

## CHAPTER 3: READING LITERACY LITERATURE REVIEW

*“To learn to read is to light a fire. Every syllable that is spelled out is a spark.”*

*Victor Hugo*

The importance of literacy has become more evident in the 50 years since the United Nations (UN) declared literacy to be a basic human right, along with the right to adequate food, health care and housing. Literacy education has indeed become a tool to help address what might be perceived as more pressing needs for food, health care and housing.

The UN Literacy Decade was declared as 2003 to 2012, and according to UNESCO statistics, about 861 million people (or about 20% of the world's adults) cannot read or write, nor participate fully or optimally in the organization and activities of their societies. Of these illiterate adults, 70% live in Sub-Saharan Africa, Southern and Western Asia, Arab countries and North Africa, while two-thirds are estimated to be women (“Literacy”, 2004).

This study proposes to identify, illuminate and explain relationships between some major factors associated with successful reading at Grade 5 level in South African primary schools. Of importance in particular are those factors that influence reading achievement at home-, class- and school-level. The remainder of chapter 3 will examine previous findings and significant background factors associated with reading literacy achievement.

### 3.1. DEFINITIONS OF LITERACY

A common sense definition of ‘literacy’ would indicate the ability to read and write. In more specific terms, literacy can be defined as the ability to both read and write a short simple statement, reflecting understanding about everyday life. Binkley and Kelly (2003) cite excerpts from the National Assessment of

Educational Progress (NAEP) study undertaken in the United States of America (USA) during 2002, to define reading literacy as follows:

The term reading literacy is not intended to imply only basic or functional literacy. Rather, the term connotes a broader sense of reading, including when to read, how to read, and how to reflect on what has been read. (NAEP framework, 2002:8).

The United States Reading Panel, in conjunction with The Partnership for Reading and the Reading First Law, defined reading as a complex system of deriving meaning from print that requires an understanding of the connection between phonemes and print, the ability to decode unfamiliar words and to read fluently, possess sufficient background information and vocabulary to improve reading comprehension, and the development of appropriate active strategies to construct meaning from print and the maintenance of motivation to read (Report of the National Reading Panel, 1999).

According to Scherba (2003), the definition of literacy has evolved from an exclusive focus on reading and writing to encompass a more inclusive and expansive perspective. This development means that research into literacy has evolved to include aspects of diverse populations that cross cultural, political and socio-economic boundaries. Dubin and Kuhlman (1992) agree with this notion, stating that literacy has taken on meanings that go beyond the simple definitions of reading and writing. According to these authors, the word 'literacy' itself has come to mean competence, knowledge and skill. For example, common expressions such as 'computer literacy', 'civic literacy' or 'health literacy' stand for know-how and awareness of the domain of the first word in such expressions.

Hiebert (1991) follows a constructivist approach to the definition of literacy by stating:

For some time now, a new perspective on literacy and the learning processes through which literacy is acquired have been emerging. This new

perspective does not consist of old ideas with a new name, but rather it represents a profound shift from a text-driven definition of literacy to a view of literacy as active transformation of texts. In the old view, meaning was assumed to reside primarily within text, whereas, in the new view, meaning is created through an interaction of reader and text (Hiebert, 1991:1).

Given the reported definitions and conceptualisations, it becomes clear that reading literacy can be regarded as one of the most important abilities learners acquire as they progress through their early school years. As a foundation for learning across all subjects, literacy can be used for recreation and personal growth, while simultaneously providing young children with the ability to participate more extensively in their communities and societies.

Fuchs and Woessmann (2004) refer to the definition of reading literacy offered by the Organization for Economic Co-operation and Development (OECD), as the capacity to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge and potential and to participate in society. Reading literacy is therefore not understood as a basic skill, but rather as a goal, while at the same time also being a functional means of education and individual development, within and outside school, in the individual's current and later life, in further education, at work and in leisure activities (Linnakyla, Malin & Taube, 2004). Viewing literacy as a social practice means that reading represents a multitude of evolving human activities with language at its centre (Landis, 2003). According to Frost, Madsbjerg, Niedersee, Olofsson and Sorensen (2005) reading is an activity used for interpersonal communication, but is also dependent on intrapersonal sources such as motivation, attention, imagination, memory, comprehension and language.

Most current theories of reading development stress the fundamental importance of phonological skills to learning to read, (e.g. Nation & Snowling, 2004), while Wood, Hill, Meyer and Flowers (2005) have noted that phonemic awareness, vocabulary and fluency variables seem essential for effective prediction of reading achievement. Others, such as Beech, (2005) and Hempenstall (2004), argue that reading literature has paid specific attention to

how children progress through different phases of reading according to defined stages of development.

For both industrialized and developing countries, literacy education is near the top of the policy agenda. UNESCO's estimates of illiteracy figures worldwide remain high, while the prospects of a radical reduction seem unlikely. Despite these low literacy levels across the globe, the relative costs and benefits of literacy programs are as yet poorly understood. Yet, literacy is of central importance to development ("Literacy and International Development", 2004). Increasingly, the attainment of literacy is correlated with higher levels of income and job productivity. Baydar, Brooks-Gunn and Furstenburg (1993) support and explain this notion by stating that levels of literacy of individuals and societies are often taken as indicators of well-being, since low levels of literacy have been linked to low productivity, high unemployment rates, low earnings and high rates of welfare dependency, and teenage parenting.

The consequences for learners who cannot read or who struggle to read in the early grades are well documented. Leslie and Allen (1999) cite Juel (1988), who reported that 88% of American children who scored in the lowest quartile for reading comprehension in Grade 4 remained below the 50<sup>th</sup> percentile for reading at the end of the fourth grade.

Donald, Condy and Forrester (2003) report that despite structural transformations that have taken place in post-apartheid South African society and its education system, many schools still face educational disadvantages, making the adequate development of literacy skills a national priority. Generally under-resourced schools, extensive poverty, unemployment and teacher under-qualification result in generally low standards of scholastic progress, achievement, high failure and attrition rates, and hence in inadequate development of literacy for the learners concerned.

For the purposes of this study, the PIRLS 2006 definition of reading literacy is applied. In naming its 1991 study, the IEA decided to join the terms 'literacy' and 'reading' to convey the notion that literacy includes the ability to reflect on

what is read and to use reading as a tool to achieve personal and societal goals. Thus, according to Campbell et al. (2001), the framework for literacy that applies to PIRLS is as follows:

...the ability to understand and use those written language forms required by society and [or] valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers and for enjoyment. (Campbell et al., 2001:3).

With this definition of reading literacy, the PIRLS 2006 framework takes the stance that reading literacy is a constructive and interactive process. According to Brinkley and Kelly (2003), the reader is now regarded as actively constructing meaning and as knowing effective reading strategies. Such readers have positive attitudes towards reading and read for the purposes of recreation and information acquisition. Meaning is constructed in the interaction between reader and text, in the context of a particular reading experience. Reading implies that the reader brings with him or her a repertoire of knowledge, skills, cognitive and metacognitive strategies. This definition of reading literacy as used by the IEA is used as conceptual foundation of reading for the purposes of this study and its use of the South African PIRLS 2006 data as data source.

### **3.2. READING LITERACY AS CONCEPTUALIZED BY THE RNCS**

In South Africa, ongoing concerns surrounding the development of learners' literacy skills drive the literacy teaching and learning research landscape. Concerns associated with learners' development of basic literacy skills at the foundation levels of education (Bloch, 1999; Lessing & de Witt, 2005), concern about their acquisition of more advanced literacy skills in high school (Matjila & Pretorius, 2004; Pretorius & Ribbens, 2005), and concerns about the development of advanced literate language skills needed for tertiary level education (Pretorius, 2002), are all consistently reflected in research.

The Revised National Curriculum Statement (RNCS), as issued by the National Department of Education in South Africa, professes to follow a balanced

approach to literacy development. Such a balanced approach recognizes that learners, upon entering their formal schooling years in Grade R, arrive at school with prior knowledge and a high proficiency in their home language, developed through a range of interactions with others at home in the context of nurturing, care and play (“RNCS Grades R-9”, 2002).

The principle that guides the teaching and learning of literacy in the national curriculum statement is that language development is a gradual process of improvement. Increasingly, learners’ language will become more accurate as they are afforded more opportunities to use and develop their language knowledge and skills. With this principle in mind, the balanced approach to literacy begins with children’s emergent literacy and involves their reading books and writing for real life purposes while also paying attention to phonics. With regards to reading, the RNCS states that the move is away from the ‘reading readiness approach’, which held that children were not ready to start learning to read and write until they were able to perform skills such as auditory discrimination and visual discrimination, and had sufficiently developed fine and large motor skills. The balanced approach to literacy as stated in the RNCS emphasizes that these skills should not necessarily have to be in place for a learner to start reading and writing. Instead, these skills should be developed during children’s early learning experiences.

The RNCS encourages learners in the Foundation Phase (that is from Grade R-3) to do wide reading, while teachers should provide learners with opportunities for writing and developing their vocabulary and language use. Learners should be helped to discover techniques and strategies to unlock the ‘code’ of the written word, such as developing word recognition and comprehension skills by means of phonemic awareness, knowledge of letter-sound correspondence and knowledge of blending, which is described as the ability to put two or three letters together to make a sound.

