling in South Africa before starting Grade 1. It includes Grade R.

Table 9.5: Number of Years at Preschool and Learner Achievement

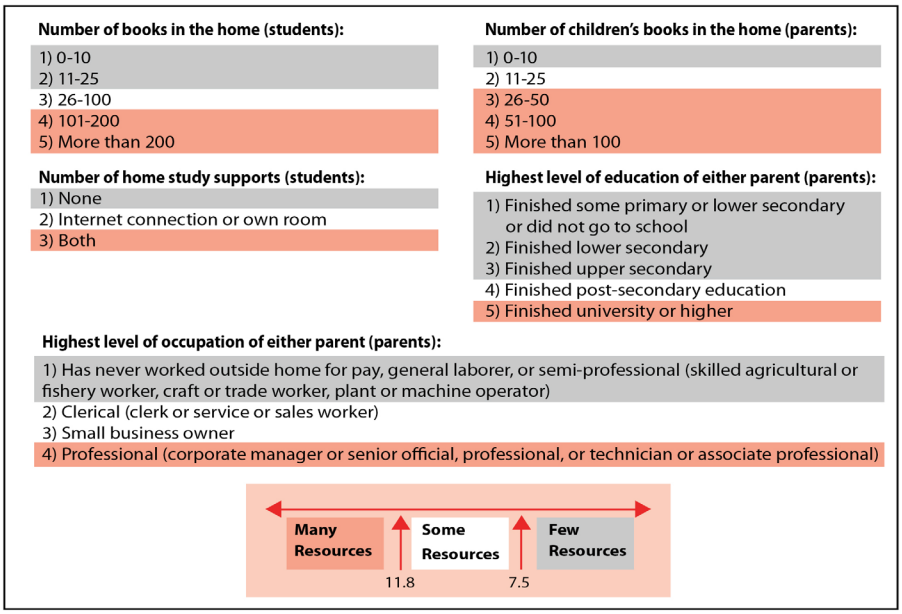
	% of Learners	% of Learners SE	Mean Score	SE
Did not attend	13	1.0	378	7.6
1 year or less	22	1.3	393	7.8
2 years	18	1.0	423	7.7
3 years or more	47	1.8	436	9.4

Internationally, more than half of learners (59%) had parents who reported that their child had attended *Three Years or More* of preschool. Nationally, 47% of learners *Attended Preschool* for *Three Years or More* and almost one-quarter (22%) *Attended Preschool* for only *One Year or Less*.

Internationally, there is a positive relationship between the number of years learners attended pre-primary and reading achievement, as learners who had attended *Three Years or More*, achieved 48 points more than those who *Did Not Attend*. In South Africa, there also appears to be a positive association for learners between the total number of years they attend preschool and their reading literacy achievement. For example, South African learners who attended *Three Years or More* of preschool obtained higher achievement scores (436 points) compared to those learners who Did Not Attend (378 points) preschool or who only *Attended Preschool* for *One Year or Less* (393 points).

9.3.3 Educational Resources in the Home

The *Parent Questionnaire* asked parents about the various types of resources available in the home. The Home Resources for Learning (HRL) scale combines data from both the learners and their parents and the scale range, (*Few, Some* and *Many Resources*) and was created to report on the resources available at home. The level of educational resources in the home was gauged by five questions on resources, books in the home (including children's books specifically), highest level of education and occupation of the parents. The information box below shows which items the HRL scale included as well as how each was grouped according to the scale's three categories.



Information Box 6: Educational Resources in the Home Scale

Over the years, research has shown that there is a strong relationship between learner achievement and socio-economic status (SES) (Chakraborty & Harper, 2017; Howie et al, 2012; McLeod Palane, in press; Roux, 2014; Spencer, Clegg, Stackhouse & Rush, 2017). Previous cycles of PIRLS have found that there is a positive relationship between parental education and occupation and learner achievement (Howie et al., 2009; Mullis et al., 2012; Mullis, Martin, Kennedy & Foy, 2007).

Figure 9.14 shows the percentage of learners at each category of the PIRLS 2016 Home Resources for Learning scale[38]. Note that the scale was created on the resources described in Information Box 6.

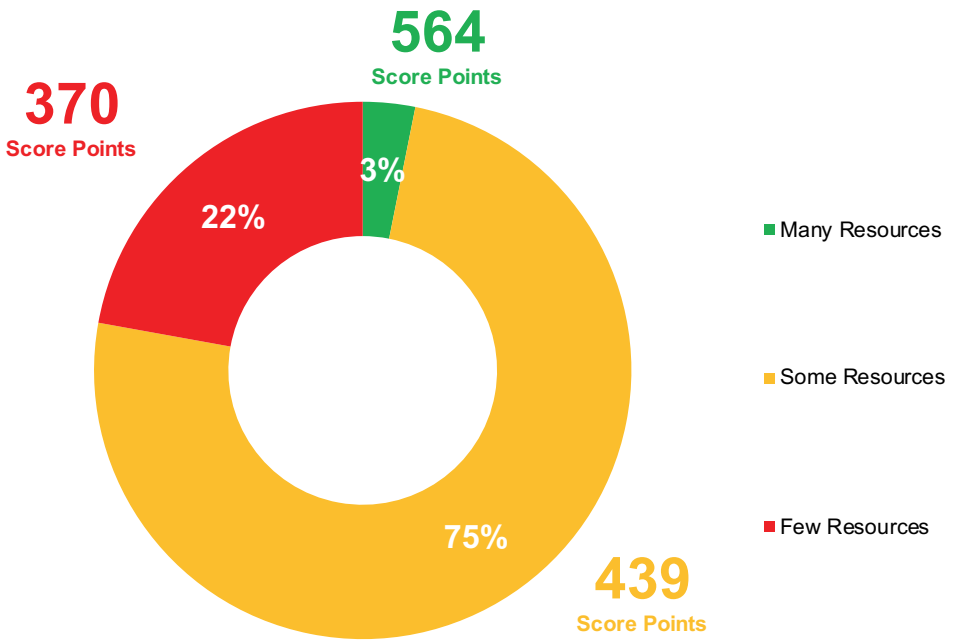


Figure 9.14: Home Resources for Learning and Learner Achievement

[38] For South Africa, the data are available for at least 50% but less than 70% of the learners.

