CHAPTER ONE

INTRODUCTION, STATEMENT OF THE PROBLEM, RESEARCH AIM, RESEARCH STATEMENT, DEFINITION OF CONCEPTS AND PROGRAMME OF STUDY

1.1   INTRODUCTION

Reading can be regarded as one of the most important skills any learner has to acquire in the formal school or learning situation. Reading can be seen as the basis for all learning (McCarthy 1995:16) and, as stated by Stanovich (1986:390), has "cognitive, behavioural and motivational consequences that slow the development of other cognitive skills and inhibit performance on many academic tasks". Simplistically stated by Brown (1982:4), it could be summarised that a learner's reading ability will determine in which class he will be placed and which subjects he will choose and later on this will also have an effect on his choice of career!

An early start in reading is important in predicting a lifetime of literacy experience, and early success at reading acquisition is one of the keys that unlock a lifetime of reading habits (Stanovich, Cunningham & West 1998:278). Adams (1990:26) declares that the social and economic values of reading and writing, both in number and importance, are multiplying vastly and Pumfrey and Owen (1995:1) warn that illiterate people are marginalised and disadvantaged in contemporary societies. Stanovich and Cunningham (1992:64) hold the view that only print provides the opportunities for individuals to acquire a broad and deep knowledge of the world. They (Stanovich & Cunningham 1992:64) further believe that print exposure contributes to cognitive efficiency, as print is an exceptional source of rich stimulation. In addition to this, Adams (1990:26) predicts that the level of literacy presently regarded as "satisfactory" will qualify as only marginal within a couple of years.

It therefore follows that a learner's perception of what reading really is ought to be formed even in the initial learning-to-read phase. Learners should never view reading as purely an act of barking-at-words, but rather as an enjoyable, meaningful, challenging and complex cognitive and metacognitive process, which is essentially enactive, interactive and creative,

and which involves recreation of meaning (Hunter - Carsch 1995:137). Reading is not a single skill, but the simultaneous application of a number of skills (Bouwer 1993:21). Reading comprises, *inter alia*, perception, processing of grapheme-phoneme correspondence, sound blending, decoding, word recognition (by a lexical or non-lexical route to recognise a word, according to dual-route theorists such as Coltheart, Curtis, Atkins & Haller 1993:589 and Snowling 1987:70), sight word vocabulary, reading comprehension, literal reading of the lines, inferential reading between the lines, and reading "beyond the lines" (Lerner 1993:404; Bouwer 1990b:8). Furthermore, readers' bringing of their pre-knowledge (schemata) to the text, their attention and reasoning, as well as their metacognitive involvement (described by Burns, Roe & Ross 1992:233 as knowing when they know, what they know, and when and what they don't know, and conscious efforts to monitor and control this functioning), are all basic aspects of reading that should be introduced to young readers, helping them understand what is expected of them when reading.

The implication of the importance and complexity of reading is clear: Learners' reading abilities and progress should be monitored by the class teacher on an ongoing basis, starting from the first reading lesson. A preventative approach in the teaching of reading should therefore be adopted, which would lessen the need for extensive corrective intervention later (Donald 1996:76).

Unfortunately it is still frequently found that all the learners in a class are required to read the same pages of a basal reader, one after the other. This regularly results in some children memorising the passage and then reciting it, instead of actually reading the text. A learner with a reading difficulty could therefore easily remain unidentified in the early stages of his schooling, culminating in more serious learning problems later.

Reading difficulties can often be corrected before a serious learning problem develops, on condition that the specific nature of the difficulty be diagnosed timeously. Beech (1985:68) declares that learners can benefit more from early intervention than when a problem is diagnosed when they are older, just as brain injuries early in a learner's life can be compensated for much better than when the injury occurs later in life. Early identification is

thus of the utmost importance, as it would put the emphasis on effective initial instruction, rather than on learning support or remediation (Ramarumo 1996:346). Singleton (1997:86) states that in recent years there has been a genuine educational movement towards early intervention, which was spearheaded by the programme known as 'Reading Recovery'. In official documents of the South African Department of Education (1998:9; 1997d:83, 147; 1997c:20) it is stated that the early identification of learners who are likely to experience barriers to learning, as well as the recognition of the principles of early intervention, should be regarded as a national priority. Vincent (1997:35) also regards early identification, and recurrent screening, as of the utmost importance.

This imperative leads to the controversial subject of assessment.

Assessment, evaluation, testing, measurement, judgement, or whichever other term used for "being tested", all seem to strike a negative chord with the majority of people. One of the reasons for this negative connotation is that the emphasis is often placed negatively - merely on the quantity, or percentage of knowledge or skills a learner has not yet mastered, causing the assessee to feel exposed and vulnerable.

Assessment should be seen as an essential, creative process (Cullingford 1997:1) in which learners' specific strengths and weaknesses are determined in order to diagnose why they are experiencing difficulties in an area of learning and to point to how the regular teacher could intervene and also evaluate whether the intervention has achieved its aims. This view of assessment could actually empower young learners (and their teachers!) to help themselves (Burden 1996: 98-101). Singleton (1997:91) views such assessments or screening as supplying teachers with the information they need to differentiate learning effectively, and Morawski (1992:82) regards a holistic assessment of each of the learners in their class as essential for teachers to develop remedial plans for the learners. The South African Department of Education (1997d:29) agrees that assessment should result in indicators of educational need.

Proper assessment of each learner's reading abilities should be regarded as an intrinsic part of

the teaching/instruction of reading to monitor whether the aim of teaching reading – to develop thoughtful, critical, responsive and effective readers (Valencia, Hiebert & Afflerbach 1994:1) – has been achieved. The philosophy at the heart of any assessment should be the promotion of learners' learning, which implies that assessment goes hand-in-hand with teaching and learning (Smith 1995:121; Hancock, Turnbill & Cambourne 1994:46).

Individual assessments for each learner would obviously be impractical, as it would be too costly and time-consuming. Group assessments would therefore be the solution. Beech and Singleton (1997:21-22) regard "mass screening" as useful on the grounds of economy and efficiency and stress that this mass screening should be performed by the class teacher.

Teachers and learners in South African schools are all presently faced with a severely complex situation and many with unique language difficulties. Not only are there large numbers of learners per class, but there are also sometimes more second and third language speakers of English[1] (many with linguistic and socio-economical disadvantages) than first language speakers who attend schools where English is the language of learning. A policy of inclusive education , which encourages participation of learners with special needs in the mainstream, will further add to this complexity.

In spite of all these difficulties facing South African teachers and learners, no formal locally developed, diagnostic reading instrument exists for English learners in the Foundation Phase[2]. Standardised American and British reading tests have been used for years by South African practitioners. Because of, *inter alia,* their level of difficulty , contextual specificity and inappropriate norm base, none of these tests is suitable for all young South African readers in the initial learning-to-read stage.

Consequently there is a genuine need for South African diagnostic reading materials for Grade 1 to Grade 3 readers which are specifically designed for use by the regular class teacher. Such

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[1]   The researcher acknowledges that many African learners use English as a further language; for the purposes of this study second language is used to include third and further languages.

[2]   Learners in Grades 1 to 3 are in the Foundation Phase.

materials would enable teachers to timeously identify and assist learners in their class who have a reading and/or language difficulty, offering an effective starting point from which to steer the instruction and learning support of the teacher towards effective differentiation. It would **not**, however, replace continuous, authentic assessment[3] in the classroom.

1.2   STATEMENT OF THE PROBLEM

The researcher's preliminary survey showed that no scientifically developed English reading assessment instrument exists in the country which is suitable for all South African learners in the initial reading phase and also confirmed the need for such materials. All the available tests (in excess of 40) in the test library of the Human Sciences Research Council (HSRC) were examined. None of these tests was regarded suitable for all South African learners in the Foundation Phase.

The identified problem is thus to develop diagnostic reading materials with appropriate sub-sets of assessment items at the appropriate levels for a heterogeneous population of South African learners in Grade 1 to Grade 3 who use English as the language of learning. These materials must be developed for use by the regular class teacher.

The specific nature and the difficulties of the learning-to-read phase would have to be taken into consideration in the design of the diagnostic tool. The critical outcomes formulated for Curriculum 2005 (South African Department of Education, 1997a, 1997b), as well as the draft Policy Document on Assessment (South African Department of Education, 1998) would have to be reflected in the approach generally and in the materials.

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[3]Authentic assessment is regarded as assessments where ongoing interactions between teachers and their students are used for assessing students' learning processes, abilities and accomplishments (Hiebert, Valencia & Afflerbach 1994:6).

The critical outcomes[4] formulated for Curriculum 2005 should be taken into consideration in the design.

Important factors and questions that require examination and consideration in developing the diagnostic reading materials comprise the following sub-sets:

1.2.1 Orthodidactic dynamics of assessment

- Which model of assessment would allow for group application in the Foundation Phase to be time- and cost-effective?

- Which formats and procedures would ensure learner- and user-friendliness at the Foundation Phase level?

- Which formats and procedures would enable regular class teachers to apply and interpret the instrument in the regular Foundation Phase class situation?

- Which formats and procedures could make it possible for the reading instrument to function as a mediational agent, i.e. facilitate learning and support the learners to be cognitively involved with text on a higher level than before when reading?

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[4] Outcomes could be critical or specific, and are regarded as the end products of a learning process (S.A. Department of Education 1998:39). Critical outcomes "ensure that learners gain the skills and values that will allow them to contribute to their own success as well as to the success of their family, community and nation as a whole (S.A. Department of Education 1998:41). The S.A. Department of Education (1997a:16) names the following eight outcomes, whilst only the first seven are noted in a Discussion Document (S.A. Department of Education 1997b:10):

- communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation;
- identify and solve problems by using creative critical thinking;
- organise and manage themselves and their activities responsibly and effectively;
- work effectively with others in a team, group, organisation and community;
- collect, analyse, organise and critically evaluate information;
- use science and technology effectively and critically showing responsibilities towards the environment;
- understand that the world is a set of related systems, with problem-solving contexts not existing in isolation;
- show awareness of the importance of effective learning strategies, responsible citizenship, cultural sensitivity, education and career opportunities and entrepreneurial abilities.

Outcomes-based education is a flexible, empowerment orientated approach to learning, where teachers are encouraged to broaden their perspectives, be proactive, interactive and to monitor the learners' progress continuously (S.A. Department of Education 1997d:19,21,28).

1.2.2 Content and skills addressed

- What is the range of reading skills and strategies that needs to be addressed in the diagnostic reading materials?

- How could the various reading skills and strategies be addressed in sub-sets of assessment activities?

- How should the materials be designed to determine whether a learner has difficulties related to the lower cognitive skills (*inter alia*, phonological awareness, word recognition, decoding, letter recognition in terms of position in space)?

- How should the materials be designed to determine whether a learner has difficulties related to the higher cognitive skills and schemata (*inter alia*, using of pre-knowledge, reading between the lines, construction of meaning, strategic reading, metacognition and to deduce or infer information that is provided indirectly)?

1.2.3 Test development

- How should the diagnostic reading materials be constructed, for it to be suitable for application at any stage throughout the year for purposes of identification and differentiation in the process of ongoing assessment?

- Should the materials be criterion- or norm referenced?

- Would it be possible to develop two comparable forms of assessment activities to increase the user value?

1.2.4 Utilisation of test results

(1)   The teacher

- How should the diagnostic reading materials be designed, to enable class teachers to understand the reading needs of the learners in their class?

- How should the materials be designed to help teachers establish differentially who in their class has a reading, language or specific learning difficulty?

- Would it be possible to design the diagnostic materials to support teachers in a practice of continuous assessment and learning support?

- How should the materials be designed to help less experienced teachers understand that advanced aspects of strategic reading (eg. the development of schemata, reading

comprehension, reading between the lines) should be introduced even in the initial learning-to-read phase?

(2)   <u>The learner</u>

- How should the diagnostic reading materials be designed to help learners discover strategies to identify and solve problems by means of critical and creative thinking?
- How should the materials be designed to help learners organise and manage themselves and their acts of learning more effectively?
- How should the materials support learners to communicate effectively at the receptive level, using visual, symbolic and/or language skills?

1.3   AIM OF THE RESEARCH

The aim of the research is to develop diagnostic reading materials for all South African learners in Grade 1 through 3 who use English as the language of learning.

The diagnostic reading materials for South African learners in Grade 1 to Grade 3 will accommodate principles and practices of outcomes-based education in its focus on skills and strategies of reading comprehension and will be intended for use by regular class teachers in a pro-active, continuous way. The diagnostic materials will be aimed to enable class teachers to understand their learners' special instructional needs in reading, and to identify the specific difficulties that learners in the Foundation Phase generally experience.

The development of the diagnostic materials furthermore has the objective of providing teachers with focus to address those difficulties experienced by their learners and to decide on the level on which learning support, as well as regular class tuition should proceed.

In summary, the development of the diagnostic English reading materials specifically aims to be in line with the recent theories of reading in the learning-to-read phase, in looking at the learning competencies and reading development of all South African learners in the Foundation Phase who use English as the language of learning, i.e. including first (L1) or

second language (L2) speakers of English.

Finally, the reading materials aim to accommodate current policies of the South African Department of Education on learning, instruction and assessment.

1.4   RESEARCH DESIGN

1.4.1   Literature review

The theoretical issues concerning the following relevant fields will be examined and integrated by means of a review of the recent, relevant literature:

- Various models and theories of beginning reading (L1 and L2) with their respective views of the reading processes and strategies and the reading programmes and instructional reading materials used in each model, with the views of each on assessment integrated in this division
- Existing instruments of reading assessment
- Principles of conventional and authentic reading assessment
- Test development, with brief consideration of
  - norm-referenced tests
  - criterion-referenced tests
  - multiple-choice format of testing

1.4.2   Case Studies and Field Notes

Field notes of case studies from the researcher's professional practice will be contemplated to illustrate and verify the reciprocal relationship between theory, praxis and practice.

Relevant information from a number of case studies focusing on issues related to reading will be supplied in Appendix A. Full reports will not be presented.

1.4.3   The development of diagnostic English reading materials

Original diagnostic reading materials for learners in the Foundation Phase who use English as

the language of learning will be developed. The position taken on the issues examined in the literature review proposed in 1.4.1, as integrated with the case studies and the field notes of 1.4.2, will be closely adhered to in the development of the materials. Two comparable forms of the materials will be developed in an attempt to contribute towards establishing a practice of continuous assessment by the class teacher. The comparable forms will consist of sub-sets of assessment activities to address the various aspects of development in the early phase of reading development.

The development of the diagnostic reading materials will comprise the following:

- The design of the set of materials, which entails the choice of assessment formats
- The writing of original texts and the formulation of questions
- The design of the test procedures, in the form of a user's manual
- A pilot implementation of the assessment items, after which alterations, if necessary, will be made
- A scrutiny of the revised items by a panel of specialists in the field, including researchers of the Human Sciences Research Council
- Data-collection in four English schools representing heterogeneous L1 and L2 learners from a low-average to average income group, selecting a representative sample of average readers in Grades 1 to 3
- Statistical data processing, item analysis and item selection
- Establishment of the reliability, validity and practicability of the materials
- Recommendations for the final design of the diagnostic reading materials

The results obtained in the experimental application of the diagnostic materials will also be examined summarily to gain an understanding of the distribution and nature of specific reading needs of learners locally, to direct future development of learning support programmes.

1.5   RESEARCH STATEMENT

In order to develop diagnostic reading materials that are specifically suitable for South African

learners (L1 and L2) in the Foundation Phase, it is imperative to analyse the factors in the learning situation locally that play a crucial part in the development of the learners' reading competence and, more particularly, of reading difficulties. An orthodidactic approach to the learning situation will provide an appropriate point of departure for this analysis. It will also serve as a theoretical framework on which to base the research and, finally, the design and content of the diagnostic reading materials.

The orthodidactic discipline is particularly interested in the theory and praxis concerning learning difficulty of any nature. To emphasise the importance of **praxis**, the various components of the education situation are studied as **partners**, which are all **interactively** involved. According to Bouwer (1989:9), the learner, the teacher and the learning content (termed <u>learning areas</u> in Outcomes Based Education[5]) play an equally important role in the education situation. Burden (1996:102) also points out that learning takes place if there is interaction among teachers, learners, tasks and content (of learning areas). All the components of the education situation need to function effectively and in harmony with each other for learning to take place successfully, whilst a problem in any of these could contribute to a learning difficulty. Bouwer (1989:9) states that "all factors contributing to, correlated with or interacting with the educational problem in any of these three components need to be taken into account."

In developing diagnostic English reading materials for beginning readers the primary focus would be directed at the various aspects of reading performance as the result of the interaction between the participatory involvement of the learner with his/her unique abilities and needs and the participatory involvement of the teacher with his/her didactic and linguistic skills, in

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[5] Outcomes-based education (OBE) is a "design for education which is learner-centred and orientated towards results or outcomes. It is based on the belief that all individuals can learn. In OBE the curriculum is designed to promote knowledge, skills, attitudes and values which are needed by the learner and society ... (The learner is equipped) to participate actively in the society ... Learners differ and (some may need) assistance ... to enable a learner to reach his/her full potential" (S.A. Department of Education 1997a:vii). OBE focuses on **what** and **how** the learner learns; the process of learning becomes just as important as what you learn (S.A. Department of Education 1997c:9). OBE is regarded as a flexible, empowerment orientated approach to learning (S.A. Department of Education 1997c:21). The outcomes are achieved through the integrated use of listening, speaking, reading and writing (S.A. Department of Education 1997d:7). Teachers are encouraged to "broaden their perspectives, be pro-active, interactive and share their ideas with one another" (S.A. Department of Education 1997c:28).

the act of learning-to-read the English orthography as L1 or L2, which represents the content component with all its challenges, demands and potentially problematic qualities.

1.6   DEFINITION OF CONCEPTS

1.6.1   Learning-to-read

Learning-to-read is regarded as the act where beginning readers in the Foundation Phase are introduced to the written form of communication, where they are taught to recognise words by sight, decode unknown words and to comprehend what they read. Integrated with the other skills in the learning area of Language, Literacy and Communication, this includes the forming of a perception and understanding of what reading really is.

In this study, reading is viewed as a complex act, which includes aspects such as phonological awareness, decoding, sight word recognition, reading comprehension, the ability to deduce or infer information provided indirectly, metacognition and the formation and/or utilisation of schemata.