At the end of the Foundation Phase, the balanced approach to reading literacy as outlined in the RNCS culminates in the Grade 3 learner having been

exposed to Reading and Viewing as a Learning Outcome, resulting in abilities to:

- Use visual cues to make meaning (e.g. read graphical texts such as photographs, maps and diagrams) (p.33)
- Make meaning of written text (e.g. comment on stories or poems that were read and show understanding by answering questions on main ideas, key details, cause and effect, conclusions and personal opinions) (p.33)
- Read texts alone, and use a variety of strategies to make meaning (p.35)
- Consolidate phonic knowledge (e.g. recognize that the same sound can be spelled in different ways or recognize that the same spelling can represent different sounds) (p.37)
- Read for information and enjoyment (e.g. choose a variety of books to read and state what was liked or not about them) (p.39).

### **3.3. FACTORS ASSOCIATED WITH READING ACHIEVEMENT AT LEARNER, HOME AND SCHOOL-LEVEL**

Worldwide, studies into the factors that affect learner achievement have been undertaken in a variety of ways. The following section outlines the findings of a number of these studies from both developed and developing countries. Given this outline of already existing literature, it will attempt to fill the gaps and add to the body of literature on factors associated with learner achievement, specifically in a developing context with learners from diverse social- and language backgrounds.

Strickland, Ganske and Monroe (2002) compiled a list of what is known about successful readers and writers. According to these authors, successful readers have normal to above average language skills and have opportunities to identify letters and environmental print. Children who are to become successful readers have exposure to adults who involve them in purposeful literacy experiences during early childhood years and have as a result a fair amount of pleasurable,



motivating early childhood experiences with books and literacy. Successful readers are likely to be influenced by responsive adults who listen and talk to them, and are likely to engage in activities such as rhyming and singing, thus creating an awareness of the internal structure of spoken words. Successful readers are likely to attend schools that provide learners with frequent and intensive opportunities to read and write, while building upon early childhood experiences with opportunities for learners to learn the nature of the alphabetic system. Successful readers have overall progress that is steady and sure, despite periodic difficulties, and have the ability to build on informal experiences with literacy from early years as they encounter more formal and complex tasks.

Postlethwaite and Ross (1992) refer to effective schools as those whose learners undertake substantial reading in their free time, take out books from the library and have the habit of reading out loud and spending more time on reading homework.

When it comes to what is known about learners at risk of failure in English speaking contexts, some factors pertain to the child's personal development, others to the group or situation in which they reside. Children who are particularly at risk of encountering reading difficulties typically have a history of preschool language impairment, limited proficiency in English or come from homes where a nonstandard dialect of English is spoken. Learners at risk often have parents who had difficulty learning to read, are likely to come from poor neighbourhoods and attend schools in which classroom practices are deemed ineffective. Strickland et al. (2002) point out, however, that none of these factors are automatic barriers to literacy, and these factors do not function in isolation but rather as composite factors of reading difficulties.

The following sections will pay particular attention to those factors associated with learners that influence reading literacy achievement, in particular the homes from which they come and the schools they attend.



### 3.3.1. Learner Factors

The RNCS of South Africa envisages learners who, upon exposure to the formal education system, will develop into individuals who will act in the interests of society, based on respect for democracy, equality, human dignity, life and social justice (“RNCS Grade R-9”, 2002). Through exposure to the curriculum, the education system in South Africa seeks ultimately to create lifelong learners who are confident and independent, literate, numerate, multi-skilled, compassionate individuals, with respect for the environment and an ability to participate in society as critical and active members.

This study analyzes data as it pertains to Grade 5 learners who are roughly midway through the Intermediate Phase of the South African education system. Typically, learners in this phase are on the brink of adolescence and could be described as self-conscious and responsive to peer influence, with a curiosity as to who they are and what they want to become. The RNCS (“RNCS Grade R-9”, 2002) provides a profile of learners in the intermediate phase, beginning at Grade 4:

- Learners from Grade 4 onward are more sensitive to how their actions affect others (p.55)
- They are able to consider the needs, opinions and points of view of others (p.55)
- They find it increasingly easy to function co-operatively in groups on a given task (p.55)
- At the same time, learners enjoy independence and working on their own (p.55)
- They begin to show the desire to take control of their own learning (p.55)
- These learners become more methodical and deliberate in their approaches to learning (p.55)
- They are increasingly able to access, record and manipulate information (p.55)
- Learners from Grade 4 onwards are increasingly able to investigate, compare and access information critically (p.55)

From Grade 4 onwards, learners consolidate and extend their literacy skills and build their confidence and abilities to use language more fluently. Given this learner profile, factors related to learners' reading achievements are centered on reading motivation and reading-related self-perception. Leino, Linnakyla and Malin (2004) state that learners who spend substantial time reading on their own tend to be better readers than those who devote more limited time to reading. On the other hand, Chapman and Tunmer (2003) argue that reading self-concept and reading self-efficacy appear to develop in line with initial experiences of learning to read.

For children who experience initial or continued success or difficulty in reading, relationships between reading achievement and self-perception (referring to those perceptions, values, knowledge, and beliefs individuals have about themselves as learners) arise within the first year of schooling. This timing means that the learner's self-perception forms in response to emerging patterns of accomplishment or difficulty with learning tasks (Chapman & Tunmer, 2003), so, for example, learners with a low sense of efficacy for completing reading tasks tend to give up more easily, engage in off-task activities or avoid the task altogether.

Linnakyla et al. (2004) are in agreement when stating that learner-related factors associated with low achievement can be significantly attributed to learners' self-concept in reading, their expected further education and the number of books at home. These authors identify another significant factor related to the learners themselves, namely their interest and engagement in reading on their own. Where learners are not interested in reading, where they only read when they have to, or where reading is regarded as a waste of time, reading achievement is at risk of being significantly lower.

Resonant with research that associates learner-related factors with low achievement is the work of Wallner-Paschon (2009), who refers to the process of 'reading socialization'. Important fields of socialization for the learner are the school, family and peer group, all of which in turn affect the learner's

motivational characteristics, such as reading attitude and reading self-concept, as well as reading achievement.

Gambrell, Palmer, Codling and Mazzoni (1996) refer to the work of inter alia Veenman (1984), who reported that teachers ranked motivating learners to read and creating interest in reading as amongst their primary and overriding concerns. Turner (1995) refers to motivation and cognitive engagement interchangeably as voluntary uses of high-level, self-regulated strategies, such as planning, paying attention, connecting ideas, judging and monitoring. Motivation is crucial to reading at any level and beliefs about reading have an important relation to understanding and engagement during reading. Schraw and Bruning (2000) state that positive beliefs about reading translate into higher levels of motivation and better understanding of what is read. This in turn is a positive consequence of cognitive engagement (Turner, 1995).

A slightly different perspective is that of Wigfield, Guthrie, Tonks and Perencevich (2004), who argue that even the readers with the strongest cognitive skills may not spend much time reading if they are not motivated to do so. Thus, intrinsic and extrinsic concepts of motivation to read influence the frequency and comprehension with which a learner will tend to read. Intrinsic motivation propels the learner to complete the reading task for its own sake and out of interest in the activity. Such learners are characterized by curiosity and preference for challenge. When extrinsically motivated, on the other hand, learners may perform activities for the sake of receiving rewards or some benefits. Wigfield et al. (2004) describe these two forms of motivation in contrasting terms, emphasizing the need for fostering among learners of intrinsic motivation to read. Despite the fact that intrinsic motivation helps the growth of reading skills and can lead to long term engagement in reading, learners of a young age are unlikely to be largely intrinsically motivated and will rather vacillate between intrinsic and extrinsic motivations for reading.

This study also includes among the factors the characteristics associated with learners' languages and the role these languages might play in reading achievement. The reality for most learners in South Africa is one of reading in a

second language once they progress to Grade 4. Prior to Grade 4, the premise is that learning to read took place in their mother tongue (or first language). Howie (2003) alludes to the South African educational system being faced with the challenge of providing quality education to a multi-cultural learner population speaking 11 different languages. English as a first language is spoken by less than 10% of the population, and though one of the languages most used in schools (the other being Afrikaans), it is not the most widely spoken language of the home. Thus, the challenge of second language acquisition, mastery and learning is a reality for a majority of learners in South Africa. Admiraal, Westhoff and de Bot (2006) refer to such a phenomenon as one of 'immersion', where a language that is not that of the larger society is used as a medium of instruction.

According to Ely (2005), children master the rudimentary aspects of their native languages during the first years of life. By age three, they should have acquired a large and varied lexicon, whilst by age five their command of a language is relatively sophisticated. This sophistication should increase and progress as the child enters school and learns to read. D'Angiulli, Siegel, and Maggi (2004) cite a growing body of evidence showing that the development of reading skills in learners using English is similar to the development of reading skills in children with English as a first language. Gersten and Geva (2003) support the notion by stating that both English learners and English second language learners seem to take similar paths of development, specifically in pre-reading skills such as phonological awareness.

By Grade 4 in the South African educational system, many children are immersed in a second language curriculum in which they are faced with English as language of teaching and learning (LOLT), as opposed to mother tongue teaching and learning. According to Verhoeven (1990), second language learners face two types of difficulties, namely interlingual learning problems caused by mother tongue interference and intralingual learning problems, arising from the structure of the second language. Agreement exists however that, regardless of language use, word recognition remains a critical part of reading.