Only 3% of South African learners come from homes with *Many Resources* compared to 20% internationally. The majority (75%) of South African Grade 5 learner homes were described as having *Some Resources*. A positive association between home resources and learner achievement was observed. In South Africa, learners who have *Many Resources* obtained the highest mean score of 564 (SE=11.0) (considerably higher than the international average for achievement, which is set at 500 and on par with the average achievement of the top performing countries) compared to learners who are in homes with *Some Resources* (439, SE=7.8) and *Few Resources* (370, SE=5.0), which translates to a 194-point difference and five years in education terms. It appears that having: books in the home, child's having their own room, Internet access, better-educated parents and higher level occupation contributed substantially to learner reading literacy achievement.

9.4 Conclusion

This chapter summarised the findings related to the home environment. The South African learners were older, and had less access to resources at home than their peers internationally, but similar proportions of learners spoke the test language at home.

Whilst most Grade 5 learners were positive about reading, most of their parents were less positive. Learners of parents, who were less positive, achieved much lower scores than learners whose parents liked reading. Almost all learners have homework on a weekly basis with only a very few parents indicating that their children do not get homework. About four out of ten learners receive homework every day.

Nationally, 87% of learners *Attended Preschool* compared to 89% internationally and these learners achieved higher mean scores compared to learners who *Did Not Attend Preschool*. However, parents of only 68% of learners responded to this question. It is worth noting that in 2006, 87% of learners attended some form of preschool education whilst in 2011, 82% of learners *Attended Preschool*. In both previous cycles of PIRLS, the majority (more than 80%) of learners' parents responded to the question about their child attending preschool.

A large proportion of South African parents have exceptionally high educational aspirations for their children as 42% of the parents would like their child to finish a *Master's* or *PhD Degree*, followed by completing a *Bachelor's Degree* or *Post-Secondary Education*. This cannot be explained by the fact that the sample only represents three particular languages within South Africa, as the nationally representative country sample for Grade 4 revealed a similar finding.

Seventy-five percent of households have, on average, *Some Resources* at home. Very few learners come from homes that are well resourced - books at home, study supports such as Internet access and tertiary parental education and higher occupation levels. These learners also achieved higher than the international average score (564, SE=11.0) and higher than their peers and on par with the average performance of the top achieving countries.

In conclusion, the home environment appears to be an important factor in learner reading literacy achievement. Learners without resources and active parental involvement tend to perform considerably lower than their peers.

CHAPTER 10: CONCLUSIONS AND REFLECTIONS

Sarah Howie

In this chapter, an overview of the PIRLS 2016 is given, followed by the key findings for the South African Grade 5 learners in PIRLS and the conclusions and implications arising from the findings.

10.1 Overview of PIRLS 2016

Progress in International Reading Literacy Study (PIRLS) 2016 is an international comparative evaluation of reading literacy of Grade 4 (9 year-old) learners. PIRLS is a trend study and therefore, the design and methods applied have been carefully developed and utilised to permit the measurement of changes over time. South Africa has participated in three rounds, namely 2006, 2011 and 2016.

PIRLS 2016, PIRLS 2011 and PIRLS 2006 were all undertaken by the Centre for Evaluation and Assessment (CEA) at the University of Pretoria, which served as the National Research Centre. These studies were conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA) responsible for the overall research design, encompassing the reading curriculum framework and the research questions. Very specific and high standards were instituted to guide the sampling process, quality assurance of the translation phase, the contextualisation of items and the data collection phase. The data cleaning and data analysis took place within both the National Research Centre (CEA) and at the IEA's International Data Processing Centre. The outcomes of all the quality assurance processes indicate that the data and the processes involved in the conduct of the study were both valid and reliable.

PIRLS 2016 was conducted in 50 countries and with 11 benchmarking participants comprising 340 000 learners from 12 000 schools in 2015/2016. It is one of the largest, most complex and influential assessments of reading literacy internationally. In South Africa, 18 092 learners from 349 schools in Grade 4 (12 810 learners) and Grade 5 (5 282 learners) participated. South Africa's participation in both PIRLS 2006 and PIRLS 2011 had revealed a very low level of achievement in reading literacy. At both Grades 4 and 5, the average performance of learners was well below the international average of 500 points at both grades in both studies.

The low achievement results in PIRLS 2006 led directly to a change in the national design for PIRLS 2011, which also impacted on the design for 2016. For PIRLS 2016 at the Grade 4 level, a decision was made to assess the learners with a less difficult assessment, called PIRLS Literacy, designed by the international study centre with the assistance of the national

centres. Processes similar to those of PIRLS were followed in the design and development of PIRLS Literacy, but designed as a shorter, easier test and at a lower cognitive level than that of PIRLS 2016. prePIRLS 2011, with similar characteristics to PIRLS Literacy, represented a new baseline measure for South Africa for Grade 4, and in both years, were tested in all 11 languages. The African language groups had been not assessed at Grade 5 level in 2011 due to the very low levels of performance in PIRLS 2006 and the difficulty found in accurately measuring trends in those nine languages. However, in PIRLS 2016, it was decided to include the largest language group isiZulu to ascertain whether there had been any developments in the African languages to inform future decisions regarding the design. Ten-year trend data is therefore possible for learners tested in Afrikaans and English for Grade 4 and Afrikaans, English and isiZulu at the Grade 5 level (comparison for isiZulu only between the 2006 and 2016 participation rounds).

This report focuses primarily on significant factors linked internationally to the achievement of South African Grade 5 learners who were benchmarking participants. This report presents the second descriptive analysis of the PIRLS 2016 data, as the Grade 4 learners were reported separately in a previous report and the ePIRLS study report will follow. In this chapter, the key findings are summarised, followed by some initial reflections and implications.

10.2 Key Findings for PIRLS 2016

Firstly, the key findings are presented for international and national achievement and thereafter, some of the key findings from the contextual data collected from learners, parents, teachers and principals are given.

How did South Africa perform in PIRLS 2016 and how does this compare internationally and with previous studies?