1.6.2   Diagnostic reading materials for learners in the Foundation Phase

The term Diagnostic reading materials for learners in the Foundation Phase indicates that these materials should **not** be regarded as a test. They should assess skills that belong exclusively to reading, and should not be a substitute for regular, continuous assessment by the regular class teacher.

The diagnostic reading materials should reflect the appropriate level of competence that could justifiably be expected of a learner at various points of reading development during the first three years of schooling, and should be designed to "break down" the complex reading act "into its component parts to help teachers gain information about a student's specific reading weaknesses and strengths" (Rubin 1982:109). It should be seen as a tool that would assist regular class teachers to timeously identify learners in their class who might experience reading difficulties and help them to understand and gain information about the readers' relative strengths and weaknesses in terms of the inter-relatedness of these. It should further facilitate

in teachers a better understanding of individual readers' processes of reading.

All of these benefits should enable teachers to assess the learning that has taken place in order to effectively plan further lessons and intervention (Brady 1997:12), and take the first step into diagnostic teaching (Vincent 1997:30), which would ensure that learners in the class could receive appropriate instruction and training in the necessary skills at the appropriate time (Beech & Singleton 1997:21; Burns *et al.* 1992:573).

1.6.3   Foundation Phase

Learners who are in the first three grade levels of school (Grade 1 to 3) are in the Foundation Phase.

1.6.4   English Second Language speakers (L2)

It is acknowledged that there are many African-language speakers who use English as a third, or even later language. L2 will refer to all of those speakers.

1.7   PROGRAMME OF STUDY

The first chapter of this study has provided the introduction, statement of the research problem, aim of the research, methodology, research statement and definition of terms.

In Chapter Two, literature concerning theoretical aspects that are relevant to the development of diagnostic reading materials, such as current models and theories of reading in the initial phase, assessment and reading assessment instruments, will be reviewed and integrated with relevant findings from the researcher's case studies and field notes. The requirements for the design and development of the diagnostic reading materials will be derived from the above.

The diagnostic reading materials and a detailed user's manual will subsequently be developed. In the interest of confidentiality during further development and eventual copyright, the materials and manual will not be included in the dissertation, but will be provided to examiners under separate cover.

In Chapter Three, the pilot process, the empirical research and statistical techniques used for the analysis and interpretation of the data will be reported. Item analysis and selection will be performed, to arrive at the final product recommended as the diagnostic reading materials. A frequency distribution analysis of errors per specific error type will be performed.

Chapter Four will comprise a summary, discussion of the limitations of the research, final conclusions and recommendations concerning the administration and use of the materials and suggestions.

CHAPTER TWO

THE BEGINNING READING PHASE : INSTRUCTION AND ASSESSMENT - THEORY, PRAXIS AND PRACTICE

2.1 INTRODUCTION

The main focus of the research addresses the following aspects:

- The development of diagnostic reading materials for South African learners in the Foundation Phase, who use English (L1 or L2) as their language of learning
- The administration of the reading materials to a sample of learners in four South African government schools
- The diagnostic qualitative and quantitative interpretation of the statistically computated data

As the research does not primarily constitute a theoretical study, the review of the literature on reading does not aim, nor claim, to provide a historical overview of the various models and theories of reading. Issues that are regarded as specifically relevant for the research will be examined and integrated. Important, but less relevant, issues will be touched on only briefly.

The format(s) of assessment proving most suitable will subsequently be considered in some detail. Finally, fundamental issues of test design will be investigated, with a brief consideration of the demands of validity, reliability and practicability.

The following typographical presentation will structurally reflect the elements of the research reported on in this chapter:

To synthesise theory and praxis/practice[6], observations and findings from the researcher's case studies and field notes (see Appendix A) will be integrated throughout the literature review in corroboration and as a verification of positions taken. *Green* print will represent this research step.

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[6] For the purpose of the research praxis is viewed as a scientifically substantiated practice with a theoretical grounding, whilst practice indicates general, less structured and less deliberate activity.

Possible implications of the literature review and the findings in praxis/practice (case studies and field notes) for the aim, elements of design, contribution and/or place of the diagnostic reading materials in reading instruction will be concluded in the course of the report in this chapter. *Red* print will be used to highlight such comments and requirements for the design of the diagnostic materials. Comments will be numbered chronologically in the line of discussion, followed by the number and standard phrase for the particular requirement and an indication of its accumulating weight as reflected in the number of times it has become apparent.

The researcher is aware that the effort to integrate theory, practice and praxis step-by-step in this manner holds the danger of fragmenting the literature review to the point of obscuring the logic of the line of analysis and argument. An orientational reading of the sections in black is recommended.

2.2   THEORETICAL APPROACHES TO READING INSTRUCTION

2.2.1   The Whole Language Approach in the Beginning Reading Phase

Weaver (1994:233) and Kenneth Goodman (1992:194) regard the following researchers as prominent Whole Language theorists and psycholinguists who contributed to this approach: Yetta Goodman (early literacy), Carol Burke (emergent literacy), Frank Smith (psycholinguistics), as well as Dorothy Watson and Pat Rigg who worked with Goodman on his research. According to Adams (1990:22), Horace Mann was the first prominent Whole Language advocate who suggested in the middle nineteenth century, that the Whole Word approach be used to teach beginning readers.

The Whole Language approach is also described as a top-down approach, with pro-active "indirect, incidental and unorganised (implicit) instruction" (Groff 1990:4) that is material-orientated and thus emphasises trade books, with transactive (Goodman 1986:52) and interactive involvement of the learners in choosing their reading material and actively constructing meaning during reading (Goodman 1986:38). Language across the curriculum is promoted (Goodman 1986:31). Miscue analysis is an important concept in this approach (Goodman 1992:1-41), which will be discussed later in this section.

Meij (1995:7-9) regards the following methods for the learning-to-read phase as instructional

methods of the Whole Language approach:

- **Look-And-Say method:** Whole word recognition, sight word recognition, often using the flash card method
- **Whole-Sentence method:** Emphasis on meaning through the context
- **VAKT method:** Visual, Auditory, Kinesthetic, Tactile-method, using the tracing and saying of words until a learner can spell the word, in order to help reading later on. (However, Richardson (1992:46) calls the VAKT method the Look-Say-Do method, and says that this multi-sensorial approach, like all other multi-sensorial techniques, emphasises a direct, structured instruction of decoding, which then disqualifies this method as a Whole Language method)

Some learners can recognise words on flash cards by sight, but say the words without associating their meanings, and/or confuse words which are visually similar when reading them in context. Case Study A is an example of a boy who recognised sight words such as father on a flash card, and then in text read father for feather. He also found it difficult to define, describe or categorise some of the words that he recognised by sight, e.g. kitten is a baby cat and a pet, has fur etc.

1   **Requirement 1 : Comprehension and meaning (1ˢᵗ time):** The diagnostic reading materials should be designed in a way that would ensure that words are associated with meaning, even when not appearing in context.

Groff (1990:5) and Beech (1985:16) argue that one of the reasons for the interest in the Whole Word, and thus the Whole Language approach, is the unpredictable and irregular spelling of many English words. Beech (1985:77) mentions that the Whole Word style of reading involves the processing of the visual patterns of whole words, instead of the decoding of individual letter sequences - not unlike the logographic recognition in Chinese reading.

Case Study A is an example of a L2 (L1 Danish) learner in an English school who found the reading of regular, simple (CVC) words e.g. pat, pet, pig, pit, pot, pup, put difficult, but recognised by sight words such as juice, people, biscuit, here, of which the meaning was familiar.

2   **Requirement 2 : Word recognition and decoding (1ˢᵗ time):** Regular CVC words, as well as irregularly spelled high frequency words which could be expected to form part of a learner's sight word

vocabulary, should be included in the diagnostic materials. Individual learners' performance on these different types of words should then be compared and the instruction planned accordingly.

In the Whole Language approach, reading is regarded as a holistic process (Goodman 1992:192), which integrates reading and writing into a unified learning task (Aaron 1991:128; Vellutino 1991:439). Literacy (encompassing both reading and writing skills) in all areas of the school curriculum and in the real life environment is emphasised.

However, many learners in the Foundation Phase find dictation tasks and writing generally very difficult. Case Study B is an example of a boy (L1) with poor fine motor control and writing difficulties. He wrote extremely slowly and was unable to put down a single thought in writing during his assessment.

3   Requirement 3 : Written language (1st time): Since beginning readers are not yet sufficiently experienced in expressing their ideas or their understanding of diagnostic reading materials (for group application) in writing, it might not be advisable to use open-ended questions. In endeavouring to assess reading skills the results should not be contaminated by constraints existing in the learner's spoken and/or written expressive language skills.

Proponents of the Whole Language approach view learning to read as a natural process, just like the acquisition of oral language (Aaron 1991:129; Groff 1990:6; Liberman & Liberman 1990:51). This view is strongly criticised by many, including Aaron (1991:129), who compare the acquisition of oral language and speech development to learning to walk, and learning to read (and write) to learning to swim, which requires deliberate instruction and effort.

- Reading is further viewed as a process of constructing meaning in which readers construct a text parallel to the written text, with their comprehension incorporating their beliefs, knowledge, values and experiences (Goodman 1992:193). In this view, readers are encouraged to take risks when they read, which would allow them to guess at words and information (Goodman 1986:39) and to "predict, select, confirm and self-correct as they seek to make sense of print" (Goodman 1986:38). In the process of constructing meaning, readers sometimes make miscues (not "errors", according to Weaver 1994:231) that reflect on, and have an effect on, the construction of their meaning (Goodman 1992:192). A reader's miscues should be analysed to provide insight into the reading processes that he/she uses (Weaver

1994:233). The view is that good readers simultaneously (Weaver 1994:134) and effectively (Weaver 1994:233) use their knowledge of language (syntactic, semantic and grapho/phonemic aspects), as well as reading strategies, such as prior knowledge (schemata) and metacognition, to construct meaning while reading (Weaver 1994:132-134). The reading strategies are used simultaneously to

- **predict** words and/or information (by using syntactic and semantic knowledge and cues to narrow down the field of possible words)
- **sample** words and/or statements (by looking at some of the visual, grapho/phonemic cues), and
- **confirm** or **correct** (by using syntactic and semantic cues) the unfamiliar words (Weaver 1994:133, 134), which might/might not be exactly the same as the written words in the text. The construction of meaning is more important than to "reproduce surface detail" (Weaver 1994:231), to such an extent that incorrect sight word recognition and insufficient reading speed, accuracy and fluency are not necessarily regarded as indicators of a reading deficiency (Weaver 1994:232)

Aaron (1991:129) views the goal of the Whole Language approach as helping beginning readers to comprehend the meaning of text in written language, and declares that this approach does not make any distinction between "learning-to-read" and "reading-to-learn." At all grade levels, processing textual meaning generally is emphasised, instead of developing any discrete "skills" (Aaron 1991:129). Comprehension strategies are used to expand learners' strengths (Baumann 1991:v; Groff 1990:7).

The learner in Case Study A accepted the following sentence as true: In winter it is very hot, and to the question Was it hot or cold in the story? he gave the answer as hot. In practice it is found that many readers do not use their schemata, or prior knowledge effectively in reading.

4   Requirement 4 : Schemata (1st time) and Requirement 1 : Comprehension and meaning (2nd time): Learners should be taught from the very beginning to perceive reading as "reading for meaning", and actively to utilise their schemata when reading. The diagnostic reading materials for the Foundation Phase should thus contain a section to assess this aspect of reading.

In the Whole Language approach, words are never presented out of context (Goodman 1992:191; Vellutino 1991:438; Groff 1990:5-7). The texts used in this approach are described by Goodman (1992:192) and Aaron (1991:178) as being functional, relevant, purposeful, meaningful and interesting. Texts that have been written by the learners are often used.

In the researcher's practice individual words are often used successfully to help the learners develop higher cognitive skills such as classification, association and consciously utilising their schemata. In therapy sessions, the learner in Case Study A was, *inter alia*, required to read individual words on flash cards. The learner had to describe, define or categorise each word and also had to supply other words that could be associated with it, e.g. bird was described as an animal that can fly, it can eat seeds and worms, and sometimes it eats small animals, and the associated words were feathers, egg, wings, eagle, beak, claws.

5   **Requirement 5 : Word reading (1ˢᵗ time):** Since learners in the first year of the Foundation Phase, as well as readers with a learning difficulty, are easily threatened by lots of print on a page, these learners might regard a word reading test as more learner-friendly. A well designed word reading test, using high frequency, familiar concepts and words, could supply practical, relevant and useful information regarding various components of the learning-to-read process. Word reading tests could meet the practical demands of task- and time-effectiveness, and contain a realistic amount of work for beginning readers. It would be possible to use different word reading tests, progressively rising in level of difficulty, for various stages throughout the first year, leading up to a prose reading test to fully assess a reader's reading competence.

Adams (1990:23) and Snowling (1987:61) state that Whole Language theorists believe that when reading is presented in context, readers use semantic clues to help them to predict words. Learners are encouraged to use their background knowledge and self-monitoring questions, as well as their existing knowledge of the oral language strategically to help them when they read (Pearson & Tierney 1983:42-43). They are inspired to make maximum use of contextual information to facilitate word identification, and to use graphophonic information sparingly (Vellutino 1991:437), only as an ancillary tool (Adams 1990:23). Readers are encouraged to derive from print just enough information to provide a basis for guessing at the gist of the text (Liberman & Liberman 1990:51), an activity described by Goodman (1992:192) as a "psycholinguistic guessing game". Bryant and Bradley (1985:78), amongst many others, strongly oppose the Whole Language theorists' view that phonological, visual and orthographic clues are relatively unimportant. Stanovich's interactive-compensatory model (Stanovich 1986:370) indicates that poor readers, and

not good readers, often use contextual clues, because less skilled readers who are deficient in basic reading skills tend to compensate for these inadequacies by relying more heavily on contextual clues and higher-order processing when reading (Ehri 1995:18; Nicholson, Bailey & McArthur 1991:33; Vellutino 1991:438, 442; Stanovich 1986:368, 369; Beech 1985:29).

Case Study C is an example of a boy in the third grade, who had very poor decoding skills and a limited sight word vocabulary. When presented with a text, he relied heavily on contextual clues, as well as on his schemata. If the unfamiliar word appeared early in the sentence or text though, he was unable to read the word and stared helplessly at it. He did not try to read ahead in an attempt to use contextual clues, he only used those contextual clues preceding the unknown word. He displayed a severe lack of metacognitive strategies. Case Study D is a boy who failed to use schemata or metacognitive skills - he accepted what he read, even if it made no sense, e.g. A supervise person for Jane and Peter arrived, instead of A surprise parcel for Jane and Peter arrived on Saturday.

6   **Requirement 6 : All known aspects of reading (1st time) and Requirement 7 : Metacognition (1th time)**: Decoding skills and strategies, as well as the use of schemata and metacognitive strategies are important when reading, as illustrated by Case Studies C and D, and the diagnostic reading materials should assess all these aspects. Discrete components of the results should steer the inexperienced teacher's instruction in the direction of reading for meaning, utilising metacognition and schemata, but also emphasising accuracy in word recognition.

Basal readers, reduced texts, experiments with non-words or pseudo-words, word reading lists and multiple-choice questions in any teaching or testing task are strongly rejected (Goodman 1992:191), whilst the use of retelling techniques (to check whether the analysis made of the readers' miscues is correct - Weaver 1994:234) and "authentic assessment"[7] by the teacher are promoted (Goodman 1992:191; Spiegel 1992:39).

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[7] Authentic assessment is classroom based (Valencia 1994:23) and needs to be viewed as "ongoing and cyclic processes intricately interwoven with teaching and learning (Smith 1995:121; Hancock *et al.* 1994:46). Authentic assessments use information from the classroom context, emphasises what each learner can do, or attempted to do, as well as which processes the learner used during learning (Hancock *et al.* 1994:48). Assessments should result in optimal learning for all those involved, it must inform, support and justify teacher decision-making, it must reflect the theories that guide the teaching, and the findings resulting from the assessment must be accurate, valid, reliable and be perceived to be rigorous by all who use them (Hancock *et al.* 1994:50). Brady (1997:10) regards assessments as important for determining that learning has taken place, so that further teaching and learning can be planned. Brady (1997:10) further indeed stresses the "motivational aspects" of assessment, where the learner is motivated for further learning, and the teachers are motivated to plan their instruction.

The use of standardised testing of reading competence is strongly criticised, as it is the opinion of the Whole Language theorists that aspects of reading such as prior knowledge and the use of predictive skills, which greatly influence comprehension, are typically not addressed in standardised tests (Grindler & Stratton 1992:263). Gutknecht (1992:213) states that standardised tests are skill-, and not process-orientated, and are therefore unacceptable.

In the researcher's practice the multiple choice format is used effectively, almost in a style of metacognitive learning support or mediated learning, to assess the multiple aspects of reading (including comprehension, prior knowledge and metacognition). Learners who find it difficult to express their thoughts or their understanding of the text orally or in writing (e.g. learners with a language difficulty, or with poor expressive writing skills, or with a resistance to writing - Case study I) tend to enjoy the multiple choice questions more. The multiple choice format focuses on and reflects the learners' reading abilities, and not their (sometimes limited) expressive language skills. An example of the multiple choice format being used to assess reading comprehension follows:

It was quiet in the house. Tom, his brother and their parents had come home late last night. Everybody, excepting Tom, was still asleep. He sat on his bed and looked at the birds through his window. They were drinking water from the pond next to the letterbox.

1   What time of the day was it in this story?
(a)   It was very early in the morning.
(b)   It was very late in the morning.
(c)   It was very early in the evening.
(d)   It was very late in the evening.

2.   What was Tom doing?
(a)   Tom was still asleep.
(b)   Tom was expecting everybody.
(c)   Tom was sitting on his bed.
(d)   Tom was drinking water.

3.   Where was Tom's bed?
(a)   His bed was in his parents' room.
(b)   His bed was in his brother's room.
(c)   His bed was in his own room.
(d)   His bed was in a guestroom.

4. Where was the room in which Tom was sitting?

(a) Downstairs in the back of the house.

(b) Downstairs in the front of the house.

(c) Upstairs in the back of the house.

(d) Upstairs in the front of the house.

5. What is true about Tom's window?

(a) The curtains had birds on them.

(b) The curtains were drawn.

(c) The window was small and high.

(d) The window was big and low.

6. Where were the birds?

(a) The birds were in the house.