Children acquiring reading in a second language may experience difficulty with all three of these recognition processes (Verhoeven, 1990). This study will use scores of learners as obtained in their language of learning from Grades 1 to 3 (languages which, in South Africa, are not necessarily learners' mother tongues). Learning difficulties are expected to be more pronounced in cases where the word recognition processes are absent even for reading achievement in the mother tongue.

The work of Elley (2000) confirms the view that the challenge in raising literacy levels in developing countries specifically lies in the fact that so many learners receive schooling in a non-native or a second language. Elley (2000) provides evidence for the effectiveness of 'Book Flooding', by which it is possible to double the rate of reading acquisition of developing world primary schools. The strategy entails the introduction of 100 high interest books per class to primary schools, accompanied by short sessions of teacher training. Elley's (2000) findings in terms of benefits for reading skill and enthusiasm were consistent across diverse cultures, mother tongue and age of learners. Benefits were also recorded through improvement in children's writing, listening comprehension and related language skills, where these improvements are typically found to develop very slowly under traditional textbook styles of teaching.

Learner-level factors that are included for the purposes of this study (as taken from and measured by the PIRLS 2006 Learner Questionnaire) and methods for selecting these are discussed in Chapter 7.

### **3.3.2. Home Factors**

The process of becoming literate begins long before a child enters a formal educational system. Purcell-Gates (1996) describes the construction of knowledge as a process that takes place within instances of situated dialogue, with children developing their explicit and implicit understanding of language systems through experience and in initial interaction with others within a specified cultural context. Therefore, literacy can be viewed as a cultural practice and young children begin to learn about reading and writing initially in

their homes. It is apparent that the home environment affects children's literacy and the difference between parents of good readers and those of poorer readers has been noted in the literature as associated with literacy levels achieved in a common age grade. Martin, Mullis and Gonzalez (2004) report that for every country participating in the Progress in International Reading Literacy Study (PIRLS) 2001, a strong relationship was found between fourth grade reading achievement and parents' reports of levels of engagement in literacy activities before their children started school.

According to Fiala and Sheridan (2003), parents of good readers tend to emphasize reading for meaning, while those of poorer readers tend to emphasize the reading of words rather than focusing on meaning and content. In terms of learners' home background, Fuchs and Woessmann (2004) state that family is consistently related to educational achievement, and measured in terms of parents' education and occupation and the number of books at home. Fuchs and Woessmann (2004) also refer to the Programme for International Student Assessment 2000 (PISA) study to support their claim that learners who live with both their parents seem to perform better than those who live with only a single mother. These learners perform better than those living with only a single father, who in turn perform better than those learners who do not live with their parents at all. Learners' achievement increases steadily with each higher category of their parents' education.

A related finding from Linnakyla et al. (2004), in their secondary analysis of Finnish and Swedish PISA 2000 data, is that learners ran a greater risk of low achievement if they came from a large family with many siblings. In addition, the risk increased when cultural communication at home was not active, meaning that parents seldom discussed political and social issues, books, films, television programmes or the news. Gonzalez-DeHass, Willems and Holbein (2005) refer to parental involvement that has a positive impact on their children's scholastic achievement. Their work acknowledges factors such as participation in parent-teacher interactions and school activities, engaging in their children's extracurricular activities and homework, reacting to their children's grades, assisting in selection of subjects, keeping abreast of

academic progress and imparting values of the importance of academic or scholastic success.

A finding also emanating from the PISA 2000 data, and of possible impact in this study, is that learners who have at least one parent working on a full-time basis performed at statistically better levels than those whose parents did not have full time employment. With regard to parental involvement, Linnakyla et al. (2004) confirm PISA 2000 findings that parents with less education tend to be less concerned with educational issues. PISA 2000 data also indicated that children from blue-collar families perform significantly below the lowest achievements of children from white-collar families.

According to Linnakyla et al. (2004), parents' economic status has a bearing on family resources beyond the school in support of their children's learning, in terms of books, computers, magazines, hobbies or the availability of private tuition. Hence, a family's access to social and economic capital seems to have the capacity to influence the children's learning positively.

In terms of these family resources, Fuchs and Woessmann (2004) point to a possible significant background factor when predicting reading literacy achievement, namely the number of books in the home. This aspect has also been consistently found to be of significance in the PIRLS 2006 study (Mullis et al., 2007). Although it seems that learners with more than 500 books in the home perform better than those without any books, the effect of this indicator seems to diminish greatly at the level of 250 books. Holding all other family background factors constant, it seems that the presence of computers at home leads to poorer achievement. The presence of computers in the home may indicate that they distract learners, since they can be used for many purposes other than learning, or reading for learning. The use of computers to assist learning and reading may not be the most efficient resource. Linnakyla et al. (2004) support this idea, but add that the presence of computers seems to have little to no effect when used infrequently or in moderation. The risk of diminished achievement is higher among the keenest users of computer technology.



Home factors, as measured at the learner-level, that are included for the purposes of this study (as taken from the PIRLS 2006 Parent Questionnaire) include aspects of literacy in the home, the availability of home resources, parent demographics and language in the home and are discussed in Chapter 7.

### **3.3.3. School Factors**

Over the last ten years, South African teachers have faced extensive changes to the education system, and, the realization of many is that, whilst policy and curricula documents may be relatively easy to draft, the actual grassroots implementation can be far more difficult, if not impossible, to achieve. To add to the difficulty of implementation, in South Africa great variation exists between schools, and, after 15 years of democratic rule, schools that were previously designated for whites only are still very different from those that were assigned to the previously disadvantaged under the apartheid system. Johnson, Monk and Hodges (2000) are of the opinion that, in light of the starkness of continuing differences in teacher education and educational provision, South Africa effectively still has separate education systems operating within the country.

Despite these continuing differences in education provision, the national Department of Education views teachers as key contributors to transformation in South Africa, by envisioning teachers who are qualified, competent, dedicated and caring. Teachers' roles and functions include being mediators of learning, interpreters and designers of learning programmes and materials, leaders, managers, administrators, scholars, researchers, lifelong learners, community members and citizens, assessors and learning area or phase specialists ("RNCS, Grade R-9", 2002).

Prior to 1994, the system of teacher education in South Africa was driven by political logic to provide separate systems of education for different racial and ethnic groupings. This separation led to a fragmentation of teacher education institutions and an overall lack of coherence and quality assurance of programmes. For the first time, in 1995, a regulatory framework for teacher

education programmes began and culminated in the acceptance of the *Norms and Standards for Educators* in 2000. This policy framework provided procedures for the approval of teacher education programmes and outlined the kinds of qualifications that the Department of Education considered important in providing funding and employment opportunities (Robinson, 2003).

With regards to school-related factors impacting on the reading achievement of learners, Howie (2006) reports a number of factors specifically related to learners in South African classrooms. These factors include inadequate subject knowledge of teachers, inadequate communication ability between learners and teachers in the LOLT, lack of instructional materials, and difficulties for teachers to manage classroom activities effectively and overcrowded classrooms. Such findings are reflected in the work of Passos (2009), who carried out a comparative analysis of teacher competence and its effect on Grade 6 learner performance in upper primary schools in Mozambique and other SACMEQ countries. According to Passos (2009), the relationship between teacher competence and learner performance in reading and mathematics is influenced by cognitive, affective and behavioural factors.

Sailors, Hoffman and Matthee (2007), in their evaluation of schools that promote literacy learning in low-income communities, summarize the work of a number of researchers, such as Weber (1971) and Hoffman and Rutherford (1984), who identified common themes across effective schools that could guide reform efforts in the failing schools operating in resource-poor environments. The common themes in these schools that influenced learner achievement positively included:

- A clear school mission
- Effective instructional leadership and practices
- High expectations for learners to achieve and perform at their best
- A safe, orderly, positive physical environment
- Ongoing curriculum improvement
- Maximum use of available instructional time

- Frequent monitoring of learner progress
- Positive home-school connections

Following their work on high achieving schools from low-income environments in a sample of South African primary schools, Sailors et al. (2007) identified their own set of themes and factors that seemed to impact positively on learner achievement. In concordance with the work of other researchers, they cited the presence of a safe, orderly learning environment as having a positive influence on learner achievement. Another factor identified includes the presence of strong leadership that guides the school in terms of academic guidance, community relations and shared decision-making. In describing teachers as 'excellent', a third factor is identified that impacts learner achievement positively, namely being committed, competent, caring and collaborative. A fourth identified factor is that of a shared sense of competence, pride and purpose in schools that function effectively in low-income communities. Lastly, community participation and engagement with the school constitutes a factor associated with higher achievement among learners (Sailors et al., 2007).

Teachers often know more pedagogic strategies than they actually use, therefore a teacher's classroom practice might be considered to be only a selection from a wide range of content knowledge. Often classroom practice is constrained by the availability of resources and the normative behaviour of the environment in which the teacher works. New practices are only likely to survive if there is a fit with the teacher's working environment (Johnson et al., 2000).