Internationally, out of 50 countries assessing Grade 4 learners, the top performing countries were the Russian Federation, Singapore, Hong Kong SAR, Finland and Ireland with four out of the five the same as PIRLS 2011. The Russian Federation learners achieved significantly higher scores than all others in the study. Hong Kong SAR and Singapore had used earlier results of PIRLS 2001 and PIRLS 2006 to implement systemic reforms in the reading curriculum, instructional materials and teacher education, as had the Russian Federation (the top performing country for PIRLS 2006 and 2011) following structural changes. Furthermore, three countries (including the Russian Federation) had raised their levels of reading achievement consistently between 2001 and 2016. Girls continued to outperform boys internationally, as they had in 2006 and 2011.

Ninety-six percent of learners internationally have been educated to reach a basic level of reading (called the Low International Benchmark). Some countries succeeded in reaching this benchmark almost universally, with 99% of their learners from the Russian Federation, Hong Kong SAR, Norway (Grade 5), Latvia, Netherlands and Croatia doing so. Impressively, almost one-third (up from one-fifth in 2011) of learners from Singapore reached the highest level of achievement, the Advanced International Benchmark. This contrasts with the African countries

where less than 40% achieved the Low International Benchmark and almost none achieved the Advanced International Benchmark.

For South Africa, the following conclusions were drawn:

For South Africa overall, the results were low (406 points) compared to the international average (500 points), given that these were Grade 5 learners. The Eng/Afr/Zul sample of Grade 5 South African learners achieved the lowest results of the benchmarking participants. In relation to the 50 participating countries against which they could only be benchmarked, the South African Grade 5 learners achieved significantly below 45 other participating countries' Grade 4 learners, and were comparable to Oman and Kuwait's Grade 4 learners and above only the three African countries Egypt, Morocco and South Africa's Grade 4 learners.

As explained earlier in the report in Chapters 1, 3, and 6, a trend analysis of reading literacy achievement was only possible for the Grade 5 cohorts for Afrikaans and English in the 2006, 2011 and 2016 rounds of participation and for IsiZulu 2006 results compared to 2016. Therefore the trends included in this report were limited to three language groups in the Grade 5 PIRLS as no national comparison is possible. The combined score for Afrikaans and English revealed that there were no statistically significant differences between 2011 and 2016 but change was found over a 10-year period with the 2016 score of 434 points being significantly higher than the 2006 average of 403 score points (see Table 6.1). Individually, no change was found for either Afrikaans or English as the differences in scores are not statistically significant (see Table 6.2). However, a large and significant change over the 10-year period was found for the isiZulu group which improved in 2016 compared to 2006. This may be partly explained by the fact that isiZulu started from a very low base.

There was a significant gender gap in achievement, with South African Grade 5 girls outperforming boys overall. Over the 10 years, for the combined Afrikaans and English groups, boys improved significantly whilst, although girls achieved higher scores each cycle, their performance remained unchanged. For both boys and girls in isiZulu, there was a substantial and significant improvement and almost a 100-point difference over the past 10 years. There were also significant improvements found for boys writing in English, as well as girls and boys writing in isiZulu, who achieved significantly higher scores in the 2016 round when compared to 2006. No changes were observed for learners writing in Afrikaans.

Across the three languages, learners attained less than 100 points (406 points) below the international average with the highest score achieved by those writing in English (435 points). Learners tested in isiZulu languages, despite the notable improvement mentioned earlier, achieved (358 points) well below the international average (500 points).

There was great variation in the provincial level achievement scores. However, given the sampling across provinces, due to the three languages and their prevalence, the provincial comparisons across are less important for the Grade 5 data than the Grade 4 data (see Chapters 3 and 4) and more emphasis on each province's results.

More learners were able to reach a rudimentary level of reading and attain the Lowest International Benchmark in 2016 (51%) than in 2006 (36%). However, the South African Grade 5 learners were well below the achievement levels of the international Grade 4 learners where only 4% of learners did not achieve the international benchmarks compared to 49% of the South African Grade 5 learners (see Figure 6.8). Of concern is the drop at the top of the achievement distribution with fewer learners reaching the highest international benchmark, Advanced (2%) and High (7%), meaning very few were able to read at a more advanced level with no learners writing in isiZulu attaining the Advanced level and very few the High Level. Across the three languages, considerable variation in performance was found and whilst fewer than four out of ten learners (37%) writing in Afrikaans and English did not reach the international benchmarks, this was almost seven out of ten learners writing in isiZulu (69%). This failure points to an inability to locate and retrieve explicitly stated detail when reading literary texts. When reading informational texts, not reaching the Low International Benchmark also implies an inability to locate and reproduce two or three pieces of information from within the text, and to use subheadings, text boxes and illustrations to locate parts of the text when reading informational texts (see Chapter 2).

From a low base in 2006, more learners in South African Eng/Afr/Zul Grade 5 sample were able to read for meaning after 10 years (49% in 2016 could not reach the international benchmarks compared to 64% in 2006). In particular, the growth has been considerable in isiZulu where 92% of learners previously could not reach the benchmarks, this reduced to 69% 10 years later. Improvements of 10% were observed for English and seven percent for Afrikaans (see Table 6.5) over the same period. In four provinces, half or more of the learners did not reach the international benchmarks ranging from 50% in the Eastern Cape to 62% in KwaZulu Natal.

Who are the learners in PIRLS 2016 and what type of environment do they have at home?

The South African Grade 5 learners were much older, as expected compared to Grade 4 learners internationally, but similar proportions of learners spoke the test language at home to their peers and larger proportions of learners spoke the test language at home compared to some high achieving countries. However, they had significantly less access to resources at home than their peers internationally. Very few learners come from homes that are well resourced (books at home, study supports such as Internet access and tertiary parental education and higher occupation levels). These learners that do, also achieved well above the international average score and much higher than their peers.

Grade 5 learners who liked reading, and were confident readers, achieved higher scores. Furthermore, children of parents who liked reading achieved on average higher scores than those whose parents did not. Whilst most Grade 4 learners were positive about reading, most of their parents were less positive. Learners of parents, who were less positive, achieved much lower scores than learners whose parents liked reading. Almost all learners have homework on a weekly basis with only a very few parents indicating that their children do not get homework. About four out of ten (43%) learners received homework every day.