(b) The birds were in the window.

(c) The birds were next to a trough. (i.e. distracter for through)

(d) The birds were next to the letterbox.

7 **Requirement 1 : Comprehension and meaning (3rd time):** A reading assessment battery should be designed to assess the multiple aspects of reading for meaning, including predictive and associative skills and use of schemata in integrated, authentic fashion. The diagnostic reading materials should assist regular class teachers in planning their instruction. A format should be chosen that would effectively distinguish the needed information concerning the details of learners' processing.

To summarise, it could be said that Goodman (1992:196) views the Whole Language approach as an "inclusive philosophy of education" and states that this philosophy is built on its strong views on five pillars, namely language, learning, teaching, curriculum and learning community, which can in turn be summarised as follows:

- **Language:** Reading and writing are performed naturally and holistically, with trade books, about real life situations, and they cover literacy in all areas. Learners often write and read their own texts, using texts similar to oral language. Authenticity is regarded as essential (Goodman 1986:31).

- **Learning:** Learners are in control, choosing what they want to read. Learning is personal

and social, with learning occurring optimally in functional, relevant and meaningful experiences (Goodman 1986:39).

- **Teaching (Language instruction):** Teachers and learners interact with each other. The teachers utilise fruitful teachable moments (Baumann 1991:vii; Goodman 1986:53), using indirect methods of instruction (Spiegel 1992:38). Teachers are seen as "guides, facilitators and kid watchers" (Goodman 1986:39; 41).

- **Curriculum:** The curriculum is integrated around problem solving in science and social studies, with an emphasis on interdisciplinary co-operation and on literacy education (Spiegel 1992:38).

- **Learning community:** A flexibility is maintained in materials and activities (Spiegel 1992:38), with learners generating their own questions and answering them collaboratively, dynamically interacting with each other (Pearson & Tierney 1983:41).

Goodman (1992:197) explicitly states that the following examples of models are regarded as incompatible with the Whole Language approach:

- **Outcomes-based education**, because of its "pre-specified goals that tend to be too narrow, too specific and unrelated to modern knowledge of language development."

- **Phonics-only programmes**, because they "... reduce reading to a simple skills sequence and isolate what is learned from functional use ..."

- Any model of teaching which assumes that **learning** only happens as the result of **teaching**

- **Direct Instruction**, that focuses on "skills" which can easily be assessed with an "objective" test for "mastery."

Although the Whole Language approach is heavily criticised by proponents of the approaches to reading to be discussed in subsequent sections, Goodman (1992:194-195) sees his contribution to the field of reading research in the general acknowledgement of the following views:

- Predictability is an important aspect of text.

- Comprehension is at all times important in reading.

- Reading errors are not all equally salient.

- Basal readers with "controlled vocabulary" (Goodman 1986:35) that does not represent the "dynamic fluid nature of language" (Goodman 1986:15), are boring.

- Learners should be empowered to choose what they want to read and write.

- Learners should be encouraged to ask questions continuously while reading and to seek answers in the text.

2.2.2   The Phonological Approach in the Beginning Reading Phase

The following authors and researchers are among the prominent advocates of the Phonological approach: Bryant and Nunes (1998); Frederickson and Frith (1998); Adams (1990); Bryant, Maclean, Bradley and Crossland (1990); Goswami and Bryant (1990); Perfetti, Beck, Bell and Hughes (1998); Bryant and Bradley (1985) and Bryant (1974).

The Phonological approach is also known as a bottom-up, developmental, code-orientated, phonics approach, with "direct, intensive and systematic instruction" (Spiegel 1992:40; Groff 1990:2), which could be performed explicitly or implicitly (Grossen & Carnine 1990:15), is based on an identified scope of goals and objectives (Spiegel 1992:40), and is planned around the teaching of a number of discrete sub-skills, which have a hierarchical sequence of difficulty (McCarthy 1995:15; Dechant 1991:23; Groff 1990:2; Winograd 1989:2). Spiegel (1992:41) regards systematic direct instruction as not only being teacher-centred (the teacher decides what to teach), but also as being learner-centred (what is taught is determined by what the learners need to learn and are able to learn). Basal readers are used for instructional material. The systematic use of standardised reading tests or assessments to monitor progress, is viewed as important. Empirical studies and research to predict the future development of reading skills, are prominent in this approach.

Key terms in the Phonological approach which will occur in the discussion below, include the following: grapheme-phoneme correspondence, phonics, decoding, sub-skills, skilled-reading, word attack, word identification, pseudo word reading, graded word reading, phonological awareness, working memory, orthography, alphabetic coding, mental age, reading age, the predictability of reading performance and developmental framework for the normal development of reading.

In the Phonological approach teachers aim to teach their learners to transfer the "wonders of phonology" from speech to script (Liberman & Liberman 1990:58), and printed language is seen as a "biologically secondary code that maps to its natural base in ways that must be quite consciously understood if it is to be used properly" (Liberman & Liberman 1990:52). Learning-to-read is thus viewed as a cognitive, intellectual achievement (Liberman & Liberman 1990:52) which requires instruction, whilst learning-to-speak is a natural process.

Learners must thus consciously understand that it is possible to misread/confuse words such as no/on, bat/pat, bark/dark, drank/dark, pest/pets/step/best/bets. Errors such as these occur in all the Case Studies.

8   Requirement 8 : Mediated learning (1st time) and Requirement 1 : Comprehension and meaning (4th time): In keeping with the principles of mediation to determine learning potential in dynamic assessment[8], the design of the diagnostic reading materials should provide learners with sufficient practice examples to make them consciously aware of the effect that errors like these (e.g. incorrect letter sequence and letter reversals) would have on the meaning of the text.

Goodman, in strong critique, refers to this approach as one that regards learners as "blobs of clay that need moulding" (Goodman 1986:25), and as a "skill-drill, text-test model" (Goodman 1992:195) that emphasises "bite-size/(sic), but abstract little pieces" of language (Goodman 1986:7), instead of emphasising meaning, which sometimes calls for the incorporation of a reader's knowledge, beliefs, values and experiences, and sometimes allows for the use of a "psycholinguistic guessing game" to help solve difficult words in context (Goodman 1992:192, 193). Whole Language theorists further criticise the Phonological approach for using words out of context and presenting monotonous and uninteresting text in basal readers (Aaron 1991:132), often in artificial situations (Spiegel 1992:41). The teachers in the Whole Language camp are concerned that beginning readers who are taught reading by means of the Phonics approach will merely "bark at

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[8] Dynamic assessment is based on the link between testing and learning support, and does not only examine the processes of learning, but also the products of learning (Grigorenko & Sternberg 1998:75). It has the aim to quantify the learning potential of the learner (Grigorenko & Sternberg 1998:75). Feedback is given by the examiner until the test takers have solved the problem; testing therefore combines with instruction (Grigorenko & Sternberg 1998:75). In dynamic assessment the learning is embedded in the evaluation, the teaching provides the necessary information for mastery of the tested knowledge (Grigorenko & Sternberg 1998:75). In dynamic testing examples will be given until the learners understand what is expected, so that they can master, apply and reapply the knowledge taught in the dynamic testing situation (Grigorenko & Sternberg 1998:76). Grigorenko and Sternberg (1998:76) describe dynamic assessment as aimed to evaluate, intervene and change.

print", without comprehending what they read (Johnston, Connelly & Watson 1995:40), and will also fail to develop effective comprehension strategies (Goodman 1986:52).

Beginning readers who experience reading difficulties on all levels of reading - e.g. decoding problems, limited sight word vocabulary, poor comprehension – do indeed sometimes "bark at print", as illustrated in Case Study E. This is a L1 first grader with a limited sight word vocabulary who sounded out words in sounds and letters and then literally "barked" at the print in a loud voice, with virtually no comprehension, e.g.

She put her kitten by the door

Sounded	Read or blended to word
	she!
[pə u tə]	but!
[hə ɛː r]	hair!
[kə i t t ɛː n]	ten!
[bə wai]	why!
	the!
[bə də ɔː r]	door!

This learner had no idea what the sentence was about.

9   **Requirement 5 : Word reading materials (2nd time) and Requirement 1 : Comprehension and meaning (5th time):** The diagnostic reading materials should be designed to enhance the beginning readers' realisation that, even when only single words are read, meaning and comprehension are important, and reading activities need not be boring. Reading tasks and texts should be formulated to challenge young readers to think and attach meaning to the words, and should "invite" them consciously to use their schemata and metacognitive skills when reading. In the design of the diagnostic reading materials it should be clear that the components of reading are not viewed as splinter skills being assessed.

In answer to the criticisms from the Whole Language camp, Liberman and Liberman (1990:69) state the view of theorists of the Phonological approach as follows: "What the reader wants to get from the printed page, is what the author actually said, not what the reader thinks he might have said, given the reader's guess from context and his cultural and personal perspective, as is suggested by Whole Language theorists." Vellutino (1991:442) views word identification as the most basic skill in learning to read, stating that an adequate degree of fluency in word identification

is a basic prerequisite for successful reading comprehension. He (Vellutino 1991:442) regards word identification in skilled readers as a fast acting, automatic process that depends little on contextual information for its execution and declares that even skilled readers cannot accurately predict more than one word of four in sentence contexts, indicating that the predictive role of context is in fact limited.

If readers fail to read accurately and fluently, they may see a sentence as a string of loose words with no collective meaning. They then guess at words, because of poor sight word recognition, or because of difficulties in the decoding process. Insufficient word recognition with poor accuracy thus lead to poor comprehension, as illustrated in the previous example of Case Study E. This reader's perception of reading was that reading meant the "saying of the word" and that meaning played no part.

10   **Requirement 1 : Comprehension and meaning (6th time):** The diagnostic reading materials should subscribe to a view of reading as communication, which must at all times be meaningful and accurate.

Adams (1990:61) mentions that many research studies were done in the Phonics approach during the early 1960's to examine the possible effect that the non-linguistic perceptual and motor skills (e.g. spatial relations, visual memory, visual discrimination, visual-motor integration, gross and fine motor co-ordination, tactile-kinesthetic activities and auditory-visual integration) could have on reading acquisition. The tests of Frostig (1961) and Beery and Buktenica (1989, 1982, 1967) were prominent during that time. However, research studies concluded that perceptual training *per se* does not accelerate reading development (Adams 1990:61), and the pendulum started to move to phonological awareness, emphasising the auditory aspects of language and phonics. Phonics instruction is now widely recognised as instruction that successfully engenders automaticity in word identification, and has become a valuable component in beginning reading (Aaron 1991:131; Vellutino 1991:438).

Although perceptual training *per se* does not necessarily accelerate reading development, reading errors because of perceptual difficulties do occur. Common errors include word reversals like was/saw, letter reversals as in baby/daddy/paddy, sequential errors like slot/lost/lots or susceptible/suspectible and visual discrimination errors like fan/far, lame/lane and wet/vet.

11   **Requirement 9 : Perceptual skills (1st time) and requirement 10 : Phonological awareness (1st time):** The diagnostic reading materials should, *inter alia*, contain items open to letter and word reversals,

sequential errors and discrimination errors in reading in order to identify areas of weakness, related to perceptual problems that need attention.

The assessment of the learner's knowledge of phonics should also specifically be included.

The instructional materials used in this method emphasise the processing of the smallest linguistic units (phonemes), the gradual compilation of the smaller units, to the deciphering and comprehension of the higher units (Dechant 1991:23). All phonemes are regarded as extremely important, because the smallest unit of sound can change the pronunciation, and meaning, of a word, or the meaning of a whole sentence, as can be seen in the following examples:

"There's no business like shoe business"	:	The cat can see well in the park.
"A stitch in time saves none." (Dechant 1982:212)	:	A stitch in time saves mine

It is found that readers enjoy this type of reading task where one letter changes the meaning of a sentence, sometimes to a humorous, ridiculous (and often meaningless!) statement.

12   Requirement 1 : Comprehension and meaning (7th time) and Requirement 5 : Word reading materials (3rd time): It should be the aim to include items in the diagnostic reading materials, even in word reading, that would confirm that, because of meaning, reading is enjoyable.

Mastery of skills[9] and word recognition at an automatic level are regarded in the Phonological approach as prerequisite skills or strategies for fluent, skilled reading and for reading comprehension. According to this view, language comprehension processes can become fully operative in reading only when a certain degree of fluency in word identification has been achieved (Vellutino 1991:438). Aaron (1991:131) declares that, only after the mastery of the basic word recognition skills, "usually in the upper grades, are the readers able to focus on the ultimate goal of reading, which is to understand the text."

This statement by Aaron is regarded by the researcher as highly questionable. Experience has demonstrated that learners find reading more enjoyable, challenging, meaningful (and worth doing!) if their perception of reading is changed from a "say-the-word" act to a "read-the-message" act. This was clearly illustrated in

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[9]   Mastery of skills depends on an individual learner's qualities, e.g. the "attitude, capabilities and potential" of each individual (Van der Merwe 1996:286).

therapy sessions with the learner in Case Study E. He read the sentence She put her kitten by the door as She! but! hair! ten! why! the! door!-without comprehension, merely barking at words. However, when he was later instructed to try and read a message and do what it required, this learner was more motivated, and even used metacognitive strategies to solve the "problem." The instruction was, Put the pen on the book, which he succeeded in reading as But the pen on the book and could correct himself since the contextual support enabled him to recognise the anomalous word.

13   **Requirement 1 : Comprehension and meaning (8th time):** The diagnostic reading materials should assess the beginning readers' level of skill in using cognitive strategies and linking meaning to individual words, thus emphasising the making of meaning.

Regarding the making of meaning, Vellutino (1991:43) states that advocates of the code-orientated approach acknowledge the importance of using meaning-based strategies in addition to code-based strategies. Olson, Forsberg, Wise and Rack (1994:244) regard reading comprehension as the "most important end product" of reading, and declare that poor word recognition causes deficient reading comprehension. Gough and Tunmer (1986:7) specifically state that theorists of the phonic/code-orientated approach do not equate decoding and reading, and realise that what is read must be comprehended. However, they also declare that, whilst decoding is not sufficient for reading, it is necessary for reading (Gough & Tunmer 1986:7). Vellutino, Scanlon and Tanzman (1994:287-288), as well as Vellutino (1991:442) view word identification as the central component of the reading process and regard this as a prerequisite for adequate comprehension, adding that reading comprehension depends on adequate language comprehension. Grossen and Carnine (1990:15) state that teachers of the Phonological approach deal with meaning by reading to the learners while they are learning to decode, which leads to advanced "interpretive and evaluative skills".

14   **Requirement 2 : Word recognition and decoding (2nd time) and Requirement 11 : Language (1st time):** The diagnostic reading materials should assist teachers in determining the decoding skills of each reader in the class, and analysing errors qualitatively in order to distinguish meaning- and language-based difficulties from decoding difficulties. The materials should assist teachers in differentiating effectively between authentically good and poor readers in all respects.

Ehri (1995:20-22) views the development of word recognition as happening in four phases:

●   **Visual cue phase:** Readers memorise visual, contextual or graphic features of words to

remember how to read them, without the use of grapheme-phoneme relations. It is an immature process. Pre-schoolers "read" words such as <u>Coca Cola</u> this way.

- **Rudimentary alphabetic phase:** Readers use grapheme-phoneme correspondence to read words, but process only some of the letters in words e.g. initial or final letters. Ehri (1995:21) also calls this phase phonetic-cue reading.

- **Mature alphabetic phase:** Readers process all the letters and sounds in words and are skilled at sounding out and blending unfamiliar words, to build their sight word vocabulary.

- **Spelling pattern phase:** Readers use familiar spelling patterns and grapheme-phoneme knowledge. This phase emerges after readers have had sufficient experience to process words alphabetically and have learnt which letters combine frequently in different words as well as how to pronounce them.

Lerner (1993:412) regards the synthetic and analytic phonics methods as instructional methods for the learning-to-read phase in the Phonological approach.

- **Synthetic phonics method:** Isolated letters and their sound equivalents are taught. Learners are then taught to synthesise phonemes, to segment spoken words into their separate phonemes and then to blend the individual phonetic elements into whole words. (Lerner 1993:412; Groff 1990:3). Teaching materials focus on the alphabet, digraphs and syllables (Aaron 1991:127), which teachers actively demonstrate, supervise and teach (Groff 1990:2).

- **Analytic phonics method:** Learners are taught whole words that have a consistent- sound spelling pattern, and are then taught to analyse the phoneme elements that constitute the word. Linguistic readers use a similar approach (Lerner 1993:413).

In the **synthetic phonics** method, the emphasis is on phonological awareness and on the auditory elements of word recognition skills, whilst in the **analytic phonics** method, the orthographic processing of words and the visual elements of word recognition and language are emphasised.

Phonological awareness is described as the knowledge that spoken words are composed of discrete units of sound and that reading involves the manipulation of the units as well as the understanding

of how to relate sounds to letters or digraphs in written words (ERIC DIGEST 1996:79; Aaron 1991:130; Liberman & Liberman 1990:63). Liberman and Liberman (1990:65) state that several research studies have concluded that phonological awareness can be developed by training, and Aaron (1991:130) reports that research studies show that improved phoneme awareness improves reading skills significantly, both in beginning readers and in learners with a reading disability.

Since phonological awareness is viewed as a significant predictor of reading competence (Badian 1998:472), numerous empirical studies have been conducted to find which aspects of phonological awareness are the best predictors of reading success. These studies have addressed:

- Nursery rhymes (Maclean, Bryant & Bradley 1988:16)
- Onset and rime, in rhyme and alliteration (Bryant *et al.* 1990:429; Goswami & Bryant 1990:18-25)
- Tapping of phonemes (Bryant *et al.* 1990:429)
- Phoneme deletion tasks (e.g. omitting the first/last sound – Bryant *et al.* 1990:429; Cunningham & Stanovich 1990:734)
- Phonological choice tasks (e.g. pairs of pseudo words, where the learner has to identify the pseudo word that sounds like a real word – Cunningham & Stanovich 1990:734)
- Listening comprehension (Gough & Tunmer 1986:8)
- Letter naming tasks (Badian 1998:478)
- Phonological processing skills comprising alliteration; rhyme; segmenting single syllable words and synthesising the segments to provide new words or word combinations; reading of non-words, picture naming, digit naming and retrieval of phonological information from long-term memory in a fluency test (Frederickson & Frith 1998:122-123)

Learners such as Case Study E indeed find deletion tasks very difficult:

Which word can you hear if I say: s-t-o-p?