Ediger (2004) is of the opinion that teachers need to be competent in the teaching of reading, since there is content for the learner to read in each learning area, regardless of the grade level that is taught. Behind Ediger's seemingly simplistic statement there is however a more complex picture of what the task of a competent teacher entails. In recent years, the teaching of reading has swung from a whole word methodology to phonics to direct instruction, and then to methods of whole language instruction as described by Stahl (1998). O'Sullivan (2003) adds to the list bottom-up reading instruction strategies (for example look-and-say) and top-down strategies (such as extensive reading, use

of context and pictorial clues). Despite these shifts in teaching reading, Gates (2002) is of the opinion that the success of teaching reading is not defined by how well the learner can perform in any of the component skills (such as sounding letters or word recognition), but rather by having acquired these skills as an entire enjoyable process with abundance of opportunity to read naturally and successfully. To this view, Brooks-Harper and Shelton (1998) add their support, by stating that the major objective for reading instruction is that learners will eventually be able to use reading competence to enhance their learning in a pleasurable way.

Allington and Johnston (2000) list in their review of effective fourth grade teachers and their classrooms a number of desirable classroom and teacher characteristics, amongst which are the following:

- Teachers who provide explicit instruction
- Teachers who have classroom routines
- Teachers who support and challenge their learners
- Classrooms where optimized reading opportunity is provided
- Classrooms where reading and writing is integrated with other subject areas
- Classrooms in which a focus is placed on meaning and the means to construct meaning
- Classrooms in which opportunities are provided to discuss what was read

The abovementioned characteristics paint a picture of effectiveness, but do not function in isolation from factors that could adversely affect reading achievement. Such factors include the teacher's education and experience, in-service activities, beliefs and instructional and assessment preferences. Some of the differences between effective classrooms with high achieving learners and ineffective classrooms with low achieving learners are highlighted by Richgels (2003) in the following way:

- Higher achieving classrooms have a better integration of reading skills instruction with holistic literacy activities.
- High instructional density occurs in high achieving classrooms, meaning that there is a great deal of instruction in all settings, serving multiple purposes.
- Effective teachers are able to scaffold what learners' learn by providing support for progress without doing the learning for the child.
- High achieving classrooms have self-regulated learners who enjoy independent work.
- Effective teachers are able to integrate reading and writing as simultaneous processes, while communicating high expectations of their learners.

Macdonald (2006) conceptualizes effective teaching and learning in a South African study by referring to 'mediation', a term initially used by Vygotsky, to describe the way in which the world is interpreted to children for them to make their own construction of it. Mediation takes place within the child's 'zone of proximal development', enabling him or her to be more successful in a problem-solving environment, if assisted by more capable significant others. According to Macdonald (2006), the context of literacy in South Africa, e.g. the way in which adults read to children, and the way in which books are understood, is not yet integrated well enough with Vygotsky's notions of mediation. There may well be a need for more understanding about how parents and teachers assist learners in making sense of the contexts in which they find themselves. This poor integration between children's context of literacy and how it is mediated to them is worsened by rapid socio-political change and turbulent curriculum innovation that have taken place over the last fifteen years. As yet, these changes have not been meshed significantly into the literacy contexts in which South African learners are embedded.

For the purposes of this study, school-level factors include items that have been selected from the PIRLS 2006 School Questionnaire and the PIRLS 2006

Teacher Questionnaire. These school-level factors and criteria for their inclusion in building multi-level models will be discussed in Chapter 7.

## CHAPTER 4: THE PROGRESS IN INTERNATIONAL READING LITERACY STUDY (PIRLS) 2006

*“The more that you read, the more things you will know. The more that you learn, the more places you’ll go.”*

*Dr. Seuss*

PIRLS 2006 is an international comparative evaluation of reading literacy of Grade 4 (9 year-old) learners, involving more than 40 countries. The study was established to provide countries with information about learners’ achievement in the core curriculum area of reading, to complement the mathematics and science data provided by the Trends in International Mathematics and Science study (TIMSS).

PIRLS 2006 is run under the auspices of the International Association for the Evaluation of Educational Achievement (the IEA). As an organization, the IEA undertakes international studies that benchmark performance of school-going children in mathematics, science, civic education, information, communication, technology and reading, inter alia. Currently, 46 countries are involved in the PIRLS 2006 collaborative analysis of children’s reading literacy and the factors that influence reading acquisition.

### 4.1. PIRLS 2006 FRAMEWORK FOR LITERACY

PIRLS 2006 is the second, after PIRLS 2001, in a series of planned five-year cycles of assessment to measure trends in children’s reading literacy achievement, policy and practices related to literacy. PIRLS 2006 aims to describe trends and international comparisons for:

- The reading achievement of Grade 4 learners
- Learners’ competencies in relation to goals and standards for reading education
- The impact of the home environment and how parents foster reading literacy



- The organization, time and reading materials for learning to read in schools
- Curriculum and classroom approaches to reading instruction

Campbell, Kelly, Mullis, Martin and Sainsbury (2004) state that PIRLS focuses on three aspects of reading literacy. Firstly, *processes of comprehension* are ways in which readers construct meaning from text. They focus on and retrieve specific ideas, make inferences, interpret and integrate information, while also examining the text features. Secondly, *purposes for reading* are two types of reading that account for most of the reading young learners do, namely reading for literary experience and reading to acquire and use information. Subsequent sections of this document will pay particular attention to the types of reading comprehension and the purposes for reading found in the PIRLS 2006 assessment. Thirdly, *reading behaviours and attitudes* refer to those behaviours and attitudes that would promote lifelong reading habits.

Table 4.1 (below) provides a breakdown of the aspects of reading literacy as measured by PIRLS 2006. In the case of the South African study, these aspects were recorded or measured not only for Grade 4 but also for Grade 5 learners.

**Table 4.1: PIRLS 2006 Aspects of Reading Literacy**

Processes of Comprehension	1. Focus on and retrieve explicitly stated information 2. Make straightforward inference 3. Interpret and integrate ideas and information 4. Examine and evaluate content, language and textual elements
Purposes for Reading	Reading for Literary Experience Reading to Acquire and Use Information
Reading Behaviours and Attitudes	Contextual Questionnaires internationally administered to: - School principals - Grade 4 Teachers - Grade 4 Learners - Grade 4 Learners' Parents

In naming its 1991 study, the IEA decided to join the terms 'literacy' and 'reading' to convey the notion that literacy includes the ability to reflect on what is read and reading is a tool to achieve personal and societal goals. Thus,

according to Campbell et al. (2001), the framework for literacy that applies to PIRLS is as follows:

...the ability to understand and use those written language forms required by society and [or] valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers and for enjoyment. (Campbell et al., 2001:3).

With this definition of reading literacy, the PIRLS 2006 framework regards reading literacy as a constructive and interactive process. According to Brinkley and Kelly (2003), the reader is now regarded as actively constructing meaning and as knowing effective reading strategies. Such readers have positive attitudes towards reading and read for the purposes of recreation and information acquisition. Meaning is constructed in the interaction between reader and text, in the context of a particular reading experience. Reading implies that the reader brings with him or her a repertoire of knowledge, skills, cognitive and metacognitive strategies.

The PIRLS 2006 framework for reading literacy acknowledges that reading is a constructive and interactive process involving interaction between the reader and the text. The context of reading is an important element in how readers create meaning and the choice of skills and strategies they use in order to do so. The framework also acknowledges that the structural elements of a text will influence a reader's strategies. In short, PIRLS 2006 conveys the notion that reading helps develop an understanding of text, thinking about text and reading various texts for many different purposes. It reasonably seeks to measure these elements.

#### **4.2. ASPECTS OF READING LITERACY**

PIRLS 2006 focuses on the three aspects of reading literacy, presented in Table 4.1. These aspects are outlined in this section.

#### **4.2.1. Processes of Comprehension**

The PIRLS 2006 assessment examines the processes of comprehension as well as purposes for reading. These two aspects do not function in isolation from each other, but rather work together to form the basis of the written test of reading comprehension. According to the PIRLS 2006 Assessment Framework and Specifications (Mullis, Kennedy, Martin & Sainsbury, 2004), readers construct meaning in different ways when faced with the task of reading. They are likely to:

- focus on and retrieve specific ideas
- make inferences
- interpret and integrate information and ideas
- evaluate and examine text features.

These four types of comprehension processes are used in the PIRLS 2006 assessment to develop the comprehension questions derived from reading passages that are finally presented to learners. A range of questions, each dealing with a particular process, enables learners to demonstrate their abilities and skills in constructing meaning from written text.

##### **4.2.1.1. Focus On and Retrieve Explicitly Stated Information**

When focusing on and retrieving explicitly stated information, learners use various strategies to locate and understand content that is relevant to the question posed in the test. Retrieving appropriate text from a reading passage not only means that the learners have to understand what is stated in the text, but to also ascertain how that content is related to the information sought (Mullis et al., 2004). Reading tasks that may exemplify this type of comprehension process include:

- Identifying information that is relevant to the specific goal of reading
- Looking for specific ideas
- Searching for definitions, words or phrases

- Identifying the setting of a story (e.g. in terms of time or place)
- Finding the main idea when explicitly stated.

#### **4.2.1.2. Making Straightforward Inference**

Constructing meaning from a text requires readers to make inferences about ideas or information not stated explicitly within it. Making these inferences allows the learner to move beyond what is stated in the text and to fill in the 'gaps' in meaning. Some of these inferences might be straightforward, implying that they are mostly indicated explicitly in the text. Although the ideas might be explicitly stated, the learner still needs to make the connections between ideas, thus the intended meaning of text must be inferred (Mullis et al., 2004).