Nationally, 87% of learners *Attended Preschool*, which was comparable to 89% internationally and these learners achieved higher mean scores compared to learners not attending preschool.

As in 2011, a large proportion of South African parents have exceptionally high educational expectations for their children as 42% of the parents would like their child to complete a *Master's* or *PhD Degree*. In general, a much higher proportion of South African parents aspire to their children undertaking postgraduate education than the international average, which is already considered high. There appeared to be little interest in the *Post-Secondary Education* option.

Finally, the home environment appears to be important in reading literacy achievement, and whilst this report has not exhausted exploring the data, it is clear that learners without resources and active parental involvement tend to perform lower than their peers.

What was the classroom environment of the PIRLS learners and what was the profile of the teachers who taught them language?

A complex and varied profile emerged of the teachers who taught the PIRLS 2016 Grade 5 Eng/Afr/Zul learners. Internationally, 86% of learners were taught by highly qualified teachers with Bachelor (60%) or *Postgraduate Degrees*. In the three South African languages, just more than half of the learners were taught by degreed teachers. A small but significant percentage of learners (7%) were taught by teachers whose highest qualification was Grade 12. A substantial proportion of the learners (38%) were taught by teachers with a *Post-Secondary Education* qualification (from a College of Education). No Grade 5 learners had teachers who reported having *Postgraduate Degrees*. About three-quarters of the learners were taught by teachers with primary school teaching qualifications, whilst almost one out of five learners was taught by teachers who had a secondary school teaching qualification. On average, South African teachers had taught for 17 years, the same as the average internationally. A concern arises with the teacher's age, as nearly two-thirds of the teachers were older than 40 years. In six provinces, there was an absence of teachers younger than 25 year and in two provinces, none younger than 30 years. There was no linear association of teacher's age and achievement. Learners whose teachers were aged between 30 and 39 years achieved the highest reading achievement followed by teachers who were aged between 50 and 59. Just over half of the learners are taught by teachers who reported that they are very satisfied with their profession. However, there was a negative correlation between the group who were very satisfied and the way in which their learners performed. The learners taught by teachers with negative dispositions towards their careers achieved higher scores than those learners who were taught by teachers very satisfied with their careers. This should be investigated further but suggests that the high performing environments may be very demanding and stressful.

The average class size was 39, but this varied substantially across languages and provinces and appeared to have increased over the past 10 years. Learners writing in isZulu were in classes of 46 learners on average compared to those in Afrikaans where there were 32 learners. South Africa teachers reported the most time spent on instruction out of all the

benchmarking participants and almost double the time spent by the top performing countries in PIRLS. Amongst the differences found was that the South African teachers spend about eight percent of their time on reading compared to the Russian teachers spending about three times that amount. South African teachers indicated that they spent a total of 19% of their total instruction on *Language Instruction* which includes reading, writing, speaking, literature and other language skills. *Short Stories* and non-fiction subject area books were the most popular type of literary and informational text, respectively, among teachers. There was no relationship found between instructional time and achievement in reading, possibly indicating a lack of effective teaching and learning. There was also variation across languages in terms of time on task for language and reading.

As in 2011, the teaching of more complex reading skills (such as making generalisations, describing text style and structure, and determining the author's perspective) is introduced at a much later stage for South African learners than internationally. An interesting finding is that the top performing country, the Russian Federation, completes all of the skills and strategies in Grades 1-3, whereas most countries are still emphasising at least two of the skills in Grade 4. South African Grade 5 learners exposed at an earlier grade tended to achieve higher scores in reading.

More than half of the Grade 5 learners indicated that they *Very Much Like Reading* and achieved higher scores than their peers. Most learners (84%) had teachers who reported that the majority of learners have, to *Some* extent, a lack of prerequisite knowledge required to cope fully with the curriculum demand for Grade 5. There were very few of the Grade 5 learners (5%) who were considered not to be lacking the prerequisite knowledge and skills. In terms of learner availability to learn, twice as many South African learners were absent from school on a weekly basis than their peers internationally, which was negatively associated with their achievement. Well above the international average, more than half of the South African Grade 5 learners are in classes where teachers report their teaching is limited because learners come to school suffering from a lack of nutrition (especially in Limpopo and Mpumalanga where more than 80% of learners' teachers feel constrained by this) and achieved lower scores than those who are in classes where teachers are not limited by learners lacking nutrition. In conjunction with the aforementioned, about 60% of the Grade 5 learners are in classes where the teachers report that their teaching is limited to *Some* extent by learners going to school having had too little sleep and more especially in the densely populated urban areas.

How was the environment of the schools that the PIRLS learners attended and how did it relate to reading achievement?

A large percentage (39%) of Grade 5 learners came from schools in remote rural areas. These learners also achieved considerably lower scores than their peers in other areas. About three-quarters of schools comprised mostly learners from disadvantaged economic backgrounds with more affluent learners achieving more than 100 points more than learners in schools with less affluent learners. A much higher proportion of parents seem satisfied with their child's school than internationally and there appears to be an association with better achievement.

Only 5% of learners attended schools where school principals indicated that in their schools the majority of learners entered school with early literacy skills. These learners achieve much higher scores (which are equal to the international average) than those in schools where a smaller percentage of learners enter with early literacy skills.

About a quarter of the learners were in schools where school principals reported that their schools are not affected by resource shortages. Three-quarters of the learners attended schools where the school principals indicated that the inadequacy of the school resources hampered the teaching and learning process, *Somewhat* or *A Lot*. Almost half of the Grade 5 learners (45%) attended schools with no libraries and achieved on average 34 points less than schools with libraries. As with the school libraries, less than 43% of learners attend school with no computers available for instruction. Little more than one out of ten school principals reported that they have a computer available for every one to two learners. These learners also achieved 88 points higher than their peers who do not have access to computers.