Which word will remain if you take away the s in stop?

Which word will remain if you take away the s in best?

15   Requirement 10 : Phonological awareness (2st time) and Requirement 1 : Comprehension and meaning (9th time): Although an analysis of the above-mentioned phonological awareness skills is relevant in research studies that aim to understand reading and to predict future reading competence, some of these

aspects are of less functional value in a diagnostic assessment of the individual's reading competence. The aim of a diagnostic reading assessment should be to understand the reason(s) for, and the correlates of poor reading performance.

In reading for diagnostic purposes, readers should be allowed to read and process meaningful printed text (single words or prose texts) holistically and integratively.

However, phonological awareness tasks should be considered for inclusion in the design of the diagnostic test. Phoneme deletion tasks tap into relevant skills for reading and would also be practicable for group assessment. Pseudo words however, are viewed as unsuitable for young beginning readers, and readers with reading difficulties. Meaningful words are viewed as the preferred format even for diagnostically assessing phonological skills.

Regarding the possible predictability of reading ability, the relationship between phonological awareness and learning to read is viewed as being reciprocal (ERIC DIGEST 1996:79; Ellis 1990:119; Ellis & Cataldo 1990:1; Liberman & Liberman 1990:63-64; Maclean *et al.* 1988:35; Perfetti *et al.* 1988:40, 73; Vellutino & Scanlon 1988:113). Deficient phonological awareness is thus both an "associate" and a predictor of reading problems (Mann 1993:259).

Some learners experience reading difficulties that are entirely different to those existing because of phonological deficits (Frederickson & Frith 1998:121). Snowling (1987:110) as well as Gough and Tunmer (1986:8) describe cases of learners with superior decoding skills, but poor reading comprehension, a phenomenon called hyperlexia. Snowling (1991:56) states that the existence of hyperlexia "is an indication that the development of single-word skills can advance without the support of comprehension", and the conclusion of Gough and Tunmer (1986:8) is that superior decoding skills will only make readers read as well as they can listen. Snowling (1987:110) furthermore warns that superiority in decoding skill can even be a hindrance, as it can mask reading difficulty and prevent these readers from being identified timeously. Frederickson and Frith (1998:119; 121) and Snowling (1987:113) point out that the combination of intact phonological skills, but poor comprehension (hyperlexia) could be linked to a more general language disability, which is often found in second language readers. Some second language learners have a limited receptive vocabulary, or insufficient "general and/or specific knowledge of concepts represented in writing" (Doctor, Dear & Makgamatha 1996:365).

Cases similar to the above have been found in practice. Case Study F is an example of a L2 learner (Afrikaans speaking and in an English school) who had a well developed sight word vocabulary and experienced no decoding difficulty, but displayed poor comprehension skills. He was able to answer some direct questions, but found it very difficult to infer or deduce unwritten information by "reading between the lines", e.g.

A robin hopped up to my window:

Assessor: "Tell me about the window" - Learner: "It doesn't say".

Assessor: "Tell me about the house" - Learner: "It doesn't say".

OR

The children put on their costumes and ran to the pool:

Assessor: "What season was it? - Learner: "It doesn't say".

The L2 learner in Case Study G (Zulu speaking, and in an English school) had no real difficulty recognising(saying) the words in the following text:

The Kingfisher uses its sharp pointed bill to make a burrow or a tunnel in the riverbank. It lines the nesting chamber with fish bones.

When the learner was asked to tell the story in her own words, she answered: "The King catches fish and then he goes to the bank to borrow money. He makes lines with fishbones".

The learner's comprehension skills in reading as well as listening comprehension skills were very poor. She did not have the necessary vocabulary or knowledge of concepts to understand the text.

16   **Requirement 12 : Early identification of difficulties and interpreting of results (1st time):** It is of the utmost importance, especially given the South African situation, to design diagnostic reading materials to distinguish between reading difficulties related to problems in decoding and those related to a language factor of whatever nature. Early identification of the L1 or L2 learner with/without a deficit in phonological skills as reflected in decoding errors, as well as with /without reading comprehension difficulties, is important.

In recent years there has been a shift in emphasis from the phonological to the orthographic aspects of reading. This is illustrated by the position of Johnston *et al.* (1995:34) who view the Phonological approach as a multi-sensorial teaching method, which has as much to do with the teaching of orthography (spelling rules) as it has to do with sounds. Teaching in this model accordingly emphasises the regularities in the English orthography in order to aid learners' reading development (Johnston *et al.* 1995:34).

Snowling (1987:49-50) describes studies by Bryant and Bradley that demonstrate that beginning readers use visual, or orthographic, strategies for reading, but phonological, or auditory, strategies for spelling. To illustrate this, the words <u>light</u> and <u>bun</u> were used, where <u>light</u> could be read and <u>bun</u> not, whilst the opposite happened in the spelling activity.

The learner in Case Study D was able to read the words <u>just</u>, <u>journey</u> and <u>job</u>, but spelled them respectively as <u>chisd</u>, <u>churney</u> and <u>chob</u>.
He was able, however, to spell <u>shelves</u> correctly, but read it as <u>she lives</u>.

The Danish learner in Case Study A could not read (but could spell) phonic words like <u>bun</u>, <u>hut</u>, <u>pot</u>, <u>pet</u>, <u>pat</u>, but recognised <u>school</u>, <u>people</u>, <u>biscuit</u> on sight (he was unable to spell these words). He could not read or write <u>put</u> and <u>pit</u>.

<u>17</u>   **Requirement 3 : Written language (2nd time):** In the diagnostic reading test, only reading skills, not spelling, should be assessed.

Bryant and Nunes (1998:186) argue that, just as phonological awareness contributes to learners' learning about grapheme-phoneme correspondences, so too should their awareness of syntax and morphemes ("morphosyntactic awareness" - Bryant & Nunes 1998:187) be connected to their learning about grammatically determined orthographic patterns. The grammatical as well as the phonological connections between oral and written language should be emphasised (Bryant & Nunes 1998:188). Instruction in word identification that facilitates both phoneme awareness and alphabetic coding, or orthographic aspects, is thus promoted in this approach (Vellutino 1991:442).

With the emphasis on orthography, empirical studies using word tests instead of listening comprehension or auditory aspects of language are used to predict reading competence. Badian (1998:472) states that not many researchers have included visual-orthographic processing skills in their research studies. She (Badian 1998:473 - 478) briefly discusses the following experiments and conclusions:

- Visual-orthographic processing skills (specifically visual matching - <u>drop</u>: <u>droq</u>, <u>drop</u>, <u>borq</u>, <u>brop</u>) are extremely good predictors of the reading competence of good and poor readers - better than the phonological awareness activities (syllabic tapping and serial naming speed)

that were included in her study (Badian 1998:473).

● Sentence memory, which taps short-term memory and working memory, was found to be a better predictor of reading vocabulary and reading comprehension than the phonological awareness letter naming activity, which is important for readers in the first grade (Badian 1998:478).

Cunningham and Stanovich (1990:734) included the following orthographic aspects in a study:

● Orthographic choice tasks (rume : room - Which one is spelled correctly?) (Cunningham & Stanovich 1990:734)

● Homophone choice tasks (pair : pear - Which one is a fruit?) (Cunningham & Stanovich 1990:734)

In the study by Cunningham and Stanovich (1990:738) it was found that orthographic processing ability (independent from phonological processing skill) accounts for word recognition skill, and that good performance on orthographic processing tasks predicts efficient word recognition skills. Automaticity in word recognition makes free reading more enjoyable and leads to more text exposure which in turn leads to the Matthew effect : the-rich-get-richer and the poor-get-poorer, or good readers read more and become better readers, whilst poor readers read less and become even poorer at reading (Cunningham & Stanovich 1990:739; Stanovich 1986:396). The Matthew effect is indeed a prominent key term often used in the Cognitive Approach to reading.

Snowling (1991:69) states that learners with reading problems ("dyslexics") reach their level of reading competence by relying on a visual approach and therefore find orthographic choice tasks, as well as phonological choice tasks, very difficult.

18   Requirement 9 : Perceptual skills (2nd time): Orthographic visual matching tasks (drop : droq, drop, borq, borp, bord) could possibly be included in the diagnostic reading materials.
Requirement 3 : Written language (3rd time):
However, orthographic choice tasks (rume:room - Which one is spelled correctly?) and homophone choice tasks (pair:pear - Which one is a fruit?) would be too difficult for beginning readers, as well as for L2 readers or readers with a reading difficulty. Both of these tasks do not assess reading *per se* and the readers have

perhaps not yet been exposed sufficiently to print and tuition for such a test to yield valid results.

2.2.3   The Cognitive Approach in the Beginning Reading Phase

The following authors and researchers, are some of the advocates of the Cognitive approach: John Beech (1997, 1985); Louise Spear-Swerling and Robert Sternberg (1994); Max Coltheart, Brent Curtis, Paul Atkins and Michael Haller (1993); Margaret Snowling (1991, 1987); Anne Cunningham (1990); Keith Stanovich and Anne Cunningham (1992); Keith Stanovich (1988; 1986); Peter Winograd (1989, 1987) and Roderick Barron (1986).

Two of the very prominent models in the Cognitive approach that have been proposed to serve as explanation for various facts about skilled reading, beginning reading and reading problems are the **dual-route** model (Dominguez, de Vega & Cuetos 1997:401; Klein 1996:353; Coltheart *et al.* 1993:589; Snowling 1991:50; Rack, Snowling & Olson 1992:30; Snowling 1987:50; Barron 1986:93; Hulme 1981:169-170), and the **interactive-compensatory** model (Ehri 1995:18; Nicholson, Bailey & McArthur 1991:33; Vellutino 1991:438; Stanovich 1986:368 - 369; Stanovich 1980:32; Beech 1985:29). Both these models will be discussed later in this section. Other models of reading include the Spear-Sternberg model (Spear-Swerling & Sternberg 1994:95), the Parallel-Distributed Processing (PDP) model of Seidenberg and McClelland (Coltheart *et al.* 1993:540), the dual-route cascade model (Coltheart *et al.* 1993:598), and the dual-interactive activation model (Dominguez *et al.* 1997:416).

Further key terms, although not exclusive to the Cognitive approach, include: <u>construction of meaning, comprehension, thinking strategies, strategic reading, metacognition, schemata, attribution theory, motivation, learned helplessness, reading purpose, Matthew effect, dynamic authentic assessment, integration, communication</u> and <u>information processing</u>.

The Cognitive approach is neither a top-down, nor a bottom-up approach, but is rather an integrative approach, which proposes a dual-route model of reading, where top-down and bottom-up processes occur simultaneously and independently. Word identification skills are integrated with the readers' prior knowledge in a flexible and strategic manner, depending on the reader's purpose, the nature of the material, and the context (Winograd 1989:3). It is argued that the truth about reading lies somewhere between the two extremes of the Whole Language and Phonological

approaches to reading (Snowling 1987:61).

Advocates of the Cognitive approach view reading as a dynamic, holistic, constructive, communicative and interactive process, in fact, as part of the communication process. Reading is intimately related to the other language areas. When readers are reading, they are put into contact with ideas which the author communicates to them. The reader has to construct meaning (Lerner 1993:392; Wixson & Peters 1989:23) and make sense of what the author is communicating to him, process this information and be able to use and apply the information.

It is found that beginning readers often have the perception that reading is merely a word recognition act.

19   Requirement 1 : Comprehension and meaning (10th time): In the reading materials it must be clear that reading should be seen as a communicative process.

According to LaBerge and Samuels, as described by Pearson and Tierney (1983:43 - 44), followers of the Cognitive approach believe that readers can only achieve a level of "sophisticated interactive processing" and focus on higher-level cognitive processes (e.g. making of meaning and the ability to infer, to deduce and to read between the lines and beyond the lines) once the lower level processes (e.g. decoding and word recognition) have been automated. Bouwer (1989:122) states that reading comprehension is "quite substantially influenced by the measure of ease with which word clusters (phrases and clauses) are recognised." She (Bouwer 1989:122) further states that, for component readers, word recognition is a function of textual meaning, where the good readers are guided by textual clues in the text to anticipate words, and that reading fluency indicates "the skills of maintaining a high and constant reading speed, as well as the accuracy of word recognition, which stems from reading attentively and comprehendingly." Snowling (1987:109) explains that phonological recoding strategies function as a self-teaching mechanism for readers and regards this as important for reading comprehension. These phonological strategies are needed to hold items which have been decoded for integration later on, as well as for storing the sentence context in the working memory, facilitating word identification (Snowling 1987:109). Poor readers who are experiencing phonological deficits will therefore have a disadvantage (Snowling 1987:109).

Morris, Shaywitz, Shankweiler, Katz, Stuebing, Fletcher, Lyon, Francis and Shaywitz (1998:348)

discuss current views on reading disability and conclude that problems with reading often result from a "bottleneck" in the development of phonological skills, stating that "beginning readers and poor readers at all ages" have difficulty with decoding skills. This view is shared by Spear-Swerling and Sternberg (1994:91), who believe that learners with reading difficulties often have a deficit in phonological processing and have a decoding difficulty.

Spear-Swerling and Sternberg (1994:94-95) view reading acquisition as a developmental process which involves the following six distinct phases:

- **Visual-cue word recognition**; which is characteristic of children who are just beginning to recognise words.

- **Phonetic-cue word recognition**; where readers begin to use phonics cues, which often involves the first or last letter of a word. They cannot fully decode words and rely heavily on context to aid their word recognition. Learners must be phonologically aware, know the principles of rhyming and have alphabetic insight (letters and sounds map into each other).

- **Controlled word recognition**; where learners have fully attained word decoding skills and have acquired a great deal of orthographic knowledge, but their decoding still requires considerable effort.

- **Automated word recognition**; which is usually achieved at second or third grade level, where learners recognise the majority of common words accurately and relatively effortlessly. This level is important for proficient reading and sets the stage for rapidly increasing reading comprehension. Learners use their mental resources to understand the meaning of the text rather than to recognise the words and they use reading as a tool to acquire new concepts and information. The learners with automated word recognition do not rely on sentence context or prior knowledge to guess at words, because they are highly efficient in the recognition of the words.

- **Strategic reading**; when learners begin to use a number of strategies routinely to help then to comprehend the text better. Nondisabled readers usually reach this level where strategies are used at a middle-to-ending elementary level, when their pre-knowledge and use of strategies interact. Strategy acquisition continues throughout life.

- **Proficient adult reading**; where readers are insightful, reflective and analytical and are able

to use texts and integrate knowledge from many sources.

Spear-Swerling & Sternberg (1994:102) conclude that a reading programme should be well-integrated and comprehensive, and should develop both fluent decoding and higher level comprehension skills.

Regarding reading instruction, it is therefore argued that decoding skills should be taught explicitly, ensuring that readers reach an appropriate level of automaticity. Teaching should be "pro-active" (Kriegler & Skuy 1996:114; Pearson & Tierney 1983:45), with teachers selecting materials and making clear what the task is, modeling how the task should be performed and providing opportunities for guided practice of the reading task (Pearson & Tierney 1983:45). Beech (1985:24) describes the aim of the teachers as providing sufficient practice opportunities so that readers could master the initial stage of decoding, and encouraging them to understand what they read.

20   Requirement 6 : All known aspects of reading (2nd time):   In assessment materials for the beginning reading phase, both lower-order and higher-order cognitive processes should be included.

For higher level understanding of text being read, sequences of words must be retained in the short term memory and all the individual constituents must be combined or integrated into meaningful communication (Beech 1985:24; Hulme 1981:164). Pearson and Tierney (1983:44) state that the reader is an "active information processor whose goal it is to construct a model of meaning for the text", using his/her schemata, prior knowledge or background knowledge. It is therefore imperative that teachers help their learners to develop the skill of consciously using their schemata, by selecting materials and reading activities that would ensure that their learners practise this skill. Metacognitive skills should also be emphasised in the instruction of reading (Pearson & Tierney 1983:44).

It is sometimes found that readers have difficulty understanding the connection between sentences, and deducing or inferring information. Their reading performance often improves dramatically in therapy when this skill is practised.

In Case Study D the reader had difficulty answering the question after reading the text:

The black cat saw a mouse. It was scared.

Assessor: Who, do you think, does the word it refer to?

Reader: I don't know.

The reader in Case Study F had difficulty with the following exercise:

David was wet and full of mud. He had to take a bath immediately. He grabbed his clean clothes and ran down the passage. He threw open the door and flung down his clothes.

Assessor: Which door do you think did he open?

Reader: It does not say.

21   **Requirement 1 : Comprehension and meaning (11th time):** Items which assess a learner's ability to retain a sequence of words or a statement in memory and then to use the information later to understand another portion of the text, as well as the ability to infer or deduce information, should be included in the diagnostic reading materials.

However, Beech (1985:41) mentions that in practice it was found by Durkin that there is very little teaching of the comprehension processes *per se*, and that readers can often "get through so-called comprehension tests simply by referring directly to the original wording of the text, instead of making inferences implied by the content." A similar case was discussed by Grindler and Stratton (1992:262). Esterhuyse (1997:102) discusses the findings of Le Roux, that in many South African classrooms the emphasis is only on decoding skills, whilst reading comprehension is neglected.

Many teachers and parents regard word accuracy as so important that they stop young readers if even a single word is read incorrectly. When the reader in Case Study E read

A man walks down the street instead of

The man walks down the street, he was immediately stopped and told to "look again", which confirmed his perception of reading as individual words that had to be recognised correctly, with no emphasis on comprehension.

22   **Requirement 6 : All known aspects of reading (3rd time):** The diagnostic reading materials should aim to help inexperienced teachers as well as learners to realise that reading comprehension and making inferences whilst reading are important, but should also assess the learners' word recognition and decoding skills.

In the Cognitive approach assessment is seen as a dynamic, interactive process (interaction between the learner, the teacher and teaching content - Bouwer 1989:9; or between teachers, learners, tasks and contexts, as described by Burden (1996:102), where the teacher presents a reading activity to the reader, observes the response and then introduces modifications to the task (Lipson & Wixson 1989:127). Assessment should be authentic (Lipson & Wixson 1989:127), and should also be an "interpretative act" (Christie 1995:118). Assessment should aim to help teachers intervene effectively when difficulties occur and plan their lessons according to the needs of the learners in their class, thus improving both teaching and learning (Grigorenko & Sternberg 1998:75; Kriegler & Skuy 1996:114; Schauweker 1995:233). Burden (1996:100) calls this "formative" assessment or educational intervention. Assessment should also aim to empower the learners to help themselves (Burden 1996:100 - 101) and encourage the teachers to collect as much information as possible in order to learn more about the learners and to better understand the strategies they use when reading (Grindler & Stratton 1992:264). Teachers should see assessment as a decision making process rather than a process that considers assessment as an end result (Grindler & Stratton 1992:264).