Reading tasks that might exemplify this type of text processing include the following:

- Inferring that one event caused another event
- Concluding the main point by making a series of arguments
- Determining the referent of a pronoun
- Identifying generalizations made in the text
- Describing the relationship between two characters.

#### **4.2.1.3. Interpret and Integrate Ideas and Information**

When interpreting ideas and information, the learner is processing text beyond the phrase or sentence level. The learner might focus on local or global meaning, or may relate details to overall themes and ideas. This process is therefore an interpretive one, where learners attempt to construct a more specific or complete understanding of the text by integrating personal knowledge and experience with meaning found in the text (Mullis et al., 2004). Reading tasks that may exemplify this type of text processing include the following:

- Discerning the overall message or theme of a text
- Considering alternative actions by characters
- Comparing and contrasting text information
- Inferring a story's mood or tone
- Interpreting a real-world application of text information.

#### **4.2.1.4. Examine and Evaluate Content, Language and Textual Elements**

Examining and evaluating content, language and textual elements entail a shift in focus from constructing meaning to critically considering the text itself. According to Mullis et al. (2004), this focus allows for reflecting on textual elements, such as structure and language in order for the learner to examine how meaning is presented. During this process, the learner should draw on his or her knowledge of text genre and structure, an understanding of language conventions, and reflection on the author's devices to convey meaning, purpose, and perspective to the reader. In essence, examining and evaluating content, language and textual elements entail weighing of the learners' understanding of the text against their understanding of the world.

Reading tasks that may exemplify this type of text processing include the following:

- Evaluating the relative likelihood that the course of events described in the text could really happen
- Describing how the author devised a surprise ending
- Judging the completeness or clarity of information in the text
- Determining an author's perspective on the central topic.

## **4.2.2. PURPOSES FOR READING**

The PIRLS 2006 assessment focuses on two purposes for reading, namely:

- Reading for literary experience
- Reading to acquire and use information

These two purposes for reading account for most of the reading done by young learners in and out of school. Although the PIRLS 2006 assessment distinguishes between these two purposes for reading, the underlying processes and strategies readers use for both purposes are very similar.

Each of these purposes for reading is often associated with specific types of texts. For example, reading for literary experience is often associated with fictional material, while reading to acquire and use information is more likely to be associated with informative articles and instructional texts. The PIRLS 2006 assessment takes the form of fictional passages when reading for the purposes of literary experience, and articles for the purposes of reading to acquire and use information. However, these purposes for reading do not align strictly with these types of texts. Because tastes and preferences vary so widely, almost any text could conceivably meet either purpose for all learners (Mullis et al., 2004).

### **4.2.2.1. Reading for Literary Experience**

In literary reading, the reader engages with the text to become involved in imagined events, settings, actions, consequences, characters, atmosphere, feelings and ideas. The main form of literary texts when reading for literary experience in PIRLS 2006 assessments is narrative fiction.

### **4.2.2.2. Reading to Acquire and Use Information**

When reading to acquire and use information, the learner does not engage in imagined worlds, but with aspects of the real world. By means of informational

texts, the learner can understand how the world is and has been, and why things work the way they do. The corresponding PIRLS 2006 passages are aimed not only at the acquisition of knowledge and information, but also at assessing the learner's ability to use reasoning (Mullis et al., 2004). For the purposes of reading to acquire and use information, text formats in the PIRLS 2006 assessment take the form of factual articles.

#### **4.2.3. READING BEHAVIOURS AND ATTITUDES**

Reading behaviours and attitudes are those elements that would promote lifelong reading habits. The PIRLS 2006 assessment makes use of contextual questionnaires that are administered internationally to Grade 4 learners, to Grade 4 teachers, to school principals and to Grade 4 learners' parents, in order to gauge reading attitudes and behaviours. For the South African study, these instruments were also administered to Grade 5 learners, their parents and Grade 5 teachers. Principals were requested to complete a school questionnaire as it pertained both to Grade 4 and Grade 5 learners.

According to Mullis (2002), the aim of gathering background information on learners, their parents, teachers and school principals, is to describe the learners being assessed accurately, in order to understand the factors at play that may be influencing their educational experiences. Mullis (2002) notes that background information is also important to evaluate the potential for bias resulting from learners' non-participation. Background information should answer questions about learners who were absent on the day of assessment. It could also be used to gauge whether or not learners who refused participation in the assessment appear to differ greatly from those who did participate, so as to determine if the recorded levels of achievement might have been artificially increased or decreased. Together with descriptions of learners and their backgrounds, contextual information about educational settings and experiences can reveal striking differences in how resources are distributed and utilized between different groups or provinces of learners (Mullis, 2002).



Another important reason for collecting background information is to inform educational policies in relation to the opportunities learners are afforded to learn. Policy is informed by what emanates from the content that is officially specified in the curriculum, whether and how it was taught, learners' predisposition to learn, as well as a range of home and school factors that can support and enhance the learning process.

Mullis (2002) broadly lists the educational areas addressed by the PIRLS 2006 contextual questionnaires as curriculum, learner characteristics and experiences, home/school connection, school environment, teacher characteristics, classroom resources and instructional practices.

More specifically, Table 4.2 (below) illustrates how the questionnaire frameworks relate reading achievement to factors associated with national and community, home and school contexts:

**Table 4.2: Factors within the Home, School, National and Community Contexts addressed by PIRLS 2006**

<b>Context:</b>	<b>Factors addressed by contextual questionnaires</b>
National and Community Contexts	<ul style="list-style-type: none"> <li>• Emphasis on literacy</li> <li>• Demographics and resources</li> <li>• Governance and organization of educational system</li> <li>• Curriculum characteristics and policies</li> </ul>
School Contexts	<ul style="list-style-type: none"> <li>• School policy and curriculum</li> <li>• School environment and resources</li> <li>• Teacher training and preparation</li> <li>• Classroom environment and structure</li> <li>• Instructional strategies and activities</li> <li>• Instructional materials and technology</li> <li>• Homework and assessment</li> </ul>
Home Contexts	<ul style="list-style-type: none"> <li>• Activities fostering reading literacy</li> <li>• Languages in the home</li> <li>• Economic resources</li> <li>• Social and cultural resources</li> <li>• Home/school connection</li> <li>• Learners' out-of-school literacy activities</li> </ul>

### 4.3. PIRLS 2006 ASSESSMENT INSTRUMENTS

This section pays particular attention to the PIRLS 2006 assessment instruments. These instruments included reading achievement booklets from which learner performance was derived. Contextual questionnaires accompanied the reading achievement booklets and were administered to Grade 5 learners, their parents, Grade 5 teachers and school principals.

#### 4.3.1. Achievement Booklets

In the PIRLS 2006 reading assessment, the two purposes for reading (for literary experience and to acquire and use information) are each represented by a number of reading passages, with accompanying questions learners are required to answer.

The PIRLS 2006 structure makes use of a matrix design technique, whereby the passages and accompanying questions are divided into groups or blocks (Mullis, Kennedy, Martin & Sainsbury, 2004). Individual learner booklets are made up of sets of two of these ten blocks (see Table 4.3, below) according to a specific plan, where testing time is separated into two 40-minute blocks of passages and questions.

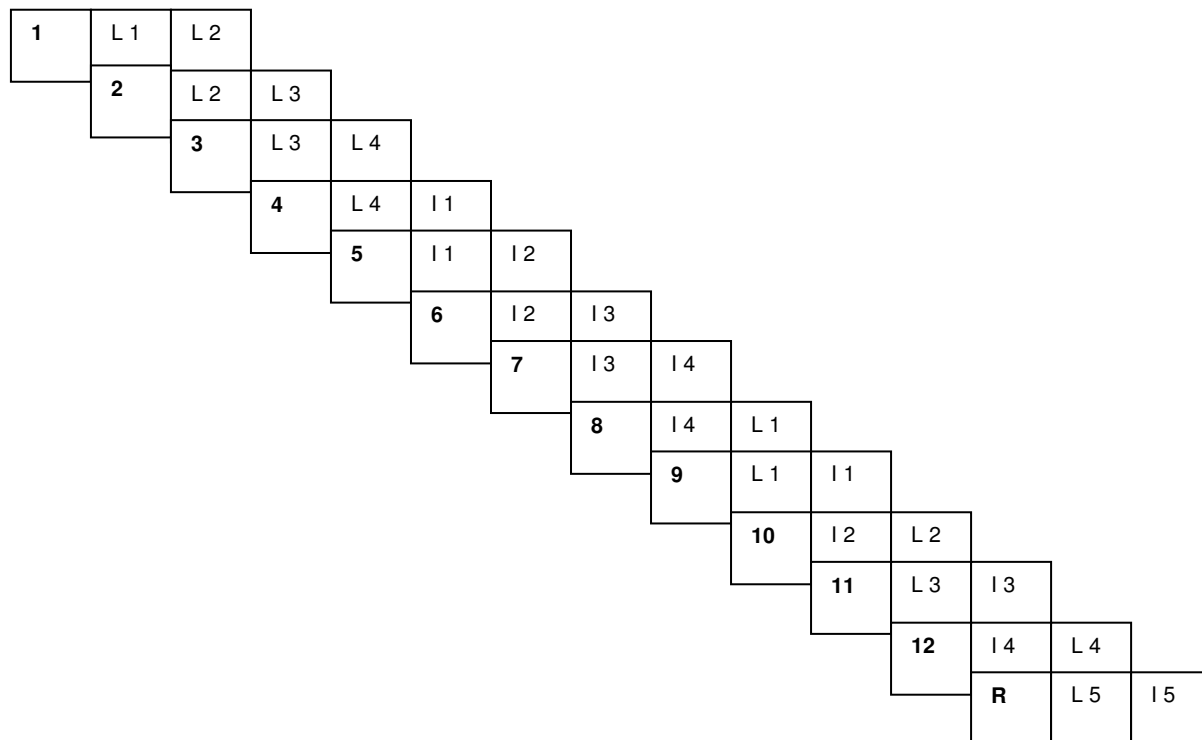
The blocks are labeled L1-L5 for the literary passages and I1-I5 for the informational passages (see Table 4.4, below). Four of the ten blocks were retained from the previous cycle of PIRLS 2001 as a foundation for measuring trends over the 5-year interval in reading achievement for previously participating countries.