A small percentage of learners (4%) attend schools where principals report having a very high academic emphasis and this is associated with higher achievement. Interestingly whilst teacher reports about academic success correlate highly with the principals' reports, this was not the case in South Africa. The percentage of learners in schools, where teachers rated there to be a *Very High Emphasis*, is higher and the relationship with achievement much weaker. Less than half of the learners (43%) were in schools where principals reported they hardly have any problems with teacher behaviour. An association between teacher behaviour and learner reading literacy achievement was observed both internationally and nationally: those schools where there were more serious problems with teacher behaviour reported that learner achievement tended to be lower (41-point difference). Absenteeism and failure to complete the curriculum was a problem as was teachers arriving late for school to a lesser extent.

About a quarter of the learners attend schools that are considered as having *Hardly Any Problems* with School Discipline and Safety compared to 62% internationally. It is important to bear in mind that perspectives on what constitutes a severe problem in a school may differ across countries and even within countries. The situation in South Africa appeared more favourable than that in the other African countries in general. Grade 4 learners achieved on average 28 points higher if they attend schools with little or no problems compared to learners who attend schools with *Moderate to Severe Problems*. The most problems seem to emerge in Mpumalanga and the Northern Cape. In three provinces (Gauteng, Northern Cape and Western Cape), there were substantial differences in scores between learners attending schools with *Hardly Any Problems* and those in schools with *Moderate to Severe Problems* (over 100 points in the Northern Cape). Internationally and nationally, there appears to be a negative relationship between the frequency of bullying and achievement in reading. In schools where bullying occurred *About Weekly*, the learners achieved 60 points less than their peers, who reported that they are *Almost Never* bullied at school. Learners were also asked to report on their sense of belonging at school. On average, when learners have a *High Sense of Belonging* (60%), there is hardly any difference in achievement between them and those learners with *Little Sense of Belonging*.

A number of school-level factors relating to the school environment and climate that appeared to have been significant in the PIRLS study, are positively associated with the Grade 5 learner reading literacy performance. Some of these also appear to be related to achievement over time (Howie et al., 2017).

10.3 Initial Reflections and Implications Arising

In this summary, a brief reflection is presented in terms of the main findings and their implications. The implications arising from this initial descriptive analysis of the PIRLS 2016 are already considerable. Further analyses no doubt will be forthcoming and in particular, the secondary analyses of contextual factors and their effect on achievement are to be encouraged. However, in the absence of an in-depth analysis, the following conclusions can already be made and a number of recommendations be proposed:

1. ***The national level of achievement of South Africa Grade 5 learners has remained low, despite some changes, over the past 10 years and still compares poorly internationally with Grade 4 learners.***

   In the results presented in Chapters 4-6, it is evident that on a national level, there is some progress, albeit limited regarding learners writing in Afrikaans and English, but more considerable for learners writing in isiZulu over 10 years. It is clear that the five year trends are not sufficient as time periods to provide sufficient evidence of change and that ten-year periods are necessary. The international comparisons still provide an unflattering mirror for South African reading achievement revealing low performance and in relationship to benchmarking with other countries internationally. Furthermore, the benchmark data reveal an improvement at the bottom with more learners achieving the international benchmarks but a drop at the top with fewer learners achieving the highest two international benchmarks for Afrikaans and English. No isiZulu learners achieved the highest benchmark. There are concerns regarding the performance of learners writing in Afrikaans and English as performance fails to show improvements over 5 years and each individually do not reveal progress overall. It is only when combined and analysed over the past 10 years that any change is evident. The most positive element of the results is the significant improvement in isiZulu albeit from a very low base in 2006, and this is mirrored in their performance in the international benchmarks where much larger percentages of learners are reaching at least the lowest international benchmark.

   Based upon these concerning findings overall, the following recommendations are:

   a. Implement a national campaign for reading which emphasises the shared responsibility of government, schools, teachers, parents, learners and the broader community and which promotes the importance of reading for success in life generally and academically in particular. Campaign for greater parental involvement in school and learner activities in general.

b. Strengthen the quality of teaching reading literacy and training of pedagogical content knowledge of teachers across all languages in the Foundation Phase. Emphasise in particular the importance of higher level order reading comprehension skills and train teachers to implement these effectively. Furthermore, emphasise the importance of informational texts in addition to literary texts.
c. Review and increase the effectiveness of the implemented language curriculum. Increase the proportion of time spent on reading in Foundation and Intermediate Phases in the curriculum as well as encourage extra-mural reading and positive reading habits throughout both Phases.
d. Initiate a pre-primary campaign for parents and teachers and emphasise the importance of Early Literacy activities at home and concentrate on the quality of training of teachers at the pre-primary level. Escalate the provision of pre-primary resources for all children.
e. Target interventions for reading literacy for high-risk populations including boys, learners living in remote rural areas, townships.
f. Urgently reduce class sizes and in particular, aim to reduce the isiZulu class sizes from 46 to at least policy stipulations of 40 per class within the next three years and stop the "creep" that has occurred across all schools and provinces over past 10 years.
g. Provide and increase school resources such as school libraries and classroom libraries, especially in areas and communities where the performance is poor.
h. Investigate the reasons for the drop at the top in Afrikaans and English and provide additional support for schools that are struggling to maintain the high standards previously met.
i. Put in place interventions that reduce the high levels of learner and teacher absenteeism from schools.

2. Despite substantial improvements overall in the system over the past 20 years, the majority of schools remain either minimally or inadequately resourced for effective schooling although teachers and parents are relatively satisfied with the schools and conditions.

This includes the human resources that are ageing, a small percentage are not qualified, and in the three languages, only just over half are university trained. Principal reports suggest that the lack of physical resources is hampering schools' ability to deliver effective education. The ICT provisioning has declined and the provision of school libraries has not increased. However, the provision of classroom libraries is more evident in about two-thirds of schools where Afrikaans, English and isiZulu are the LoLT in the Foundation Phase. Of national concern are the high levels of frequent bullying relative to international comparisons, reported by learners, which exceed the international figures. What is interesting is the relatively modest reporting on problems related to discipline and safety which seem to suggest that conditions in schools are relatively under control and that severe problems are the exception. Emerging, however, is the phenomenon of verbal abuse of teachers previously not witnessed in earlier studies. It should be

noted, however, that schools are dealing with the vast majority of their learners being economically underprivileged across all three language groups and nine provinces. Despite the challenging conditions for many schools, it seems somewhat contradictory that most teachers are somewhat satisfied with their work conditions and that parents are mostly satisfied with their children's schools. It is not clear whether they are satisfied with whatever improvements have been made or whether after so long, the expectations about change have lowered over time.