The use of standardized norm-referenced instruments is criticised in the Cognitive approach because a learner's overall performance is compared with that of a large population, and is equated to a figure (e.g. grade equivalent, percentile rank or stanine score), often with no diagnostic information given about the learner's performance on the various subtests (Burns et al. 1992:573 - 574). These authors (Burns et al. 1992:577) caution that the single test score on a norm-referenced reading test often reflects learners' frustration level rather than their instructional or independent level, explaining that a learner who achieves a fourth-grade score on a test might yet be unable to perform satisfactorily in a fourth year reader or with fourth-grade content materials.

Burns et al. (1992:572 - 573) mention that criterion-referenced, or objective-referenced tests are used to see whether mastery of each criterion or objective has been achieved. In the criterion-referenced tests learners' performance is not compared with that of the large population, but scores are interpreted in terms of specific performance standards (Burns et al. 1992:573). These results are used as a guide for developing instructional prescriptions, with pre- and posttests measuring a learner's mastery of skills. Burns et al. (1992:580) state that assessment should be more

performance-based and must attempt to evaluate the learner's abilities to read strategically. Grigorenko and Sternberg (1998:75 - 77), Levande (1993:125) as well as Tzuriel and Haywood (1992:6) summarise the criticisms of several other prominent cognitive researchers (e.g. Feuerstein, Vygotsky) on standard psychometric testing (static assessment), centred on three main points, as follows:

- Bias against minority groups and special needs groups, and the selective interpretation of the results of these groups
- Lack of consideration of factors such as motivation, personality and social adequacy
- Lack of adequate information for actual intervention, prescriptive teaching, and remediation, or learning support processes (Tzuriel & Haywood 1992:6), without which many readers do not become competent readers

23   Requirement 13 : Criterion-referenced testing (1st time), Requirement 12 : Early identification of difficulties and interpreting of results (2nd time), Requirement 14 : Avoidance of bias (1st time) and Requirement 15 : Identification of attention or motivational difficulties (1st time): The reading materials should be designed as a diagnostic, dynamic, authentic assessment that is criterion-referenced or performance based. It should supply teachers with sufficient information to interpret their learners' reading performance and to understand the reading difficulties that learners are experiencing, so that learning support and class tuition could be planned efficiently according to individual needs. It should not be biased against a minority group, and it should, inter alia, help teachers to observe which learner possibly has an attention difficulty, lacks self-discipline, does not like reading, or has difficulty with task completion.

Competent readers are cognitively, metacognitively and "actively and strategically involved" (Winograd 1989:7) when they read. Good readers approach text in a flexible manner, which depends on their purpose for reading and the nature of the text (Winograd 1989:7). Strategic readers are good readers who use their skills appropriately and effectively, which means they know when and how to use each skill for better comprehension.

In a therapy session the reader in Case Study H (a competent reader with a poor self-image) was given three reading cards, each containing a message to "somebody", and he had to choose which message was intended especially for him.

First message: "This message is for a very pretty girl who is in Grade 3. She lives in Sandton. She has long, blonde hair and blue eyes ..."

Second message: " I am writing this message to a boy who lives in Pretoria. He is hardworking and likes reading and mathematics. He is in Grade 3".

Third message: " This letter is for a very special boy who is in Grade 3. He lives in Parkwood. This boy is tall for his age. He has a neat handwriting and he is always friendly and hardworking ..."

The learner in Case Study H had no difficulty selecting his message (third message). He only read the first message up to the word girl, and the second message up to Pretoria before he put them away.

The poor reader in Case Study C, however, merely said that the messages contained no names and "How should I know which one is mine"?

Many poor readers do not approach reading strategically (Winograd 1989:7), or only use strategies to avoid reading activities (Winograd 1989:8). Poor readers lack particular reading skills and/or fail to use the skills which they have effectively. Because they tend to read less and less, the Matthew effect (the rich-get-richer and the poor-get-poorer) comes into play (Cunningham & Stanovich 1990:739; Stanovich 1986:381, 396). The Matthew effect in reading development is a cumulative advantage phenomenon (Stanovich 1986:381), which means that learners who read well and who have a good vocabulary, "will read more, learn more word meanings and hence read better", whilst learners with an inadequate vocabulary ... "who read slowly and without enjoyment - read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability" (Stanovich 1986:381).

Stanovich and Cunningham (1992:51) declare that reading interacts with the environment and provides the reader with unique opportunities to acquire declarative knowledge. They (Stanovich & Cunningham 1992:64) regard print exposure as a unique source of world knowledge, as it is an exceptional source of rich stimulation. In fact, they regard print as the only source that provides "opportunities of acquiring broad and deep knowledge of the world" and influences cognitive efficiency. They (Stanovich & Cunningham 1992:64) also regard print exposure as a significant contributor to the development of aspects of verbal intelligence.

Another key term often used in the holistic, interactive cognitive approach, is learned helplessness.

Poor readers who use strategies to avoid reading activities (Winograd 1989:8) also regularly exhibit a passiveness and a helplessness when they have to read (Johnston & Winograd 1985:280), and in effect become inactive or passive participants in the interactive reading process (Johnston & Winograd 1985:279). "Disabled" readers often present emotional, motivational and sometimes personality problems (Johnston & Winograd 1985:280), with reading failure attributed to "defects and deficiencies" (Werner & Cromer, as quoted by Johnston & Winograd 1985:281). Johnston and Winograd (1985:281) regard difficulties with metacognition, the attribution theory, learners' learned helplessness and lack of achievement motivation as more accurate explanation of the reading difficulties which many readers experience.

Johnston and Winograd (1985:281-283) explain the reasons contributing to reading difficulties as follows:

- **Metacognitive factors**: Some "learning disabled" readers should rather be viewed as "inactive learners", who do not know how to use goal-oriented strategies "flexibly and efficiently" Johnston & Winograd 1985:281).

- **Learned helplessness:** When good readers fail in a reading task, they look for solutions, remain positive, don't define themselves as failing nor offer explanations for failing, whilst helpless students attribute their reading failure to "uncontrollable factors", expressing a "negative affect and resignation". When achieving readers are successful, they attribute success to "internal, controllable factors such as effort" which can be repeated, whereas helpless students tend to attribute success to external factors like luck or teaching skill, which implies that the success will not necessarily be repeated (Johnston & Winograd 1985:282). Poor readers have the perception that responses and outcomes are independent of each other (Johnston & Winograd 1985:283).

Johnston and Winograd (1985:282) declare that readers who suffer from passive failure could have difficulties in the cognitive, motivational and affective areas. Difficulties in the cognitive area include all higher cognitive processes, e.g. metacognition, a poor ability to make inferences and language difficulties. Difficulties in the motivational area include that learners attribute success or failure to alternative external factors (e.g "luck") or uncontrollable factors such as their teacher's

teaching skills, displaying a negative affect. Difficulties in the affective area include a low self-esteem (Johnston & Winograd 1985:283).

The learner in Case Study C is an excellent example of a reader with a learned helplessness, who suffers from passive failure. When given a reading assignment, he would try to distract the attention of the therapist, by starting to discuss other issues. When failing in a task, he would always offer a reason - e.g. his eyes were sore, he had never been taught the word before, he had been reading another word. This reader tended to stare helplessly at unfamiliar words and wait to be helped. He lacked perseverance and motivation, and had a poor self-image. His sight word vocabulary was poor and he did not know how to utilise his schemata for textual comprehension.

24   Requirement 15 : Identification of attention or motivational difficulties (2nd time) and Requirement 12 : Early identification of difficulties and interpreting results (3rd time):   The reading materials should be learner-friendly and teachers should be encouraged to motivate the learners whilst engaging with the materials, to obtain a true reflection of the learners' reading performance. The materials should aim to distinguish between the various types of difficulty in the cognitive area (e.g. language difficulty, lack of ability to infer, inadequate use of metacognition etc.).

In the Cognitive approach the view is held that there is a dynamic **interaction** between the reader (e.g. his/her knowledge, skill, experience and motivation), the text (e.g. the type, content and organisation of the material) and the context (e.g. purpose', tasks and settings for reading) (Lerner 1993:312; Lipson & Wixson 1989:111).

The Cognitive interactive model of reading does not imply only the interaction between the reader, the text and the context, but also the following interactions:

- An interaction between the **word identification** skills (bottom-up) and **language compre-hension** processes (top-down), with both aspects independently and jointly contributing to reading comprehension (Vellutino *et al.* 1994:29).   In the instruction of beginning reading more emphasis is initially laid on word identification skills, whilst at later stages of reading development language comprehension and cognitive processes are focused on more closely (Vellutino *et al. 1994*:280).

- An interaction between the **reader** and the **author** (Lerner 1993:402; Dechant 1982:5)

which is described by Bouwer (1992:13) as a "dialogue." The reader and the author communicate with each other - the reader must decode the message from the author, or make meaning of what is read (Dechant 1991:9; Dechant 1982:7).

- An interaction between what the reader brings to the text by way of **prior knowledge** or schemata and metacognition, and what **new meaning or message** the reader gets from the printed page (Dechant 1982:9). Winograd (1989:5) quotes Anderson and Pearson who describe this as the interaction between old knowledge and new information, and Pearson and Tierney (1983:44) describe the reader as an active information processor.

- An interaction between between the **learner** (or reader) and the **class teacher**, implying that both are participants in the interaction between the reader and the text. Teachers have to provide reading material that would give learners an opportunity to use their prior knowledge, and ensure metacognitive consideration of the text by the readers when reading. The readers have to be metacognitively engaged to monitor their understanding of the new message and evaluate whether the new message makes sense.

Regarding the interaction between the above-mentioned aspects:

- Interaction between word identification skills and language comprehension processes:

If comprehension skills are neglected in the learning-to-read phase, reading becomes less enjoyable and less meaningful and learners develop the wrong perception of what reading is. The learner in Case Study A was asked to read the following paragraph:

"Bill has six legs, just like a bee. He has no wings and he is not big. Bill and his friends live in their nest in the ground. Thousands of his friends together form a colony. Bill and the other workers in the colony carry food to their nest. They work very hard. They know each other by smell. If a strange ant comes to their nest, the workers drive him away".

The learner read the story, focusing on word recognition. He recalled little of what he had read, and could answer hardly any questions. He only wished to know how many more paragraphs he would be expected to read. When it was pointed out that the story was a riddle and he was challenged to read it and answer some questions in order to find the answer to the riddle, he showed more interest and even started enjoying the exercise:

"Is Bill a boy (male) or a girl (female)? Why?"

"Is Bill a person or an insect? Why?

"Is Bill a bee? Why/Why not?"

What is Bill's house called?

Where is Bill's house?

What is a colony?

What work does Bill do?

How do they know each other?

What do they do when a stranger comes to them?

So - what is Bill?

25 **Requirement 1 : Comprehension and meaning (12th time):** The diagnostic reading materials should target word identification and decoding skills combined with meaningful comprehension strategies, for beginning readers to experience that reading is a communicative, dynamic, interactive and integrative process.

  ° Interaction between the reader and the author
   The learner in Case Study A (discussed above) initially expected Bill to be a person. He had to read, remember and interpret all the author's subsequent messages to fully comprehend the passage.

26 **Requirment 1 : Comprehension and meaning (13th time):** The diagnostic reading materials should be designed for learners to realise that the author communicates with them through a total written message, and that all segments of the message should be interpreted and comprehended for it to make sense.

Interaction between old knowledge and new information
The learner in Case Study A had to adapt and integrate his old knowledge (Bill is the name of a male person), with the new information (Bill has six legs, is not a bee, works hard, lives in a colony, knows others by smell." Prior knowledge (insects have six legs, ants have six legs, no wings, bees have wings, ants work hard etc) had to be applied to the text.

27 **Requirment 4 : Schemata (2nd time):** The diagnostic reading materials should be designed for learners to realise that their background information or prior knowledge could be useful for understanding the author's message.

  ° Interaction between the learner and the class teacher
   Learners are sometimes almost surprised when they realise that they are expected to be active participants in the reading process and must apply metacognitive skills. The learner in Case Study D defined reading as "words that you have to read"
   Assessor: Tell me about the words that you read.

Learner:	It is words that were written by somebody.
Assessor:	Why were the word written down?
Learner:	He wanted to write a story.
Assessor:	What was the story about?
Learner:	It was about Bill.
Assessor:	What was Bill?
Learner:	It doesn't say.
Assessor:	How can you find out?
Learner:	I don't know.

28   **Requirement 4 : Schemata (3rd time):** The diagnostic reading materials should be designed to invite learners to interact with the text.

The interaction between the learner and the text, where the learner is metacognitively engaged in considering the text, is thus regarded as vital in the Cognitive approach.

In a previous study, the researcher (De Jongh 1988:37) describes **metacognition** as a creative act, where the readers are strategically and actively involved with the text. Readers who use their metacognitive skills communicate effectively and productively with the text by constantly monitoring what they understand and fail to understand. What is more, they know what to do if their reading does not make sense or does not complement their existing schemata. The metacognitive strategies that readers use to control the text and comprehend what they read include pausing, re-reading, formulating and answering one's own questions, using prior knowledge or existing schemata, and comparing to verify that new information is in line with existing knowledge. If a discrepancy occurs between new information and existing knowledge, readers have to decide whether their existing knowledge should be changed, adapted or supplemented, by cognitively judging whether the new information is correct, appropriate and relevant. Readers also resort to contextual clues metacognitively, to help them understand the text.

An important quality of metacognition is that the comprehension of readers who are effectively and metacognitively engaged generally improves and they are then usually also able to apply the new information gained from the particular text. Competent readers are not passive readers; they engage actively with the text and regard reading holistically, as yielding infinitely more than the sum

of the components of the text.

Young readers initially find it difficult to engage metacognitively in their reading. Metacognitive strategies should be introduced and expressly modelled to them.

The learner of Case Study D enjoyed the following exercise:

Fred likes all water sport.

(So, which sport could that be? That could be a sport such as swimming, skiing, motor boating, surfing.)

He owns a catamaran ...

(What is a catamaran? It must have some connection with water sport. Let me read on, perhaps they will explain later.)

which he uses to sail with ...

(So, a catamaran has something to do with sails. Perhaps it is a surfboard.)

on any dam.

(So, you can only sail on it on a dam. Oh, but you also use a surfboard on the sea, so a catamaran is not a surfboard.)

When his family go to the sea ...

(Oh, you can use a catamaran on the sea too! Perhaps it is a surfboard.)

he helps his father to hook the trailer ...

(Why must he hook a trailer? Let me read on.)

of the catamaran. It is certainly worth the trouble for all the fun they will have!

(Oh, so it can't be a surfboard. A surfboard is usually transported on the roof of the car, and the catamaran seems big and heavy. Let me ask my teacher what a catamaran is.) etc.

29   Requirement 7 : Metacognition (2st time):   Items that assess the use of metacognitive strategies should be included in the diagnostic reading materials.

For readers to be metacognitively engaged when reading, they have to utilise their schemata. Schemata can be described as all the prior or existing knowledge that readers have at their disposal, which includes the knowledge they have about the content of the text that they are reading about, as well as their knowledge regarding textual conventions, language and sentence construction generally (De Jongh 1988:38). All their existing, prior or background knowledge, help readers to deduce and infer information, summarise content and generalise principles and facts whilst reading (De Jongh 1988:45). Readers are thus enabled to function on increasing levels of complexity. If all their knowledge is tapped when reading, readers will be able to read "between the lines", as active participants in the reading process, bringing more information to, and gaining more information

from the text, with the result of better achievements in reading comprehension and a higher level of reading competency.

Hillen (1995:10) argues that a reader's **linguistic schemata** (or prior linguistic knowledge) and level of language proficiency (L1 or L2) as well as the reader's **content schemata** or prior background knowledge of the content area of the text and the **formal schemata** or the rhetorical structure of the text are all important factors in developing reading competence.

Readers who do not possess sufficient or rich schemata, and those who don't consciously use their existing schemata and are not actively involved when reading, usually experience difficulties with text demanding higher cognitive processing (De Jongh 1988:45). For effective reading, the reader's abstract schemata interact with the textual data, both being equally important in the making of meaning (Rude & Oehlkers 1984:196). Teachers should therefore help learners to expand their prior knowledge (schemata) and teach them how to integrate new information with their existing schemata (De Jongh 1988:41), by evaluating the new information and considering whether schemata should be changed or adapted, or inversely whether the new information should be adapted according to the existing schemata (Beech 1985:32-33). Learners' schemata should be expanded and enriched, with teachers having the responsibility to provide opportunities in the classroom to introduce their learners to the necessary concepts. If a learner lacks the prior knowledge necessary to understand a text, it is insufficient for the teacher to merely give an explanation in an attempt for the reader to develop the necessary concepts, just as explaining a joke seldom leads to laughter (Rude & Oehlkers 1984:227). New information can only be understood and learned when the new facts are added to existing schemata, thus changing refining or expanding these, or when new schemata are formed arising from the new information (Rude & Oehlkers 1984:226).

The learner in Case Study D had difficulty with the following text:

Tom and Mary went to the beach. They put the cream, the Fridge and their sunglasses in a bag.

Assessor: What did they take to the beach?

Learner: The cream, the fridge and their sunglasses.

Assessor: What did they do with the cream?

Learner: They put it in the fridge.

Assessor: Why?

Learner: They wanted to eat it.

When he was asked how it was possible for two children to carry a fridge to the beach in a bag, he realised that the Fridge must be something else and added that the cream was also probably suntan cream.

30   **Requirement 4 : Schemata (4th time):**   Items that encourage learners to consciously utilise their schemata should be included in the diagnostic reading materials for the identification of learners who either lack the necessary schemata, or do not know how to tap this resource.

A reading difficulty could arise when there is a deficiency or shortcoming, or insufficient participation in any of the components of the reading process.