**Table 4.3: PIRLS 2006 Matrix Sampling Blocks**

<b>Purpose for Reading</b>	<b>Block</b>				
Literary Experience (Literary texts)	L1	L2	L3	L4	L5
Acquire and Use Information (Informational texts)	I1	I2	I3	I4	I5

**Table 4.4: PIRLS 2006 Test Booklet Design**

Booklet Number	Reading Passage	Reading Passage
1	L 1 (Passage from PIRLS 2001)	L 2 (Passage from PIRLS 2001)
2	L 2	L 3
3	L 3	L 4
4	L 4	I 1 (Passage from PIRLS 2001)
5	I 1	I 2 (Passage from PIRLS 2001)
6	I 2	I 3
7	I 3	I 4
8	I 4	L 1
9	L 1	I 1
10	I 2	L 2
11	L 3	I 3
12	I 4	L 4
Reader (13)	L 5	I 5



**Figure 4.1: Matrix Design per Test Booklet**

In the PIRLS 2006 design, the ten blocks are distributed across 13 possible booklets. During data collection, each learner responded to one such test booklet consisting of two reading passages. In order to present some passages in a more visually appealing manner, two blocks (one literary and one informational) were presented in a colour-printed, magazine-type format, with the questions in a separate booklet. This booklet (booklet 13) is referred to as the PIRLS “Reader”. Figure 4.1 (above) illustrates the matrix design for each

test booklet. Up to and including booklet 9, each second reading passage becomes the first reading passage in the following booklet.

Two question formats are used in the PIRLS 2006 assessment, i.e. multiple choice and constructed response questions. The former provided learners with four response options, of which only one was correct. Each multiple-choice question was worth one point, while correct answers to constructed response questions were worth one, two or three points, depending on the depth of understanding required.

According to Mullis et al. (2004), multiple-choice questions are used to assess any of the comprehension processes. However, as these types of questions do not allow learners to explain or support statements, they were deemed less suitable to assess learner abilities to make more complex interpretations or evaluations. To remedy this unsuitability, the PIRLS 2006 comprehension texts also made use of constructed response questions that are considered to be consistent with the definition of literacy underlying the framework. Constructed response questions reflect the interactive, constructive view of reading, where meaning is constructed between the reader, the text and the context of the reading task. To tap the constructed elements, these types of questions require learners to provide support for what was inferred from reading or to make interpretations depending upon background knowledge and experience (Mullis et al., 2004).

#### **4.3.2. Contextual Questionnaires**

In addition to test booklets aimed at providing a basis of measurement for learners' reading performance, the assessment was accompanied by contextual questionnaires to be completed by learners, parents, educators and school principals. In this way, additional information was gathered on home and school factors associated with individual learners' reading performance by Grade 4. According to Kelly (2001), the contextual questionnaires are grounded in a model that relates reading outcomes, as exhibited by learners' reading achievements and attitudes, to home, school and national contexts.

#### **4.3.3. Learner Questionnaire**

Each learner participating in the PIRLS 2006 assessment was requested to complete a learner questionnaire, which sought to elicit information about learners' home and school experiences and included aspects such as instructional experiences, reading for homework, self-perceptions and attitudes towards reading, out-of-school reading habits, computer use, home literacy resources and basic demographic information.

#### **4.3.4. Learning to Read Survey (Parent Questionnaire)**

Referred to by PIRLS 2006 as the 'Learning to Read Survey', this questionnaire was addressed to parents or primary caregivers of learners. It dealt mainly with parent-child literacy activities, availability of literacy resources in the home, parents' reading habits and attitudes, connections between the home and the school, and basic demographic information and socio-economic indicators.

#### **4.3.5. Teacher Questionnaire**

For each of the sampled classrooms, reading teachers of learners were requested to complete a teacher questionnaire. Mainly intended to gather information about classroom contexts for developing reading literacy, this questionnaire also focused on general classroom characteristics (for example class size, language abilities and reading levels of learners). The questionnaire also explored factors related to teachers' reading instruction, which included aspects of instructional time, available materials, grouping learners in different or same ability groups, and activities undertaken in the classroom to promote and develop learners' reading literacy. The questionnaire enquired about teachers' use of resources, their assessment practices and efforts to maintain a connection between the learners' homes and the school. This comprehensive questionnaire concluded with questions regarding the teachers' opportunities for professional collaboration and professional development, and their current education and training.

#### **4.3.6. School Questionnaire**

For each of the sampled schools in PIRLS 2006, principals were expected to complete a school questionnaire, exploring enrollment, school demographics, availability of resources and socio-economic indicators related to the learner population for the associated school. The questionnaire focused upon national and community level in terms of reading curriculum policies and total instructional time for the school year. The school questionnaire also elicited responses to questions pertaining to the availability of materials and staff, perceptions about school climate, as well as the interaction and cooperation between the school and the learners, their parents or other caregivers.

#### **4.4. RESEARCH DESIGN AND METHODOLOGY: PIRLS 2006**

Gay and Airasian (2003) define 'research' as the scientific and disciplined inquiry approach to the study of problems, applied in a formal, systematic way. It is therefore a process of inquiry and formulating specific questions, the answers to which lead to a better understanding of the problem at hand (Graziano & Raulin, 2000), normally with a view to informing choices of constructed response or information.

For the purposes of the PIRLS 2006 study, quantitative research methodology was used in the form of survey research. According to Gay and Airasian (2003), underlying quantitative research is a belief that the object of study is relatively stable, uniform and coherent. Thus, it is assumed that a phenomenon (in this case, related to the topic of reading literacy) can be measured, understood and generalized upon. Quantitative methods are based on the collection and analysis of numerical data usually obtained from questionnaires, tests, checklists and other paper-and-pencil instruments. In the case of survey research, quantitative information is produced which may assist the researcher to explore and explain particular phenomena. Generally involving large samples of respondents, surveys aim to measure a number of variables, test multiple hypotheses and possibly infer temporal order from questions concerning past behaviour, experience, preference, beliefs and opinions (Neuman, 1997).

At this point it is necessary to make a distinction between this study and the PIRLS 2006 study. This study utilized South African data from the IEA's Progress in International Reading Literacy Study 2006, and was therefore a secondary analysis of questionnaire data and learner reading achievement as measured by a number of reading tasks. The aim of this secondary analysis was to illuminate underlying patterns in data emanating from the South African PIRLS 2006 study based on patterns of contrast in performance from the different language groups. Data analysis will be aimed at describing the current conditions related to learners' reading environment in relation to the learners' language background. It was expected that different relationships may exist between the response variable and the possible explanatory variables impacting on reading achievement, across different language groups.

#### **4.5. SAMPLING DESIGN FOR PIRLS 2006**

One of the major components in undertaking an international comparative study such as PIRLS 2006 is the proper selection of samples. By properly selecting samples, it is likely that unbiased, accurate and internationally comparable survey estimates will be obtained.

PIRLS 2006 takes the form of a cross-sectional survey with the aim of investigating reading literacy at one particular time, within a single learner population for each of the participating countries. According to Gay and Airasian (2003), such a cross-sectional survey design allows for data collection at one particular time, in order to provide information on the current status of a phenomenon, in this case reading literacy.

The sample design proposed for PIRLS 2006 is generally referred to as a three-stage stratified cluster sample. Foy and Joncas (2003) name three reasons for stratifying:

- To produce reliable estimates, using different sampling designs, for sub-national domains, e.g. provinces or states.
- To improve the sampling efficiency, thus improving the reliability of national estimates without necessarily increasing sample sizes.
- To ensure that different parts of the population are appropriately represented in the sample.

Examples of stratification variables included regions (e.g. provinces), urbanization (e.g. urban vs. rural), socio-economic status (e.g. low, medium or high), school types (e.g. public vs. private) and school programmes (e.g. elementary, primary or secondary).

#### **4.5.1. First-Stage Sampling Units**

The first stage of sampling consisted of individual schools that were selected with probabilities proportional to their size. In this case, school size was measured by the estimated number of learners enrolled in the target grade. Foy and Joncas (2003) refer to a school sampling frame as a comprehensive national list of eligible schools. Prior to sampling, schools in this sampling frame were assigned to a predetermined number of strata, thereby making the stratification implicit, explicit or both. Foy and Joncas (2003) explain 'explicit stratification' as building separate school lists (or sampling frames) according to a set of explicit stratification variables under consideration. 'Implicit stratification', on the other hand, involves the sorting of already existing sampling frames by a set of implicit stratification variables, thus ensuring a strictly proportional sample allocation of schools within and across all implicit strata.