Given the above conclusion, the following are recommended that:

a. Even greater attention is given to increasing efforts to attract younger quality candidates into teaching to address attrition and that significant investment is made into teacher education to improve the quality of candidates entering the profession.
b. All schools should be provisioned with adequate resources and that all schools should be supported to achieve the enabling conditions required for effective education. The leadership of the schools should raise the expectations of both teachers and learners in terms of their outcomes and that there should be an increased emphasis on academic success and the importance of values in education.
c. All schools should be supported in implementing anti-bullying measures within schools and zero tolerance towards abuse of teachers and learners should be implemented with strict censures in place.
d. To educate learners within a 21st century society, ICT should be implemented in and integrated into all primary schools and not left until secondary school level. The current policies and interventions on ICT provision in primary schools should be reviewed, and effective and sustainable access to ICT and utilisation thereof in education needs to be increased.

3. Current classroom conditions and pedagogical strategies do not appear to be effective in achieving the levels of reading literacy that South Africa requires.

Given the above conclusion, the following are recommended:

a. Increasing the time on task for reading is needed and this should be achieved by increasing the proportion of time spent on reading specifically at Foundation and Intermediate Phases consistent with the top performing countries in PIRLS 2016. Secondly, the high levels of learner and teacher absenteeism should be reduced. Decreasing the class sizes would allow more time per learner with the teacher in the classroom.
b. Increasing access to books and reading materials in the classroom, inculcating a love for reading and making time to visit libraries and take books out for reading at home are essential ingredients in the classroom. Where no school and/or classroom libraries exist, these facilities should be prioritised for building and implementation and recognised as levers for change in education.

c. Encouraging and supporting teachers in the latter stages of the Foundation Phase and in the Intermediate Phase to concentrate on higher order reading skills and to train teachers in utilising the more advanced comprehension strategies in earlier stages. More exposure of learners to non-fiction and informational-type texts is needed. Furthermore, teachers' expectations of their learners need to be increased so that the learners are developed beyond failure and mediocrity.
d. Supporting the transition of languages for the majority of learners switching from their home language in Grades 1-3 to LoLT in Afrikaans and English. More extensive remedial support is required for teachers and learners during the Grade 4 transition period. Specialist support in the teaching of a second language is needed.

4. Few homes are well resourced to provide early childhood opportunities and continuous academic support for reading literacy and therefore, the role of parents and their interaction with schools is critical.

a. Parents, guardians, caregivers of learners in pre-primary and primary schools need to be made aware and supported in terms of effective strategies for preparing and assisting their children for primary school. A broader community focus on reading is needed to encourage parents to inculcate a love for reading in their children. Parents that enjoy reading model that behaviour for their children. Good reading habits start in the home and therefore community libraries provide resources and a basis for parents with few means to do this. Where libraries are available, frequent use of these assists in developing good reading habits and increasing the likelihood of reading literacy. Where formal libraries do not exist consideration should be given to opening such a resource attached to other education or social facilities within the community and providing access to underprivileged communities. Reading clubs already existing should be supported and where effective expanded across communities.
b. Parental involvement in the schools and familiarity with their child's teachers are essential to monitoring children's attendance of school and participation in class. Shared responsibility for education and reading literacy by the home and school as well as the individual learner is required.
c. There are many other activities that parents can do at home; for instance, including reading stories to them and discussing the story with them, singing rhyming songs, playing games with letters and words. These can be done in the early years before children go to pre-primary and primary school. Parents can also invest in books and gather appropriate reading materials for their children to read at home.

10.4 Last word

In two out of the three languages assessed, PIRLS 2016 did not demonstrate the progress in reading literacy performance of South African learners that one would have expected after 10 years. In order to avoid a further generation of learners leaving school either prematurely or unsuccessfully, it is essential that effective strategies be put in place urgently. The importance

of shared responsibility for this priority cannot be overlooked as the neither the Government nor the schools can do this alone. Instead, communities need to come together and parents, learners, teachers and school management have to work together with the Government and its officials to create better opportunities for South African children to acquire and develop their language of learning and learn to read with comprehension, meaning and enjoyment in the future.

It takes a village to raise a child

(African proverb)

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GLOSSARY

Scores used in PIRLS

The PIRLS score points are also referred to as Plausible Values (PVs), or reading literacy achievement scores. The scale is from 0 to 1000, with an international centre point of 500 and a Standard Deviation of 100. The PIRLS study made use of Item Response Theory (IRT) methods to impute the achievement scores for Grade 4 learners with complex models over the course of many PIRLS cycles. All countries are placed on one scale which offers the opportunity to compare countries; for example, South African Grade 4 learners achieved an average achievement score of 320 (SE=4.4) and Egypt achieved 330 (SE=5.6), but there was no statistically significant difference between the two countries.

International comparison statistics

Within this report, a variety of comparison statistics is used such as the PIRLS centre point, international averages as well as the international median. Below is a short description of each:

- PIRLS centre point: the mean of the scales established in the first cycle of the study (2001). The mean was calibrated to be 500 with a standard deviation of 100 score points
- International average: the mean score of all the participating countries in PIRLS or PIRLS Literacy
- International median: the midpoint of countries that are ranked by score or percentage. Half of the countries will have a score or percentage above and the other half below the median.

Statistical significance

In this report, the term ‘significant’ is used to describe the difference between two groups that meet the statistical significance requirements at the 0.05 level. At this level, the result, being a random occurrence, is less than 5%. A difference can only be described as ‘significant’ if the statistical analysis, for example independent t-test, was completed. A result is reported as significant if $p < 0.05$, and therefore the t-values are smaller (-1.96) or larger (1.96). If the t-value is below (-2.58) or above 2.58, then the associated p value is < 0.01.