To Stanovich (1980:35) the **interactive** model of the Cognitive approach differs from the extreme top-down model of the Whole Language approach, in that the reading processes are viewed as relatively independent at different levels in the former model, whilst in the latter the higher level processes are viewed as directing the lower-level processes.   Stanovich (1980:35) explains that when reading processes are independent at different levels the "semantic processes constrain alternatives of lower levels but are themselves constrained by lower-level analysis", whereas in the Whole Language approach "the semantic processes direct lower-level processes".

If a learner, as in Case Study E, does not have an adequate sight word vocabulary or lacks decoding skills and is unable to read some words, it appears to have a negative effect on the higher level comprehension skills. However, even if all the words are recognised, as in Case Study D, the learner's difficulties in using metacognitive strategies and schemata, also impacts negatively on reading comprehension.

31   **Requirement 6 : All known aspects of reading (5th time):**   All known aspects of reading should be addressed in the diagnostic reading materials.

In the **interactive-compensatory** model of reading it is consequently argued that a process at any level can compensate for deficiencies at any other level (Ehri 1995:18; Spear-Swerling & Sternberg 1994:97; Nicholson *et al.* 1991:33; Vellutino 1991:438; Stanovich 1986:368, 369; Stanovich 1980:36, 63; Beech 1985:29), which means that higher-level processes could compensate for deficiencies in lower-level processes. Poor decoders with poor word recognition skills rely more

heavily on contextual factors than good readers (Vellutino 1991:442; Stanovich 1980:36). Good readers use contextual clues effectively to monitor their comprehension, but poor readers use contextual clues to aid their word recognition (Stanovich 1980:59, 64). Good readers have "superior strategies for comprehending and remembering large units of texts" compared to poor readers (Stanovich 1980:64).

The learner in Case Study C had poor decoding skills, but used contextual clues very effectively to help him solve unfamiliar words. However, if he encountered too many unfamiliar words in one task he was unable to solve them and stared helplessly at the text.

32   Requirement 12 : Early identification of difficulties and interpreting results (4th time): The diagnostic reading materials should assist the teachers in timeously identifying learners in their class who are compensating for a deficiency in either the lower or the higher-order reading processes, to support such learners according to their specific needs.

As already mentioned in an earlier paragraph, reading is viewed as an integrative process in the Cognitive approach. Snowling (1987:61) states that, according to this approach, readers "rely upon knowledge-based information from the semantic system *and* what is known as data-driven information from decoding." Stanovich (1980:35) explains that during the reading process, information is provided simultaneously from several knowledge sources, which include feature extraction, orthographic knowledge, lexical knowledge, syntactic knowledge and semantic knowledge, to let top-down and bottom-up processes occur simultaneously.

Stanovich (1980:60) states that word recognition at an automatic level is important, because it frees capacity for higher-level integrative and semantic processing. He (Stanovich 1980:60) describes the view of Lesgold and Perfetti that speed of recognition is important in reading, where "rapid coding of information into short-term memory facilitates the integrative comprehension processes that operate on the information that is stored there", with phonological coding abilities that facilitate reading by providing "a redundant pathway for lexical access and by providing a more stable code for information that must be held in short term memory."

According to the dual-route model of reading (Dominguez *et al*, 1997:401; Defior, Justicia &

Martos 1996:487; Klein 1996:353; Olson *et al.* 1994:245; Coltheart *et al.* 1993:589; Rack *et al.* 1992:30; Snowling 1991:50; Snowling 1987:70; Barron 1986:93, 94; Hulme 1981:169) the meaning of a word can be accessed via two alternative routes, which are independent of each other:

- **A lexical, direct or visual route**: The letter identities that correspond to a printed word are used to access the orthographic representation for that word in the mental lexicon Barron 1986:94) and meaning of words is deduced from their visual forms. These words are recognised by sight and are usually common grapheme-phoneme correspondence words like cat or school or words in a reader's sight word vocabulary, which include exception words like broad, and words with unusual orthographic patterns like yacht. This route follows the look-and-say method of the Whole Language approach (Esterhuyse 1997:47), which is a top-down process. The whole word orthographic representation is used to access the word's semantic representation. The phonological representation of the word is post-lexical and can be accessed through its orthographic or semantic presentation, e.g. in homographs the meaning must be described before the word can be pronounced (Barron 1986:94).

- **A non-lexical, indirect or secondary phonological route** (Snowling 1991:50). This route mediates the reading of unfamiliar or orthographically inconsistent words through a phonological decoding route. The decoding method of the Phonological approach (Esterhuyse 1997:47) is used to read words like theory. Esterhuyse (1997:47) quotes Snowling as declaring that, without access to this route, "new words cannot be tackled and reading can only progress up to the limits of visual memory." In the **indirect** route a string of letter identities that corresponds to a word is segmented into graphemes (e.g. letters or letter clusters such as ai, sh, ch) that correspond to phonemes, assembling a phonological representation by applying context sensitive grapheme-to-phoneme correspondence rules (Barron 1986:94). A semantic representation in the lexicon is then accessed through this assembled representation (Barron 1986:94). Barron (1986:94) explains that these assembled phonological representations of grapheme-phoneme correspondence are pre-lexical, because their construction does not involve the use of lexical information, and mentions that "pre-lexical phonological representations are necessary for obtaining access to the lexicon and lexical meaning" (Barron 1986:94).

The direct and indirect routes may operate simultaneously, but are independent procedures for accessing lexical meaning.

An example of the direct route, is that the pronunciation of read differs for the present and past tense. A learner must therefore utilise language rules to help him read the word. He read the book, can only be in the past tense, since the present tense would have been He reads the book.

The reader in Case Study C had extreme difficulty in reading words that he did not recognise by sight, indicating that he did not have access to the indirect, non-lexical or secondary phonological route.

33   **Requirement 2 : Word recognition and decoding (3rd time):** The lexical, direct, visual route, as well as the non-lexical, indirect, secondary phonological route, should be accommodated in the diagnostic reading materials to assist teachers in identifying young readers who have memorised the words in their reading lessons but who do not have access to the direct route, and those who may have a limited sight word vocabulary, but are able through the indirect route to apply the grapheme-to-phoneme correspondence rules and read unfamiliar words.

Snowling's (1987:70) conception of reading as an integrative, simultaneous application of top-down and bottom-up processes is clear: "... essentially, the language-proficient child will bring all of his or her resources to bear when learning to read. To take some examples: when faced with the new word *postage*, children frequently read this as "post-age." The more proficient ones will then search through their mind for another word which approximates this attempt auditorily. Many are successful - they can use stored auditory-lexical information to facilitate novel word reading. Stored visual information can also be used to guide reading..."   She (Snowling 1987:91) explains that "several subsystems are at work during word recognition", with skilled readers referring to "stored bodies of phonological, semantic and orthographic information to supplement the use of letter-sound rules" when reading single word texts.

34   **Requirement 11 : Language (2nd time):** Items requiring readers to use their knowledge of the language rules, semantics and idiomatic use of the language should be included in the diagnostic reading materials for teachers to identify specific difficulties timeously and correctly.

2.3 READING ASSESSMENT

2.3.1 Introduction

Although assessment, evaluation or testing of learners in the formal school situation is viewed as a necessary tool, and an essential component of education (Cullingford 1997:1), it has always been regarded as a contentious issue, *inter alia*, because of the association with the idea of a judgement being made. However, Brady (1997:13), as well as Bachman (1990:285) declares that often it is not the test that is controversial or at fault, but rather the inferences made from the test. Beech and Singleton (1997:17) warn that the abandonment of all standardised testing would leave education increasingly vulnerable to political prejudice, and would leave the future of individual learners at the mercy of "expert" opinion unsupported by empirical evidence.

Bachman (1990:23) suggests that in testing there should be a clear distinction between the "information-providing" functions of measurement and the "decision-making" function of evaluation. Burden (1996:98-102) also states that more attention should be given to the fundamental purposes of assessment, summarising these as follows:

- **Assessment for classification purposes** has the purpose "to aid decision-making about the allocation of limited resources, or to provide access to some form of special educational provision". Such assessments are often misused and are heavily criticised by educators.

- **Assessment for diagnostic purposes** chiefly identifies the main reasons why a learner is experiencing difficulties in learning. This type of assessment is criticised by many if a "medical model" or a "faulty-wiring approach" is used.

- **Assessment for intervention purposes**, also called **formative assessment,** has the purpose of promoting learning and opportunities. Gipps (1994:91) adds that in formative assessment it is important to understand what the learners know and can do and how they articulate this, further to develop their knowledge and understanding. Good teaching practice thus includes using formative assessment to find out what and how learners know (Gipps 1994:91), to plan future teaching and learning (Brady 1997:11-12; Smith 1995:121-122; Gipps 1994:81).

- **Assessment for evaluation purposes**, also called **summative assessment**, ascertains whether the intervention has achieved its aim. Learning is regarded as "not merely an activity which depends on the cognitive processes of a learner, but ... also involves the appropriateness of the educational setting". Owen and Chamberlain (1996:16) add that summative assessments form the basis for traditional progress reports at the end of a programme, and before commencing with a new programme.

- **Assessment for empowerment purposes** is aimed at helping learners (and also teachers) to help themselves. Here the role of assessment is not only to "do things *to* children, ... and *for* children", but rather to do things "*with* children".

Kriegler and Skuy (1996:114), Hancock *et al.* (1994:46) and Swanson (1991:225) agree that assessments should be aimed at helping learners to learn, and at helping teachers to teach better. Kriegler and Skuy (1996:116) further declare that assessment can only be justified if the information gathered will be useful to the learner from whom it was obtained. Beech and Singleton (1997:13), Singleton (1997:86), Vincent (1997:35), Ramarumo (1996:346) and Beech (1985:68), to name only a few, emphasise the necessity for the early identification of reading difficulties, since it would assist teachers in providing more effective initial instruction.

Reading assessment should thus be implemented with the express purpose of obtaining information about a learner's reading competence, to decide upon the nature and level of a learning support or enrichment programme, or to plan further teaching and learning opportunities (Brady 1997:12). Brady (1997:21) emphasises that "we need assessment practices which are (and are widely acknowledged to be) valid, reliable, fair to individuals and which serve the needs of the society." He (Brady 1997:17) warns that "what can and should be assessed" is a difficult question, indicating that the domain and processes of reading should be clearly understood when the aim is to design diagnostic reading assessment materials. Findings that result from assessment practices must be accurate, valid, reliable and perceived to be rigorous by those who use them (Hancock *et al.* 1994:50).

In this section, reading, assessment and evaluation will be defined, conventional and current views

on assessment will be discussed and fundamental aspects of test design will be considered briefly. The chapter will conclude with an extraction of the requirements of reading and assessment theory for the design of the diagnostic reading materials.

Reading assessment instruments and performance tests were scrutinised at the Human Sciences Research Council for their design and content relevance to South African conditions. The tests are listed in Appendix B. Insights gleaned from this scrutiny served as a frame of reference to conceptualise the diagnostic reading materials for the study, in addition to the review on reading assessment materials in the following section.

2.3.2   The reading assessment materials design

(1)   The reading construct

Reading assessment materials must meet stringent criteria, regarding both reading and assessment, and must be practical, valid and reliable. A construct of reading must be defined and understood clearly before attempting to design the materials. Doren (1973:5) believes that many reading tests either assess broad functions of reading, without analysing the component parts, or measure aspects such as vocabulary, comprehension, paragraph reading and similar broad areas of achievement, but fail to make a specific diagnosis of deficient competencies.

(2)   Defining reading

Reading is not a single skill, but the simultaneous integrated application of a number of skills (Bouwer 1993:21), which do not develop in a chronological or hierarchic sequence and comprise, *inter alia*, phonological awareness and other auditory and visual perceptual skills, management of grapheme-phoneme correspondence, sound blending, word recognition, sight word vocabulary, lexicon and reading comprehension. The skills are applied and integrated with the reader's store of existing knowledge and experience (schemata) in a flexible and strategic manner (Bouwer 1989:128) and require metacognitive engagement with the text for both decoding and comprehension to proceed effectively. Reading comprehension should always be emphasised, even when learners are engaged in sight word recognition.

Reading comprehension can thus be understood as a dynamic and creative activity which requires the integration and/or the synthesis of a veritable motley of information by readers in their interaction with the text (Bouwer 1990a:54; 1989:119). Reading is a dialogue with the text, during which readers actively compile and interpret the message from the text in terms of their own experiences, knowledge and attributes, from which they may add information to the new text, confirm the statements, or explain textual aspects which at a first reading seem baffling. In this way, readers enrich the content as well as their own reading experience (Bouwer 1990a:54).

Reading could therefore be defined as a meaningful, integrative and complex cognitive and metacognitive process, which is essentially enactive, interactive and creative, and which involves recreation of meaning (Hunter-Carsch 1995:137)

(3) Components of the reading act to be assessed
(a) *Introduction*
Using the theoretical views on reading in 2.2.1; 2.2.2 and 2.2.3 (all integrated to praxis) as a framework, it appears that the diagnostic reading materials should comprise items to assess all components of reading.

In the design of the diagnostic reading materials it should become clear that the components of reading are not viewed as splinter skills being examined or assessed. The items used to examine the components of reading should enable the teachers to qualitatively analyse the reading errors in order to identify a possible area of difficulty.

The various components of reading with which the beginning reader could experience a range of difficulties, could be summarised as follows:

(b) *Perceptual skills*
Accurate, speedy and integrated perceptual processing is required to develop accurate recognition of words and reading fluency. Perceptual skills important in reading include:

- **Auditory perceptual skills:** auditory discrimination

  phonic analysis and synthesis

  auditory memory and sequence

  rhythm

- **Visual perceptual skills:** visual discrimination

  visual analysis and synthesis

  visual memory and sequence

  visual spatial relations

- **Visual – auditory skills:** grapheme-phoneme correspondence

Typical reading errors because of perceptual difficulties include:

- Confusion of voiced and unvoiced consonants (d̲ x t̲; s̲ x z̲; gr x k̲r)

- Errors in consonant blends (*brat* x *bat*)

- Mistaking the position of sounds in words and inability to manipulate the sounds in words (initial/final sound)

- Errors in sound blending, e.g. omission of middle consonants (*spl*it x *sl*it x *sp*it)

- Errors in letter recognition (j x g; h̲ x g; j x f)

- Visual discrimination errors (r̲ x n̲; m̲ x n̲; h̲ x n̲)

- Letter sequence errors (split x spilt; pets x pest)

- Word reversals (pat x tap; was x saw)

- Letter reversals (b̲ x d̲ x p̲ x q̲; n̲ x u̲; t̲ x f; w̲ x m̲)

- Visual memory errors (know x no; two x to x too)

(c)   *Word recognition and sight word recognition*

Accurate, automatic word recognition is necessary for reading fluency which could contribute to good reading comprehension. Knowledge of phonics and of grapheme-phoneme correspondence, the morphology and orthography of the language (e.g. affixes, root words), as well as a strategic approach for the decoding and recognition of unfamiliar words, are required. Readers need to have a store of words that they can

recognise by sight (e.g. here, through, know, of) and should further be able to use clues (contextual, semantic, and grammar clues, e.g. I read the book last week/They will read the book in class).

Young readers could have difficulty decoding words or recognising words by sight, sometimes guessing at words on the basis of the initial letter.

Any of the reading errors described in (b) could lead to poor word recognition skills.

(d)   *Lexicon*

Lexicon, or meaning vocabulary, is defined as the set of labels for the clusters of concepts that have been learned through experience, or schemata (Burns *et al.* 1992:164).   Although it is regarded as essential to understand the meaning of the words that are read, it should be stressed that lexicon is but one of the components of reading – understanding the words would not automatically imply good reading comprehension.

A limited lexicon however, would contribute to a reading difficulty.

Many young L2 speakers attending a school that uses English as the language of learning have a limited English lexicon and could therefore find it difficult to decode unfamiliar words, and/or to understand what they read .

Typical problems arising from a limited lexicon include:

- Difficulty to understand figures of speech or metaphors (e.g. to get into somebody's hair; she is in a jam could be interpreted literally)
- Difficulty to understand multiple meanings of a word, or homographs (They are *close* friends x Please *close* the door)
- Difficulty with homonyms (pair x pear; there x their)
- Difficulty with synonyms (house x residence)

- Difficulty with relational terms (more x less)
- Difficulty because the words and/or concepts are unfamiliar to the reader.

(e)   *Textual Comprehension*

Burns *et al.* (1992:258; 266; 278; 288) distinguish between the following types of reading comprehension:

- **Literal comprehension**, which is the most basic type of comprehension, where directly stated ideas are processed and readers are expected to follow the gist of a story, or argument
- **Higher-order comprehension**, which includes
    - **interpretive comprehension**, or making inferences, such as identifying main ideas, cause-and-effect, logical and chronological sequence, drawing conclusions, interpreting figurative speech, or reading between the lines
    - **critical reading**, or evaluating the written material, to draw conclusions about the appropriateness, accuracy and timelessness of the formulation
    - **creative reading**, which involves going beyond the text presented by the author, combining existing schemata with the text, visualising the content, predicting the outcomes or making value judgements

Spear-Swerling and Sternberg's (1994:95) category of **proficient adult reading**, where readers are described as insightful, reflective and analytical, and are able to use texts and integrate knowledge from many sources, could be added to the set of higher-order comprehension types. Readers have to read strategically and engage metacognitively with text to be able to read between and beyond the lines.

Typical difficulties because of poor reading comprehension include:

- Difficulty to infer or deduce information (e.g. They are eating ice-cream in the pool ...Which season was it?)
- Difficulty to solve a mathematical problem (e.g. How many legs do two dogs and

three hens have all together?

- $5 \times 4 = 20$ (2 dogs and 3 hens, 4 legs each)

  $5 \times 2 = 10$ (2 dogs and 3 hens, 2 legs each)

- Failure to differentiate between two and four legs, failure to use schemata

- $2 + 3 = 5$ – total of dogs added to total of hens – failure to understand the question

• Difficulty to draw conclusions (e.g. Sparrows are born in a nest in the grass. At first they are blind. They have no feathers and cannot stand up or walk... Why can't sparrows stand up when they are born? Incorrect conclusion: They have no feathers)

• Difficulty to predict outcomes (e.g. Loutjie is a fast bouler and Eben bats well. They are playing cricket outside their home, which has huge windows... What do you think is going to happen next?)

2.3.3 Measurement (testing) and assessment in education

Owen and Chamberlain (1996:15) define educational measurement (testing procedures/practices) as the allocation of scores to the results of instruction and/or learning at school.