As the schools were sampled, replacement schools were simultaneously identified should the need have arisen to replace non-participating sampled schools. Non-participating sampled schools in South Africa constituted those schools that were not functional, for example due to fire or floods, or schools that no longer existed, for example where mergers between two neighbouring



schools had taken place, but where such mergers had not yet been updated on the national list of schools.

#### **4.5.2. Second-Stage Sampling Units**

This second stage of sampling refers to classrooms within sampled schools. Within each sampled school, a list of eligible classrooms for the target grade was prepared. From this list, a single eligible classroom was randomly selected. In this regard, Foy and Joncas (2003) encouraged each participating country to sample two classrooms per school.

#### **4.5.3. Third-Stage Sampling Units**

The third-stage sampling units refer to learners within sampled classrooms. The PIRLS 2006 study population desired for subsequent valid inferences is defined as all learners enrolled in the upper of the two adjacent grades that include the largest proportion of 9 year-old learners at the time of testing (Foy & Joncas, 2003). For most participating countries, the upper grade should be Grade 4, otherwise it would refer to the national equivalent.

Generally, all learners in a sampled classroom were selected for the PIRLS 2006 assessment. Foy and Joncas (2003) point out the possibility of sub-sampling within sampled classrooms, but warn that this device may complicate survey operations, and so reduce the sample precision, despite consequent savings on printing, scoring and data entry. For the South African sample, no sub-sampling was attempted, which meant that intact Grade 4 and Grade 5 classes were selected and not sub-samples of learners in selected classes.

Each national sample of schools selected is intended to be a representative sample of all eligible schools in a specific country. For this study, teachers linked to the selected learners from sampled classrooms were asked to respond to teacher questionnaires. Unlike schools of a particular country, the teachers who responded to the teacher questionnaire were not regarded as a suitable representative sample of teachers within the country. Rather, these teachers

were regarded as reading teachers who teach a representative sample of learners within a country (Foy & Joncas, 2003).

#### **4.5.4. Participation Rates and Exclusions**

Participation requirements were set out by design at 85% of initially sampled schools. Non-participating schools were substituted by matched 'replacement schools' in order to meet sample size requirements. Although a system of replacement schools was available, participating countries were discouraged from utilizing replacement schools too often and were still required to have the participation of at least 50% of the initial (or preferred) sample of schools.

In terms of classroom participation, a high rate of 95% of sampled classrooms was required. The substitution of classrooms was not permitted. In terms of learners and teachers, an 85% participation rate was required. Learner participation was calculated at 85% of the selected learners at the national level, not necessarily for each participating school. As with classroom substitution, teacher substitution was not allowed, since PIRLS 2006 required teachers of participating Grade 4 classrooms to complete questionnaires relating teaching practices and classroom variables to learner achievement at classroom-level.

Despite these stringent requirements, the PIRLS 2006 study made provision for exclusions. According to Foy and Joncas (2003), reasons for exclusion were usually of a practical nature, for example increased survey costs increased complexity in the sample design or difficult test conditions. Exclusions could occur at school-level, where entire schools were excluded, or within schools, where specific learners or specific classrooms were excluded from participation.

School-level exclusions were acceptable in cases where schools were:

- Geographically inaccessible
- Extremely small in size

- Offering a curriculum or school structure radically different from the mainstream educational system

Within-school exclusion criteria allowed for the exclusion of the following learners:

- Intellectually disabled learners who are unable to follow general instructions of the test. This criterion does not include learners with poor academic performance, but only those who have been professionally and psychologically evaluated as intellectually disabled.
- Functionally disabled learners who would not be able to respond physically to a testing situation.
- Non-native language speakers, including those learners who are unable to overcome the language barrier of the test.

Exclusions had to be kept to a minimum, and specifically not more than 5% of the national desired target population, both at school-level and within-school samples.

The PIRLS 2006 sample size requirements demanded the participation of a minimum of 150 schools and 4 000 tested learners per country. In South Africa, an intended, national sample of 441 schools was drawn up. The selected sample of schools was stratified geographically and linguistically and covered schools from nine provinces, within which all 11 official languages were represented as languages of instruction. A total of 16 073 Grade 4 learners participated in PIRLS 2006 in South Africa from a realized sample of 429 (98.5%) schools. For Grade 5, the corresponding figure was 397 schools (96.5%). Intact Grade 4 classes from each school were selected for participation and all learners present on the day of testing were included in the sample. In terms of Grade 5 learner participation, the sample resulted in 14 657 learners being assessed from intact classrooms from the same schools that were selected for the Grade 4 sample.

#### 4.6. TRANSLATION OF PIRLS 2006 ASSESSMENT INSTRUMENTS

The PIRLS 2006 assessment instruments were developed and prepared in English by the International Study Centre (ISC) at Boston College. National Research Coordinators (NRCs) of participating countries also made contributions. Participating countries subsequently translated the assessment instruments into their local languages of instruction – in South Africa’s case, translation of assessment instruments was effected for all 11 official languages.

According to Kelly and Malak (2001), a good translation follows the conventions of the target language and the cultural context, while at the same time conveying the same meaning as the source text. This definition means that:

- Translated text should have the same language level and degree of formality as the source text.
- Translated text should have correct grammar, use of tenses and placement of verbs and prepositions.
- Translated text should not clarify, omit or add information not given in the source text.
- Translated text should have equivalent qualifiers and modifiers in an order appropriate for the target language.
- Idiomatic expressions should be translated appropriately and not necessarily word-for-word.
- Aspects of spelling, punctuation and use of capitals should be appropriate for the target language, the country and cultural context.

In designing the translation process, the ISC had to ensure the standardization and uniformity of instruments across countries. This objective meant that each participating country had to follow specific procedures, set out in guidelines provided to all NRCs in the PIRLS 2006 Survey Operations Manual. These guidelines and procedures were discussed and further elaborated upon at relevant NRC meetings. The importance of such a translation process was to ensure that valid comparisons could be made. It is important to ensure equivalence in passages and items across languages, while at the same time

acknowledging that differences in expression across countries had to be incorporated in the translations where necessary.

#### **4.6.1. The Translation of Instruments in South Africa**

PIRLS 2006 translation guidelines required translation of each instrument from English to the target language. The translation procedure required the following:

1. Identification of the target language (or language of instruction).
2. Identification of translators for an independent translation. Translators were required to have knowledge of English as well as the target language.
3. Translation of instruments from English to the target language and adaptation in cases deemed necessary.
4. Back-translation of instruments from the target language into English.
5. Comparison and reconciliation of the two independent translations.
6. Documentation of all cultural adaptations.

##### **4.6.1.1. Identification of the Target Language**

For the South African context, the assessment instruments had to be translated into all 11 official languages. This requirement meant that each of the test booklets comprising the reading passages with items was translated for each of the official languages. In terms of the contextual questionnaires, only the parent and learner questionnaires were translated into the other 10 official languages. This restriction was adopted not only to keep the costs of translation as low as possible, but also in anticipation that most teachers and school principals (who were requested to complete the teacher and school questionnaires) were in all likelihood able to speak, write and understand English. Thus, for these groups, background questionnaires were administered in English only.

#### **4.6.1.2. Identification of Translators for Independent Translation**

Only professional translators, many of whom are registered with the South African Translators Institute, were appointed, to ensure accurate translations of high standard for all the languages. Translators were allowed to change terms and expressions that were not familiar in their culture, given that the change would not affect the substance of the text or question, alter the meaning of the question or affect the reading level of the text.

Participating countries in PIRLS 2006 were advised to appoint translators with the following abilities or characteristics:

- Knowledge of English
- Knowledge of the target language
- Experience in the country and its cultural context
- Experience with learners in the target population to be tested with the PIRLS 2006 assessment instruments
- Familiarity with test development

In translating the PIRLS 2006 instruments, translators had the following responsibilities:

- Identifying and minimizing cultural differences in reading texts and background questionnaires
- Finding words and phrases equivalent to those used in English
- Ensuring that the reading level of texts remained the same in the target language as in the original English version
- Ensuring that the meaning of the texts and questions did not change.

#### **4.6.1.3. Translation and Adaptation**

The PIRLS 2006 assessment instruments and contextual questionnaires underwent a first round of translations for the purposes of conducting the field

test in March 2005. The translation task was staggered, which meant that the translation of instruments was not done at once for all 11 official languages. Initially, instruments were only translated into Afrikaans, isiZulu and isiXhosa, chosen not only because they represent the larger language groups within the country, but also because of the fact that Afrikaans and isiZulu schools had been included in the field test held during March 2005.

Translators were allowed to make adaptations to the text in order to make unfamiliar contextual terms culturally acceptable. Acceptable changes included the following:

***Table 4.5: Examples of Culturally Acceptable Adaptations***

<b>Type of Change:</b>	<b>Change from:</b>	<b>Change to:</b>
Units	inches miles	centimeters kilometers
Common Nouns	candy	sweets
Spelling	recognize centre	recognise center

#### **4.6.1.4. Back Translation from Target Language into English**

Following the first round of translations from English to Afrikaans, isiZulu and isiXhosa respectively, all the assessment instruments and questionnaires were translated back and compared with the English instruments. The back-translation stage involved different translators from those responsible for the first round of translations. Thus, the back translated versions could be compared to the original English versions of the instruments. Any inconsistencies or differences in meaning between the original and back translated versions of the instruments were checked. Where differences in meaning were found, instruments were subsequently sent back to the original translators to make adjustments or changes to their translated Afrikaans, isiZulu or isiXhosa versions, and in order to ensure that the same meaning was reflected in the English instruments as in the final versions of any other translated language.