Effect Size

In the PIRLS study, 40 score points are seen as a year of schooling (approximately half a Standard Deviation). Generally, an effect size of 0.5 (half a Standard Deviation) is considered to be moderate in size, therefore 40-50 score points is seen as a medium effect size in this report.

Standard Deviation (SD)

The Standard Deviation is a descriptive statistic that describes the spread of the scores around the sample mean. When the aim is to describe the sample, then the SD provides useful information and should be reported. However, if the aim is to report the sample values as representing the true values of the population, then the Standard Error should be reported (as is done in PIRLS).

Standard Error (SE)

The Standard Error is an inferential statistic that estimates the accuracy with which a sample represents a population. A large SE shows that the data are widely spread (less reliable) and a small SE shows that the data are clustered closely around the mean (more reliable). In PIRLS, large SEs are greater than 10 (rule of thumb). Greater than 20 should be noted as it may indicate too much variance around the mean (as much as 40 score points on either side of the mean).

Example: The mean score for Grade 5 South Africa (Eng/Afr/Zul) in the PIRLS Study was 406 score points with a Standard Error of 6.0. The 95th confidence interval is calculated by taking the mean and deducting two SEs and adding two SEs on either side:

Confidence Interval Range = 406 + (6.0*2) and 406 - (6.0*2)
= 418 and 394

There is **95% confidence** that the true mean score of the South African PIRLS results lies between **394 and 418** score points.

Rounding of figures

In this report, some percentages in the tables may not add exactly to the totals (adding up to 99% or 101%). This occurrence is due to the rounding of these percentages to eliminate the additional decimals. Note that the totals, percentages and averages are calculated from exact numbers and are only rounded after the calculation is completed. All Standard Errors (SE) have been rounded to one decimal place and are shown as 0.0. The average achievement scores are also based on exact numbers and have been rounded up to have zero decimal places; for example 499.95 is rounded to 500.

Language spoken at home

The South African language landscape can be seen as complex as there are 11 official languages, but note that only Afrikaans, English and isiZulu was selected for Grade 5. Grade 5 learners and their parents were both asked to indicate whether the learner spoke the Language of the Test (LoT) at home. Parents could indicate yes or no. The learners were asked how often they spoke the test language at home and whether they also speak more than one language at home. This means that the language of the test is not necessarily the home language. It

also important to note that South Africa has multi-lingual homes in some cases. Learners were tested in their Language of Learning and Teaching (LoLT) which they had from Grade 1 to 3. In the case of African language schools, they switch to English as medium of instruction and therefore the test language is not their current LoLT.

Reading the achievement graphs

A percentile graph is generally used to report test scores or results to a specific audience. These graphs allows values to split the data into equal parts ranging from 1 to 99 and is used to determine where a specific score fits in with the broader distribution. For more information on how to interpret a percentile graph, please see Chapter 4.

Total Weighted Percentage

The PIRLS samples are drawn to be representative of the population. Therefore, in the data chapters the percentage of learners is reported based on the TOTWGT (total weighted percentage). For example, if 46% of the learners were in isiZulu schools (calculated on actual learners participating), the weighted percentage would be reported as 39% because that is the portion of the population represented by the data.

List Of Acronyms And Abbreviations

ANA	Annual National Assessments
CAPS	Curriculum Assessment Policy Standards
CEA	Centre for Evaluation and Assessment
CR	Constructed Response
DBE	Department of Basic Education
DME	Data Management Expert
DoE	Department of Education
DPC	Data Processing Centre (in Hamburg)
ECD	Early Childhood Development
EFA	Education for All
ELA	Early Literacy Activity
ELT	Early Literacy Task
FAL	First Additional Language
GDP	Gross Domestic Product
GER	Gross Enrolment Rates
HRL	Home Resources For Learning
ICT	Information Communication and Techonology
IDB Analyzer	International Database Analyzer
IEA	International Association for the Evaluation of Educational Achievement
EMIS	Education Management Information System
IRT	Item Response Theory
LiEP	Language in Education Policy
LoLT	Language of Learning and Teaching (Grade 1 -3)
LoT	Language of Test (also referred to as Test Language)
MC	Multiple Choice
NCS	National Curriculum Statement
NDP	National Development Plan
NRC	National Research Co-ordinator
PIRLS	Progress in International Reading Literacy Study
PL	PIRLS Literacy
PPS	Probability Proportional-to-Size
PRL	Parents Reading Like Scale
PVs	Plausible values
QCM	Quality Control Monitors
QDG	Questionnaire Development Group
SAQA	South African Qualifications Authority
SAS	Statistical Analysis Software
SASA	South African Schools Act
SD	Standard Deviation
SDG	Sustainable Development Goals
SE	Standard Error
SES	Socio-economic Status
SPSS	Statistical Package for the Social Sciences
STATCAN	Statistics Canada (responsible for sampling)
TIMSS	Trends in International Mathematics and Science Study
TOTWGT	Total Student Weight
UK	United Kingdom
UP	University of Pretoria
USA	United States of America

Appendix A:
Languages per province

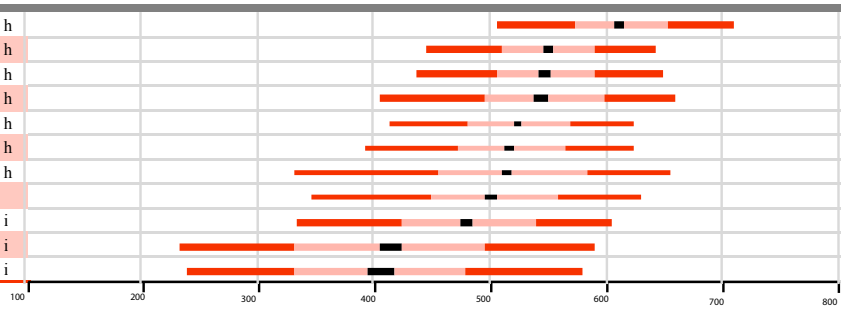
Province % of learners	Test Language	Percentage of Learners	Standard Error of Sampling
Eastern Cape 6%	Afrikaans	43%	10,7
	English	57%	10,7
Free State 1%	Afrikaans	53%	37,2
	English	47%	37,2
Gauteng 25%	Afrikaans	7%	3,7
	English	72%	5,8
	isiZulu	22%	5,1
KwaZulu-Natal 37%	English	23%	3,7
	isiZulu	77%	3,7
Limpopo 3%	English	100%	0,0
Mpumalanga 6%	Afrikaans	4%	4,0
	English	53%	17,9
	isiZulu	43%	16,8
North West 4%	Afrikaans	42%	24,4
	English	58%	24,4
Northern Cape 3%	Afrikaans	90%	9,1
	English	10%	9,1
Western Cape 15%	Afrikaans	50%	6,8
	English	50%	6,8