Swanson (1991:225) distinguishes between testing practices and the concept of assessment, in that the latter aims at discerning what the specific needs and difficulties of individual learners are, in order to implement individual intervention programmes. Assessment then includes observation, interviewing, experimental teaching and the administration of informal tests across multiple contexts (Swanson 1991:225).

35   Requirement 16 : Continuous assessment (1ˢᵗ time): The diagnostic reading materials should aim to help teachers in the process of ongoing assessment.

Hancock et al. (1994:46) regard effective assessment as ongoing and cyclic processes that are intricately interwoven with teaching and learning. Wolfendale (1993:43) further describes assessment as a dynamic process, which allows for change en route, and which occurs in the context of functional, authentic and relevant learning. Burns et al. (1992:548) declare that in

the continuous assessment process teachers should observe and interact with their learners in various types of learning activities throughout the day. Afflerbach (1995:624) concludes that assessments prove to be most productive when learners are assessed as an integral part of the learning process, where the assessment is regarded as a teaching tool to benefit learners as unique individuals within the classroom.

36 Requirement 4 : Schemata (5th time), Requirement 7 : Metacognition (3rd time) and Requirement 8 : Mediated learning (2nd time): The diagnostic reading materials should help the teachers to ensure that their learners know how to use their schemata and engage with text metacognitively when they read. The principle of mediated learning could be used very effectively to teach the learners how to engage with text metacognitively and how to use their schemata. Mediated learning could be demonstrated by including sufficient practice examples. Mediated learning would allow for change *en route*.

Brady (1997:12) says that assessments could be motivational for both the teacher and learners if they can see that learning has taken place, which implies that assessment should be an interactive procedure, with teachers giving relevant and valid feedback on their learners' performance.

37 Requirement 8 : Mediated learning (3rd time): The diagnostic reading materials should aim to let the learners learn (e.g. how to classify, how to use schemata) while they are dealing with the materials. The diagnostic reading materials should be user-friendly and effective, so that teachers and learners could be enthusiastic about the procedure, and motivated by the results.

However, performance does not necessarily improve after learners have been given valid and reliable judgement about their work (Gipps 1994:92) or their reading. In order to improve, learners need to know what the goals and standards of performance are, must compare their own performance with the desired performance and must then engage in appropriate actions to close the discrepancy between these two (Gipps 1994:92). The learners' idea of what is required must correlate with that of the teacher, they must be able to monitor the quality of what is being produced at the time of production, and they must be able to regulate or to self-monitor their work appropriately (Gipps 1994:92).

38 Requirement 1 : Comprehension and meaning (13th time): The diagnostic reading materials

should sensitise the teachers to teach reading strategically and assist them in letting the learners realise that reading is a complex, communicative and integrative process.

Johnson (1998:385) states that introduction of Outcomes Based Education in South African Schools has brought South Africa in line with international trends in the changing culture of assessment, with assessment targeting learning outcomes in terms of specified criteria (criterion-referenced assessment) and with the desired outcomes expressed explicitly. Johnson (1998:385) continues to say that assessments should be valid and authentic (performance assessment), also in areas of classroom life which are not traditionally assessed (e.g. project work), and should help teachers to develop a wider range of assessment skills, or to develop a wider repertoire or battery of assessment strategies.

Haladyna, Haas and Allison (1998:265) point out a very important issue regarding the interpretation of results, namely that administrators and teachers must be knowledgeable about how to interpret results and cautious and conservative when sharing results publicly.

39   Requirement 12 : Early identification of difficulties and interpreting results (5th time): Teachers should be provided with detailed guidelines on how to interpret the results of each individual learner.

In discussing a British report on the assessment of reading, Pumfrey (1995:139) mentions a recommendation that reading assessment materials should be as "naturalistic" as possible, in book form and with a culturally familiar story content. He (Pumfrey 1995:139) points out that, although normed word reading tests are heavily criticised, much of the criticism has been shown to be invalid. Word reading tests can, in his opinion, effectively provide empirical information on the decoding skills underpinning reading comprehension (Pumfrey 1995:140).

40   Requirement 5 : Word reading materials (4th time): Word reading tests could be used effectively in the diagnostic reading materials, providing empirical information on the decoding skills underpinning reading comprehension.

2.4 CONVENTIONAL AND CURRENT VIEWS ON METHODS OF ASSESSMENT

2.4.1 Introduction

One of the most influential trends in educational assessment is the move away from traditional methods of testing towards "authentic" assessment.

Whereas conventional testing relies on indirect measures of overall performance, authentic assessments are designed directly to measure learners' performance in terms of skills, abilities and knowledge that are valued in and of themselves (Jones 1994:101).

The primary distinction between so-called authentic assessment and conventional methods of testing, is the choice of question format. Jones (1994:102) concludes that objective question formats dominate in conventional, standardised testing programmes. Objective question formats include multiple-choice, true-false, matching and multiple true-false questions, which could be marked objectively, whereas subjective question formats used in authentic methods of assessment require the subjective, qualitative judgement of responses by the examiner (Jones 1994:102).

This section contains a summary discussion of indirect, conventional, standardised methods of assessment, with an emphasis on the multiple-choice question format and norm-referenced and criterion-referenced assessment, followed by direct, alternative methods of assessment, with an emphasis on informal, nonstandardized, authentic and dynamic methods of assessment.

2.4.2 Indirect, conventional or standardised methods of assessment

(1)   Orientation

The indirect, conventional or standardised methods of assessment are thought by many authors to provide only static psychometric measures and are heavily criticised by the adherents of alternative assessment.

Grigorenko and Sternberg (1998:75) declare that conventional, static psychometric measures of cognitive skills quantify developed abilities and indicate latent capacity only as it is realised in performance. Performance is affected by, *inter alia*, the amount of education, test-taking skill and parental support. The learner's existing abilities and level of knowledge are quantified and viewed as a basis for predicting his/her subsequent performance and/or cognitive development (Grigorenko & Sternberg 1998:75), and which are then often incorrectly used for classification purposes.

41   **Requirement 12 : Early identification of difficulties, interpreting results (6ᵗʰ time):** The diagnostic reading materials should not be viewed as having the function to predict a learner's future reading performance, but rather to

- identify learners with possible difficulties
- indicate what each learner's special reading needs are
- help learners to experience that reading is more than just word recognition and to form the perception that reading is an interactive act

The reading materials should thus be used for purposes of diagnostic learning support (formative, for empowerment), not for purposes of classification or judgement (summative).

Swanson (1991:226) discusses the Attribute, or Construct model of assessment, which has traditionally been used for the assessment of learners with learning disabilities, mentioning that the Attribute model is illustrated through diagnostic-prescriptive teaching which focuses on the identification of effective instructional strategies. The procedures of this assessment model include:

- selecting a construct (e.g. language, perception)
- dividing the construct into sequential, quantifiable and measurable categories
- administering tests to evaluate performance in these categories (identification of weaknesses/strengths)
- developing a programme to remediate (*sic*) the deficit (*sic*) on the test-related skills

Karlsen, Madden and Gardner (1966:2), who designed the Stanford Diagnostic Reading Test, state that diagnostic tests give intensive coverage of the specific area to be assessed, and provide detailed measurement, therefore emphasising the identification of strengths and

weaknesses. They (Karlsen *et al.* 1966:4) stress that, even if the assessment has been conducted in a group, it is imperative for the assessment results of each pupil to be interpreted separately.

42   **Requirement 12 : Early identification and interpreting results (7th time):** Guidelines for the interpretation of test results would be essential.

The diagnostic-prescriptive approach to testing is followed by extrapolation of that information to provide a plan for instruction (Swanson 1991:227). The diagnostic-prescriptive approach has been criticised, *inter alia*, because some test instruments may not be totally appropriate for providing information about learning problems or for prescribing instructional activities (Swanson 1991:227). Test construction theory may even be incorrect such as: learning problems reflect a failure within the learner, and the strengthening of weak areas noted on the test will categorically result in improved learning. He (Swanson 1991:227) warns that if a test is not related closely enough to classroom activities, it is not suitable to be used to suggest specific teaching activities and that classroom teachers are in any case often unable to translate test information into effective individual programming.

In practice it is still found that some teachers do not include all components of reading in their reading sessions, e.g. the emphasis is put on word recognition and possibly literal comprehension only, instead of emphasising reading-as-communication, and including aspects such as interpretive comprehension and schemata. Classroom practice regarding reading thus does not always reflect an approach towards the instruction of reading that is advocated or recommended.

43   **Requirement 1 : Comprehension and meaning (15th time), Requirement 6 : All known aspects (6th time), Requirement 12 : Early identification and interpreting results (8th time) and Requirement 16 : Continuous assessment (2nd time):** The diagnostic reading materials should contain items that reflect reading-as-communication, and include all known components of reading. The materials should be practical and realistic, to be used as a classroom activity. It should furthermore not only provide useful diagnostic information to teachers about the possible learning difficulties learners in their class are experiencing, but should also recommend future instructional activities for reading (formative assessment). Examples of how individual learning support programmes could be planned as a direct follow-up to the diagnostic reading materials, would be beneficial and empowering to teachers and learners.

Conventional methods of assessment and standardised tests could provide useful information to teachers. Groff (1990:9) argues that, although standardised tests cannot be viewed as the only source of insight into learners' reading ability, they "do seem to promise more reliable and valid mechanisms for assessing word recognition development of children than is otherwise possible, ... providing more exact replications of investigative procedure than is feasible with the collection of anecdotal evidence".

44   Requirement 17 : Validity, reliability, practicability (1ˢᵗ time): Standardised testing could provide valid and reliable insight into the difficulties that readers are experiencing, and make exact replications of investigative procedures possible.

Assessment materials have not only to be valid and reliable, but must also be practical to administer. Practicability involves questions of economy, ease of administration, scoring and the interpretation of results (Callis 1994:33). It is obviously desirable to make tests as short as possible. However, to achieve satisfactory reliability, and to enhance validity, it may be necessary to have a longer test, which contains items that are a representative sample of tasks (Callis 1994:33-34).

45   Requirement 6 : All known aspects (6ᵗʰ time): The items in the diagnostic reading materials should be a representative sample of the reading components, but the diagnostic reading materials should also be practical to administer.

For the diagnostic reading materials to meet the criterion of practicability, without sacrificing validity and reliability, the choice of question format will have to be considered carefully and responsibly. The multiple-choice question format will now be discussed.

(2)   Indirect testing using multple-choice items

Although no one form of assessment is best for all purposes, multiple-choice questions can meet many different purposes (Callis 1994:34-35), which includes being a highly effective external moderating devise for large groups of learners (Callis 1993:19).

Heese (1990:35) admits that multiple-choice questions (MCQs) in testing have a bad reputation because questions are often poorly formulated, do not test what they are supposed to test and are used for the wrong reasons (e.g. only for time-effectiveness). Specifically for the assessment of reading, however, the prime advantage of the MCQ format is that it assesses reading skill only, without requiring writing skill (Callis 1993:20; Heese 1990:360).

Beech and Singleton (1997:13) quote the view of Cummings, that L2 learners may acquire "surface" language skills within two years of attending school, but that adequate writing skills may take up to another five years to develop. The multiple-choice format of questioning would therefore be a more appropriate way of assessing L2 learners' reading skills.

46   Requirement 18 : Multiple-choice questions (MCQs) – (1st time): The multiple-choice format of questioning would be an appropriate and fair way of assessing the reading skills of L2 learners, as it may take up to another five years to develop adequate writing skills required to demonstrate reading skills by means of open questions.

Stating that well constructed MCQs can be used to test analytical and creative skills as well as less advanced skills, Heese (1990:35) denies that MCQs merely test recognition skills which involve nothing more than literal comprehension and short-term recall. In fact, in MCQs lots of reading is done for which fine discriminating skills are required (Bouwer 1990a:180). Skills to be tested should, however, be defined clearly and the distracters should be plausible and attractive to the uninformed, requiring true insight (Heese 1990:36). Items (consisting of the stem, correct answer and the distracters) which are well designed and sensitive often "draw out" the learners' comprehension and perceptions (Callis 1993:20). It is therefore essential to do an item analysis to ensure that the items are appropriate and valid.

47   Requirement 18 : MCQs (2nd time): Distracters in MCQs should require true insight and fine discriminating skills in order to answer the question correctly.

Callis (1994:34) summarises the main advantages of the use of multiple-choice tests as follows:

- ○ multiple-choice tests are practical and the administration is cost-effective
- ○ a large number of questions can be set which would ensure a thorough sample of both content and objectives
- ○ the items can be spread across a wide specification or concentrate on a specific objective
- ○ the level of difficulty of the test can be adjusted to meet particular requirements, since the difficulty of each item is known beforehand

The increased volume of reading in MCQs (Bhana 1987:16), requiring fine discriminating reading skills (Bouwer 1990a:180), without expecting the young school beginners (or learners in the Foundation Phase), of whom many are L2 learnerss, to write down their answers (Callis 1993:20; Heese 1990:360) or to verbally express their thoughts, as well as the possibility to administer the materials in the MCQ-format to a whole class at a time, certainly make the MCQ-format a very practical choice.

<u>48</u>   Requirement 18 : MCQs (3rd time): The multiple-choice format of questioning would meet all the requirements and criteria for practicability. Items should be well designed, so as not to sacrifice validity and reliability.

The question whether the diagnostic reading materials should be norm- or criterion-referenced, now needs to be considered.

(3)   <u>Norm-referenced tests</u>

In norm-referenced tests, learners are compared with other learners across the nation on the basis of their test scores. Norm-referenced reading tests thus provide objective data about reading achievement and the reliability of scores is verified by collecting data from a large sample of the population (Burns *et al.* 1992:573). Results of norm-referenced tests are expressed in grade equivalents, percentile ranks or stanines (Burns *et al.* 1992:573).

Norm-referenced tests can assist a teacher in planning reading instruction if properly understood and interpreted (Burns *et al.* 1992:577; 580), but they have the following limitations:

- Standardised norm-referenced tests do not really measure what is known about the reading process

- Norm-referenced tests often reflect a learners' frustration level rather than his/her instructional or independent level

- Norm-referenced tests measure skill mastery and do not attempt to evaluate the learner's ability to read strategically

- Norm-referenced tests are not always fair to minority groups

Learners with the same test scores therefore do not necessarily have the same reading skills, nor the same reading difficulties.

(4)   Criterion-referenced tests

In criterion-referenced tests learners are not compared with other learners. The objective is to determine whether the learners have achieved mastery of each criterion or learning objective (Burns *et al.* 1992:573), presently translated into learning outcomes with associated assessment criteria and range statements.

<u>49</u>   Requirement 13 : Criterion-referenced testing (2nd time): The diagnostic reading materials should be criterion-referenced rather than norm-referenced.

A criterion-referenced test is designed to supply specialists with scores that can be interpreted in terms of specific performance standards and are intended to be used as guides for developing appropriate instructional prescriptions (Burns *et al.* 1992:572-573), thus "fostering systematic instruction" (Haladyna *et al.* 1998:263-264).

Vincent (1997:44) believes that criterion-referenced testing of reading has "failed to fulfill its promise", and Turner (1997:58) points out that "different authors view reading in different ways and see the sequence of development of reading skills differently." Christi (1995:118) summarises the difficulty of designing a good reading test as "the fundamental problem in reading-test construction is that so little is known for certain about what is to be measured".

50   Requirement 6 : All known aspects (7th time): The construct of reading should be defined very clearly and the diagnostic reading materials should reflect the definition of reading.

(5)   Criticism against conventional standardised testing

Valencia (1997:63-64), an advocate of authentic assessment, and Gutknecht (1992:212-213), a promoter of the Whole Language approach, pile up points of criticism against standardised norm-referenced, as well as criterion-referenced tests. The criticisms are listed below, with reference to related comments on requirements in this study. Standardised tests...

- are skill-, and not process-orientated (see 5, 6)

- are used to sort and classify learners rather than provide direction for instructional planning (see 51)

- are not reflective of current conceptualisations of the reading process (see 10, 20, 25, 50)

- assume that language is learned through the acquisition of isolated, sequentially organised skills, mastered one at a time (see 9)

- are incomplete measures of language learning because they focus mainly on reading and ignore other language processes (e.g. speaking, listening and writing) (see 46)

- emphasise lower-order comprehension rather than a deep understanding, focusing mainly on word recognition skills and vocabulary skills (sight words and their meanings outside of a natural, real language context) (see 52)

- measure comprehension with passages so brief that Whole Language learners are unable to apply the metacognitive meaning-seeking strategies which they are learning (see 53)

- ignore learners' prior knowledge (schemata) (see 54)

- ignore the conceptualisation of prior knowledge into thoughts and ideas (see 9)

- ignore oral syntactic and semantic language systems, as well as print awareness developed through early involvement with environmental print (see 16, 24, 34)

- ignore the learner's attitude toward and interest in learning to read (see 55)

- ignore familiarity with characters and events in stories resulting from listening to stories being read to them (see 27, 30)

- ignore meaning seeking strategies employed in listening and reading (see 29, 38)

- produce scores that are not informative or useful for planning instruction (see 23, 32)

- do not distinguish between the learners who have difficulty responding under the constraints of the testing situation (i.e. who are easily distracted, have difficulty responding in writing or are confused by multiple-choice answer sheets) (see 56)

- are not continuous, and therefore do not provide sufficient information on any slight progress (see 57)

- do not assess all aspects of reading and therefore do not provide information regarding areas not assessed (see 58)

- do not include the types and variety of reading tasks that represent real reading (see 59)

- are sometimes not administered in the classroom situation, which is closest to the learner and to instruction (see 35)

- are not able to produce results that are timely or specific enough to influence instruction (see 60)

- yield test results which often fail to provide valid information concerning the very poor readers because of a floor effect; inversely, a ceiling effect will again obscure facts about good readers (see 66)

The criticisms against conventional standardised testing methods bearing specific implications and requirements for the design of diagnostic reading materials should be examined carefully in order to ensure that the diagnostic reading materials provide useful information:

51   Requirement 12 : Early identification, interpreting results (9th time): The diagnostic reading materials should aim to provide direction for instructional planning; by administering the materials teachers should better understand what learning support their learners need.

52   Requirement 1 : Comprehension and meaning (16th time): The diagnostic reading materials should be designed to ensure that teachers and learners do not view reading as barking-at-words, but will form the perception that reading is an integrated act, emphasising higher-order cognitive skills, even in word recognition tasks.