Field test results were made available in August 2005, on the basis of which, final adaptations were made to reading passages and background

questionnaires. These adaptations entailed, in some cases, slight changes in wording to passages or adding questions to background questionnaires. In addition to general adaptations, unsuitable reading passages were also eliminated from inclusion in the PIRLS 2006 main study. Decisions to exclude unsuitable passages were based on item statistics as well as participating countries' favourable or unfavourable opinions of passages.

Once these decisions of exclusion and general adaptations were made, South Africa proceeded with the translation task. Achievement booklets and learner and parent questionnaires were updated in Afrikaans, English, isiZulu and isiXhosa to reflect the new changes. In addition, achievement booklets, and learner and parent questionnaires were translated into the remaining seven languages, namely Sepedi, Sesotho, Setswana, SiSwati, Tshivenda, Xitsonga and isiNdebele. The translation process for the remaining seven languages followed the same process as was used for the initial four languages, that is, a first round of translations followed by back translations from the target languages into English. This round was followed by a process of reviewing and reconciling any significant differences in meaning between the original English and back translated versions.

#### **4.6.1.5. Documentation of Cultural Adaptations**

National Adaptation Forms were used to record any and all adaptations made to the achievement booklets or background questionnaire items for PIRLS 2006. The description of each adaptation included the original English term, followed by the translated terms for test or questionnaire items. This documentation was submitted to the IEA secretariat for each language of translation and was used during the translation verification process to evaluate the quality of the translations.

#### **4.6.1.6. International Verification of Instrument Translations**

Upon completion of the translation process of assessment instruments and contextual questionnaires for all 11 official languages, instruments were



scrutinized through a process of international translation verification. In order to adhere to strict quality control measures, all translated assessment instruments and questionnaires were submitted to the secretariat at the International Association for the Evaluation of Educational Achievement (the IEA). To ensure standardization of instruments across countries, the secretariat appointed independent translation verifiers to assure quality and verify translated instruments for each country participating in PIRLS 2006.

The primary task of translation verifiers was to evaluate the accuracy of the translation of the survey instruments. This task involved making recommendations for improvements in the translations where necessary, as well as notifying the national research coordinators of any deviations from the international version in the layout of the translated instruments. Their task thus involved the evaluation of accuracy of translations and justification for and adequacy of any cultural adaptations. More specifically, verifiers had to ensure the following criteria were satisfied by the translated material submitted for verification:

- The difficulty or meaning of the text was not affected by the translation
- Questions did not become more difficult or easy as a result of translation
- Information was not added or omitted
- All assessment booklets comprised the correct passages and all the items
- All background questionnaires included all the original items

Instruments were verified twice, once before the field test and once before the main data collection. The verification process required verifiers to review the translated instruments and record any deviations in 'Translation Verification Records'. Separate forms were used for the assessment booklet directions, the achievement booklets and each of the four background questionnaires. For the purposes of these verification records, severity codes were used, ranging from 1 (indicating major changes or errors) to 4 (indicating acceptable changes).

Major changes or errors related to translations included:

- Incorrect order of choices in a multiple-choice question
- Omission of questions
- Incorrect translations resulting in the question revealing the answer
- Incorrect translation that changed the meaning or difficulty of a passage or question

Minor changes or errors included spelling errors that did not affect comprehension. Minor changes were deemed acceptable and appropriate, for example where units of measurement were changed to those units used by the corresponding country. Where suggestions for alternatives indicated that the translation might have been inadequate, the translation verifier suggested different wording.

Completed verification records were sent to NRCs and the International Study Centre at Boston College. NRCs were not required to accept all recommendations made by the verifiers, but rather they would document changes that did not seem warranted or appropriate, along with reasons for not changing the text.

The review of verification reports by NRCs meant that assessment instruments could once again be submitted to the International Study Centre for final review. Once all mistakes or deviations had been corrected, the Centre provided final approval for the printing and administration of assessment instruments and background questionnaires. South Africa met all the international requirements of the verification process in all 11 official languages.

#### **4.7. DATA COLLECTION, MONITORING AND SCORING**

The South African study of PIRLS 2006 took place on a large scale and great care was taken in preparing, printing and packing instruments for distribution to each of the participating schools located in all 9 provinces and representing all

11 official languages. Due to the scale of the study, a market research company was appointed to conduct data collection. Fieldworkers were trained according to the standardized procedures for data collection as set out by the IEA. Training manuals set up by the IEA explained procedures for receipt and distribution of materials, and activities related to the test session. These details included aspects such as ensuring test security, the use of standardized scripts to regulate test directions and timing, rules for answering learners' questions, and steps to ensure that identification on the test booklets and questionnaires corresponded to information on the forms used to track learners (Mullis, Martin, Gonzalez & Kennedy, 2003).

In South Africa, data collection for PIRLS 2006 took place from October 2005 and was completed by the end of January 2006. Consistency in data collection within and between countries had to be ensured and compliance with IEA standards and guidelines was of utmost importance. For these reasons a monitoring process was put into place and each country appointed an International Quality Control Manager to act as an external, objective observer of the data collection. Each National Research Centre was also tasked with appointing National Quality Control Officials to act as observers of data collection. Table 4.6 (below) provides an indication of the number of participating schools that were monitored in each province in South Africa.

**Table 4.6: Number of Schools Monitored for PIRLS 2006**

<b>Province</b>	<b>Number of schools monitored</b>
Eastern Cape	2
Free State	4
Gauteng	3
KwaZulu-Natal	4
Limpopo	2
Mpumalanga	6
Northern Cape	4
North West	8
Western Cape	1

Upon completion of data collection, assessment booklets were unpacked and scored, and to complete the scoring for each of the 11 official languages used, the help of undergraduate students from the Faculty of Education at the University of Pretoria was enlisted. Where possible, first language speaking students for each of the 11 official languages were assigned the task of scoring.

A large part of the PIRLS 2006 assessment consisted of constructed-response items, and as had been the case with the data collection process, consistency and reliability in evaluating learner responses within and across countries had to be ensured. The International Study Centre prepared detailed scoring guides with rubrics and explanations for the allocations of marks for each constructed response item, from each of the reading passages. These rubrics and guidelines were also accompanied by extensive examples of learner responses to each of the items. The scoring guides, along with training packets supplying examples of learner responses on which scorers were to practice applying the rubrics, were used as a basis for intensive scoring training. Training sessions were initially held with representatives from research centres, which in turn had to be responsible for ensuring training personnel in their own countries applied the scoring rubrics reliably.

Information was gathered about the within-country agreement among scorers by having systematic sub-samples of at least 200 learner responses to each item scored independently by two different scorers. The correspondence between assigned scores from the two different scorers would constitute the reliability of scoring. Information was also gathered on the reliability and consistency of scoring between countries. In this regard a number of learners' responses were collected from those countries that administered PIRLS 2006 in English. This set of responses was sent to each country that had scorers proficient in English, to be scored independently by two of these scorers. According to Mullis et al. (2003), agreement in assigned scores across countries was defined in terms of the percentage of these comparisons that were in exact agreement with one another.

#### 4.8. DATA PROCESSING

PIRLS 2006 utilized rigorous quality control steps to ensure that comparable, high quality data was available for analysis. The IEA made software available (*WinDEM*) with which to capture and verify data. All data recoding and national adaptations of international variables were recorded in the National Adaptation forms and submitted to the Data Processing Centre (DPC). The DPC was subsequently responsible for more consistency checks for the release of data in September 2007 (Venter & van Staden, 2007).

The general approach to reporting achievement in the PIRLS 2006 assessment is by means of Item Response Theory (IRT) scaling methods. Learner achievement is summarized by using 2- and 3-parameter IRT models for dichotomously scored items (i.e. items that are either right or wrong), and generalized partial credit models for items worth two or three points. The IRT scaling method takes into account the difficulty value and discrimination power of each item, thus producing an average score for each learner based upon the items to which he or she responded. IRT scaling methods employed in PIRLS 2006 allow for calculating reliable scores for learners, even though each learner only responded to two of the possible ten reading passages.

Another aspect of the IRT scaling method is that it allows for score estimates of learner sub-populations, meaning that plausible values are computed for learner achievement as five separate estimates of each learner's score are generated on two scales: that of learner responses to the items in the achievement booklets and one based on the learner's characteristics. The five score estimates represent what is known as 'plausible values' and the variability between these scores encompasses all possible outcomes of achievement in the score estimation process (Mullis et al., 2003).

Mullis et al. (2003) state that IRT methods were preferred for developing estimates of performance, since learners responded to different items depending upon which of the test booklets they had received. In addition, IRT analysis places performance on a common scale by which comparisons can be

made across countries. In treating all participating countries equally, the PIRLS 2006 scale average across countries was set to 500, with a standard deviation of 100. Although countries differ in size, they were weighted in order to contribute equally to the mean and standard deviation of the scale.

The results of PIRLS 2006 were made available at an international press conference on 28 November 2007 at Boston College in the USA. The South African results were released at a press conference on 29 November 2007, directly following the international release of results.