Note: Analysis of mean reading achievement scores of languages within provinces (and vice versa) is not recommended when samples are too small and SEs become too large

Appendix B:

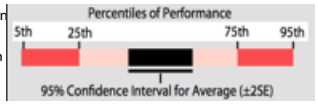
Distribution of Reading Achievement for Benchmarking Participant Countries

Country	Average Scale Score		Reading Achievement Distribution
Benchmarking Participants			
Moscow City, Russian Fed.	612 (2,2)	h	
2 Madrid, Spain	549 (2,0)	h	
≡ Quebec, Canada	547 (2,8)	h	
Ontario, Canada	544 (3,2)	h	
Andalusia, Spain	525 (2,1)	h	
Norway (4)	517 (2,0)	h	
Dubai, UAE	515 (1,9)	h	
2 Denmark (3)	501 (2,7)		
Buenos Aires, Argentina	480 (3,1)	i	
Abu Dhabi, UAE	414 (4,7)	i	
Eng/Afr/Zulu - RSA (5)	406 (6,0)	i	



h Country average significantly higher than the centerpoint of the PIRLS scale

i Country average significantly lower than the centerpoint of the PIRLS scale



Appendix C:
Reading Skills and Strategies Grade 1 or Earlier

Reading Skills and Strategies	Grade 1 or Earlier		Grade 2		Grade 3		Grade 4	
	Mean Score	SE	Mean Score	SE	Mean Score	SE	Mean Score	SE
Knowing letters of the alphabet	408,5	8,6	408,2	31,5	362,4	40,9		
Knowing letter-sound relationships	419,6	9,8	368,8	8,5	358,0	16,8		
Reading words	411,4	9,0	395,8	26,5	365,3	19,9		
Reading isolated sentences	426,0	10,8	384,6	9,5	354,1	9,7	369,8	4,7
Reading connected text	422,6	13,5	415,3	13,4	361,0	6,9	376,3	6,0
Locating information within the text	450,8	13,7	403,3	15,3	384,5	14,4	386,5	19,0
Identifying the main idea of a text	441,7	16,6	403,4	13,8	398,5	15,0	395,0	15,1
Explaining or supporting understanding of a text	443,1	16,9	412,4	26,0	403,9	16,0	396,5	10,9
Comparing a text with personal experience	437,9	22,1	425,5	20,0	407,0	17,9	390,5	10,6
Comparing different texts	450,7	21,1	439,2	25,4	420,9	15,6	378,1	11,8
Making predictions about what will happen next in a text	429,8	15,1	441,7	23,7	408,7	19,7	374,4	10,2
Making generalisations and drawing inferences based on a text	431,0	22,5	436,6	16,7	406,1	16,8	394,6	16,7
Describing the style or structure of a text	468,7	39,8	464,0	23,4	422,7	14,2	398,7	14,0
Determining the author's perspective or intention	459,7	40,4	471,9	20,1	421,4	17,8	403,2	16,9

Appendix D:
National Steering Committee PIRLS 2016

Carole Bloch	PRAESA
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THE AUTHORS

Sarah Howie

Professor Sarah Howie was the National Research Co-ordinator (NRC) of PIRLS in South Africa for three rounds: 2006, 2011 and 2016. She is a well-known leader in the field of large-scale assessment and was previously NRC for TIMSS 1995 (pop3), 1999, SITES M1 and 2006, and contributed internationally to PISA 2015, 2018, TALIS 2018. She was a member of the IEA's International Questionnaire Development Group for PIRLS 2011 and 2016. In addition to writing, she was also the editor of this report. She led the PIRLS team during the entire process of design, implementing and disseminating the study.

Celeste Combrinck

Celeste Combrinck was responsible for co-ordinating the PIRLS 2016 field trial, the data collection of the main study as well managing the dissemination for PIRLS 2016. Celeste's main interests are instrument design and refinement in the social sciences, as well as analysis, article and report writing combined with dissemination of findings.

Karen Roux

Karen Roux was involved in the PIRLS 2011 and PIRLS 2016 South African cycles. In the latest round of PIRLS, she was directly responsible for the preparation of the instruments, which includes the translation and verification of the questionnaires. Karen was also involved in the scoring processes, monitoring, data analysis and report writing. Her areas of expertise include home and classroom factors associated with reading literacy as well as instrument design and development.

Mishack Tshele

Mishack Tshele was involved in PIRLS 2011 and PIRLS 2016 as the data manager for both studies. He was responsible for the sampling frame and sample, preparation of the databases, instrument collation and organisation, training data capturers, data cleaning and management and was mainly responsible for the analysis for this report. He is a specialist in using Rasch models and managing large-scale data and conducting analysis with large-scale educational data.

Gabriel Mokoena

Gabriel Mokoena was involved in PIRLS 2011 and 2016. He was responsible for several phases of the PIRLS 2016 project, including the co-ordination of the contacting of schools, fieldwork and monitoring, training of fieldworkers, as well as being a scoring manager. Gabriel Mokoena created most of the graphics in this report and his speciality lies in corporate and institutional communication and information dissemination.

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Nelladee McLeod Palane was the Language Specialist and Scoring Supervisor for South Africa's implementation of PIRLS 2016. She participated in the international process of item development and managed the national process of translation and translation verification of the reading achievement instruments and quality assurance thereof. Nelladee is a language specialist and her expertise lies in teaching, learning and research of reading literacy and language in South Africa.

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