53   Requirement 7 : Metacognition (4th time): A specific challenge in the design of the diagnostic reading materials would be to design items in such a way, that even in word reading activities learners would still be expected to apply metacognitive, meaning-seeking strategies.

54   **Requirement 4 : Schemata (6th time):** The diagnostic reading materials should contain items that specifically call for the use of schemata.

55   **Requirement 12 : Early identification, interpreting results (10th time) and Requirement 15 : Identification of attention or motivational difficulties (3rd time):** The diagnostic reading materials should be intended to be used by the regular class teacher. The instructor's manual would have to contain guidelines for the inexperienced teachers on how to promote an interest in reading, and also take a lack of interest and a negative attitude towards reading into consideration in the interpretation of individual readers' overall performance on the reading materials

56   **Requirement 12 : Early identification, interpreting results (11th time):** The diagnostic reading materials would have to produce scores that are informative and useful for planning instruction and learning support. This would require an experimental application of the diagnostic reading materials, in order to obtain a frequency distribution of all possible error types, so that teachers could for instance get reliable information on how significant/insignificant it is if a Grade 2 learner still has a specific number of, say, b x d x p x q reversals.

57   **Requirement 8 : Mediated learning (4th time):** The teachers should be guided to realise the importance of observing the test behaviour of the learners in their class, and to ensure that all the learners understand what is expected of them. Sufficient practice examples should be included in the test instructions to ensure that learners know how to complete the materials.

58   **Requirement 16 : Continuous assessment (3rd time):** It should be clearly understood that the diagnostic reading materials should not aim, nor claim to replace continuous assessment by regular class teachers. It should rather attempt to support and assist teachers better to understand the learners (and the difficulties they are experiencing) in their class.

59   **Requirement 6 : All known aspects (8th time) and Requirement 4 : Schemata (7th time):** The diagnostic reading materials would have to contain all known aspects and components of reading, including stories. The materials should be designed for formative assessment, to ensure that there are learning opportunities (perhaps, in some cases for both teachers and learners? – e.g. items that repeatedly require learners to use their schemata might influence them to change their perception of reading from, possibly, a word recognition act to reading as communication which requires integration and interaction of many "participants").

60   **Requirement 12 : Early identification, interpreting results (12th time):** If the diagnostic reading materials are to produce results that are specific enough to influence further instruction, teachers should obtain clear information about why the learners are experiencing particular reading difficulties. An experimental application of the diagnostic reading materials in order to obtain information on whether, or when a specific error should be regarded as being an indication of a difficulty, would be necessary.

Jones (1994:110), on the other hand, is of the opinion that traditional testing should not be completely replaced by authentic assessment programmes, since traditional assessments offer a proven source of valuable information, and suggests that the two approaches on assessment should rather merge to develop powerful evaluation strategies.

61   Requirement 19 : Integration of conventional and alternative approaches to assessment (1st time): The conventional and alternative assessment approaches should be merged in an attempt to obtain all the information required to support teaching and learning.

2.4.3   Direct, alternative methods of assessment

(1)   Orientation

According to Treiman and Schwager (1997:89), the terms alternative assessment and authentic assessment are used interchangeably, but do not mean the same thing. For these authors (Treiman & Schwager 1997:89) authentic assessment is associated with the fact that human knowledge is created in human activity and realistic, real life problems should be addressed. Learners demonstrate how they construct meaning and apply knowledge in a particular setting to achieve results. Alternative assessment suggests that human learning is complex and knowledge is multidimensional. It is a dynamic assessment of complex intellectual processes, with the focus on how meaning develops in context (Treiman & Schwager 1997:89; 90).

Authentic, alternative, performance-based, on-demand, portfolio, curriculum-embedded, teacher-observed, open-ended, and essay-prompted assessments in the form of exhibitions, group projects and journals, are only a few of the new forms of student evaluation recommended by practitioners with cognitivist, interpretivist and socially critical views of assessment (Treiman & Schwager 1997:90; 91). Treiman and Schwager (1997:90) explain that recent contributions from cognitive research show that learners "construct knowledge using subjective intellectual processes" and that constructivists claim that the knowledge produced by learners on static, standardised tests is a "fragmented and decontextualised form of knowing".

However, Treiman and Schwager (1997:96) also observe that parents are often concerned that their children might not receive enough universal "basics" in the new educational approach.

62   Requirement 2 : Word recognition and decoding (4th time): The diagnostic reading materials should also include lower-order cognitive skills or "basics", but it should be clear that components of reading are not merely splinter skills that are being assessed.

Borko (1997:231) acknowledges the new approaches to assessment which are prominent in the current educational reform movement, recognising the expectation that such assessments should better address educational goals such as higher-order thinking, reasoning, problem solving, communication and conceptual understanding, and should also be more closely linked with instruction by focusing on changing classroom practices. With regard to reading, assessment should then document what students actually do in the act of reading (Borko 1997:232).

63   Requirement 1 : Comprehension and meaning (17th time): The diagnostic assessment reading materials should also include higher-order cognitive skills.

Borko (1997:232) maintains that the new vision of assessment is making profound demands on teachers and calls for a dramatic change in their instructional practices, as well as their knowledge and beliefs about teaching, learning and subject matter.

If reading instructional programmes introduce activities that focus on problem solving and on the making of meaning, and if teachers listen closely to their learners when they attempt to solve these tasks or when they provide explanations for their solutions, it is Borko's (1997:234) belief that they would have a better understanding of what their learners understand and what they are able to do.

(2)   Informal or nonstandardized assessment

Johnson (1998:387) discusses the findings of a study by Smith and Johnson (1994) which revealed that in primary schools, reading is mostly assessed in an *ad-hoc* fashion; teachers

rarely use standardised reading tests and classroom-based assessments mainly represent the teacher's intuitive model of what constitutes good reading.

In his view (Johnson 1998:387), the criterion which demonstrates successful literacy is reading "fluency" for most teachers, with no clearly defined criteria for judging writing competence. Johnson (1998:402) argues that, although teachers' intuitive judgement of their learners' capabilities is often good, intuitive judgement does not allow them to diagnose specific areas in which learners may not be achieving. He (Johnson 1998:403) acknowledges manageability in the context of large class size as the biggest challenge for successful implementation of OBE and performance assessment and points out the importance of creating a culture for organising large classes in such a manner that learning can be successfully mediated.

64 Requirement 12 : Early identification, interpreting results (13th time): The diagnostic reading materials should assist the teachers in diagnosing specific areas in which learners are not achieving, irrespective of class size.

Burns *et al.* (1992:549-572) identify observation, interaction, analysis, appraising literacy interests, portfolio assessment, self-appraisal, informal tests of specific content or skills, the cloze procedure, computer procedures, informal reading inventories, miscue analysis and running records as some of the types of informal assessment.

However, they (Burns *et al.* 1992:572) recognise the following limitations in informal assessment:

- Informal assessment is subjective, which allows for personal bias to influence judgements about learner performance
- Teachers might have unrealistic expectations of learners at a certain level, resulting in an unfair appraisal of learner performance
- Informal assessments can be time-consuming and can thus place a heavy burden on the teacher
- Not all teachers might know how to interpret and apply information from informal records

◎   Informal assessments do not allow grade scores

(3)   <u>Authentic or performance assessment</u>

Although there is no consensus as to precisely what constitutes authentic assessment, Jones (1994:103) states that it is generally taken to incorporate the following four factors:

◎   an emphasis on learner performance, which means not only what the learners know, but also what they can do

◎   the use of direct methods of assessment

◎   incorporation of a high degree of realism

◎   inclusion of activities for which no single correct answer exists, group assessment

      rather than individual assessment, and continuity over time, in order to reflect realistic situations

For assessment of reading competence to have a communicative function, focus teachers' attention on that which is important and provide good information on learners' progress, the authentic assessment materials will have to tap the knowledge and skills learners are expected to learn and be aligned with desired learner outcomes (Herman 1997:198-199).

65   Requirment 6 : All known aspects (9th time): In reading, this would mean all known aspects of reading and cognitive processes, complex thinking and problem solving skills should be included in the assessment materials.

It takes a fair number of tasks to obtain an accurate estimate of a learner's level of competence and multiple indications of performance are required to truly understand the level and nature of performance of the individual learner (Herman 1997:200-201).

66   Requirement 6 : All known aspects (10th time): The assessment materials should contain sufficient items to ensure that scores are a true reflection of the level of competence in each aspect of reading.

Herman (1997:201) consequently suggests analytic scoring instead of a single, holistic score,

- Tzuriel and Haywood, whose research, *inter alia,* recognised the desirability of more nearly culture-fair tests that would be useful for comparing results obtained in culturally diverse populations (1992)

Vygotsky's theory of a qualitative, interactive **Zone of Proximal Development (ZPD)** can be explained as follows:

ZPD reflects development itself. It is not the aim to discover how the learner became who and what he is, but rather how he can become who and what he not yet is. ZPD is a social construct, exists only in social interaction and is created by the interaction (Grigorenko and Sternberg 1998:78). ZPD lends itself well to interests in social cognition and classroom interaction, delves into the essence of learning and development and is an expression of the individual in society (Grigorenko & Sternberg 1998:78).

Grigorenko and Sternberg (1998:75) declare that dynamic testing attempts to quantify learners' learning potential during the acquisition of new cognitive operations rather than their actualised abilities, and to see whether and how a learner will change if an opportunity is provided. In dynamic testing not only previously acquired knowledge is tested, but also the capacity to master, apply and reapply knowledge that is taught in the dynamic testing situation (Grigorenko & Sternberg 1998:76).

Tzuriel and Weiss (1998:83) summarise the view of several authors that dynamic assessment differs from conventional static tests in regard to its goals, processes, instruments, test situation and the interpretation of results. Grigorenko and Sternberg's (1998:75) view on the difference between static and dynamic assessment is encapsulated in **Figure 2.2.**

to furnish "diagnostic feedback on important dimensions of student performance and thus focus on instruction and learning".

67   **Requirement 12 : Early identification, interpreting results (14th time):** Items and/or results should be grouped to reflect the level of competence in different areas of reading, so that teachers could understand the nature of difficulties which each learner is experiencing.

Implementing "authentic" assessment in the classroom would require an interactive and constructivist approach to teaching and learning, with assessment being taken by all learners in the class, rather than just by the apparent underachievers (Torrance 1994:85).

68   **Requirement 17 : Valid, reliable and practical (2nd time):** Assessment materials for groups, which could be taken by all learners in the class, would be beneficial and practical.

Torrance (1994:85) concludes that "... the planning of teaching, the conduct of teaching and the naturalistic observation of students on task, would constitute the full integration of teaching with assessment". Valencia (1997:64) claims that "authentic classroom assessment provides flexibility, adaptability and the continuous assessment which is needed to effectively assess special-needs students," and maintains that all authentic classroom measures of assessment aim to provide information for planning instruction (Valencia 1997:69).

69   **Requirement 16 : Continuous assessment (4th time):** No reading assessment materials can totally replace authentic, continuous classroom assessment. The diagnostic reading materials should rather aim to assist the teachers in their understanding of the difficulties the readers in their classes are experiencing.

70   **Requirement 12 : Early identification, interpreting results (15th time):** Reading assessment materials that could be used by the regular class teachers should constitute the full integration of teaching and assessment.

Herman (1997:198) points out that alternative assessment does not use the multiple-choice format of questioning and focuses on meaningful student work:

⊙   learners are expected to create, design, produce, perform or do something

- complex thinking and/or problem solving skills are tapped
- tasks that are instructionally meaningful are used
- authentic or real world applications are involved

Yet the multiple-choice format of questioning is being used very effectively to focus on meaningful reading in the researchers' practice.

Herman (1997:198 - 199) argues that it is regarded in the authentic assessment approach as unfair to judge learners and their learning by content and skills to which they have had no meaningful instructional exposure, and maintains that assessments must be fair to all learners and be a technically accurate, reliable, valid, useful, feasible and credible measure.

71   Requirement 6 : All known aspects (11th time):   In the assessment of a learner's reading competence, where no subject content is measured, but rather reading skills and abilities, it would be important to address all aspects of reading, so that the teacher could identify the learners with difficulties and gain an understanding of the type of difficulty each one is experiencing. The teacher might need guidance on how to interpret the test results.

It should be the aim of the diagnostic reading materials to support teachers to gain a better understanding of the complexity of the reading process and also help them to direct their instruction more effectively.

Herman (1997:199) consequently emphasises the importance of ensuring that authentic assessment instruments be free of bias and contain no stereotypes or situations that are likely to be more familiar to some subgroups than to others.

72   Requirement 14 : Avoidance of bias (2nd time):   Content used in the comprehension passages should accommodate all learners in South Africa and be free of bias.

Herman (1997:100) further warns that developers and users of alternative or authentic assessment should be attentive of the language demands of their assessments.

It was found that different ethnic groups pronounce some words differently, e.g. /sət x sit x si:t/ for sit. It would confuse learners if teachers use a pronunciation which differs from theirs.

73   Requirement 11 : Language (3rd time):   Although ideally one could plead for a standardised South African pronunciation of words, in the diagnostic reading materials words with the /i/ sound should rather not be included in instructions or examples where incorrect pronunciation could cause learners to make mistakes.

The South African Department of Education (1997:29) adapted a new framework for assessment from Herman. The comparison between content measurement and performance or authentic assessment is summarised in **Figure 2.1.**

FIGURE 2.1 Recent trends in assessment : From content measurement to performance assessment of OBE.

CONTENT MEASUREMENT	PERFORMANCE ASSESSMENT
Behavioural approach to learning and assessment	Cognitive approach to learning in assessment
◦ Accumulation of isolated facts and skills ◦ Assessment activity separate from instruction ◦ Assessment of discrete, isolated knowledge and skills	◦ Application and use of knowledge ◦ Assessment integrated with teaching and learning ◦ Integrated and cross-disciplinary assessment
Paper-pencil assessment ◦ Textbook-based knowledge ◦ Academic exercises ◦ Implicit criteria	Authentic assessment ◦ Use of knowledge in real life contexts ◦ Meaningful task ◦ Public criteria for assessment
Single occasion assessment	Portfolios: samples over time
Single attribute assessments ◦ Isolated knowledge or discrete skills	Multidimensional assessments ◦ Knowledge, abilities, thinking processes, metacognition and affect
Major emphasis on individual assessment ◦ Students assessed individually with much secrecy surrounding the test	Group assessment ◦ Collaborative learning and products

A new framework for assessment as adapted from Herman in South African Department of Education (1997:29)

(4)   Dynamic assessment

Tzuriel and Weiss (1998:83) define dynamic assessment as "the assessment of thinking, perception, learning and problem solving by an active teaching process aimed at modifying cognitive functioning".

Synonyms used for dynamic testing include <u>interactive testing</u>, <u>process testing</u>, <u>assisted testing</u> and <u>tests of learning potential</u> (Grigorenko & Sternberg 1998:77).

Dynamic assessment of learning potential can be seen as an integrative blend of assessment and intervention and is regarded as a promising diagnostic, and powerful intervention procedure that examines the processes of learning as well as its products (Grigorenko & Sternberg 1998:95). It reveals important aspects of an individual's functioning that, according to Tzuriel (1997:103), cannot be revealed by standardised assessment procedures, such as to determine to which extent developed abilities reflect latent capacity (Grigorenko & Sternberg 1998:75). Dynamic assessment could also be regarded as an interactive assessment approach, where the examiner and examinee interact in the assessment process in the belief that the thinking processes and cognitive functions of human beings are modifiable and can adapt to changing demands (Tzuriel & Haywood 1992:9).

<u>74</u>   **Requirement 12 : Early identification, interpreting results (16th time):** The diagnostic reading materials should be designed in such a way that teachers could render learning support concerning the difficulties experienced by a learner in the course of the assessment or immediately after the assessment.

According to Grigorenko and Sternberg (1998:77), proponents of a dynamic approach to testing include:

- Binet, the creator of static assessment in 1909 (but he advocated process assessment)
- Thorndyke, who argued for the necessity of measuring the ability to learn as part of intelligence in 1924
- Penrose, who already in 1934 stated that the ideal test would be one which investigates the ability to learn
- Vygotsky, whose theory of dynamic assessment formulated in around 1934 seems to be the first complete theory on dynamic assessment, emphasising the Zone of Proximal Development (ZPD)
- Feuerstein, Rand and Hoffman, who did intensive research on learning potential, mediated learning experience and cognitive modifiability (1979)

FIGURE 2.2 Comparison between dynamic and static assessment

DYNAMIC TESTING	STATIC TESTING
• Qualifying psychological processes are involved in learning and change.	• Primarily concerned with products formed as a result of pre-existing skills.
• Feedback is given. The test administrator presents a sequence of progressively more challenging tasks, but after the presentation of each task, the administrator gives the testee feedback and continues with this feedback in successive iterations until the testee either solves the problem or gives up. Testing joins with instruction, and learners' ability to learn is quantified while they learn.	• There is no feedback from the test administrator to the testee regarding the quality of his/her performance. The administrator presents a graded sequence of problems, with the testee responding to each of the problems.
• A two-way, interactive relationship exists between the test administrator and the testee, which is individualised for each child in an atmosphere of teaching and helping.	• Neutrality and a lack of involvement on the part of the test administrator are necessary to ensure standard measurement conditions.

Tzuriel (1997:90-91) believes that static assessments are not accurate in predicting the performance of disadvantaged learners. He proves this point with findings from research, stating that static assessment scores correlate more with dynamic assessment pre-teaching scores than with dynamic assessment post-teaching scores. He (Tzuriel 1997:83) explains the need to develop dynamic assessment on the grounds of the importance of early cognitive intervention and quotes Haywood's opinion that standardised psychometric measures cannot provide the information required to understand learning processes (or, for the purposes of this study, reading processes), deficient cognitive functions responsible for learning difficulties, nor the mediational strategies that facilitate learning. It is believed by Tzuriel and Haywood (Tzuriel 1997:83) that dynamic assessment could also lead to a better understanding of crucial effects of environmental factors on cognitive development and of learners with learning difficulties, as well as help to establish appropriate intervention programmes for minority groups.

Tzuriel and Haywood (1992:6) declare that the dissatisfaction of specialists in the field with

standard psychometric testing has been nourished by humanistic trends that have focused on the individual. They summarise the findings of many authors (including Feuerstein and Vygotsky), stating that the dissatisfaction with and criticism of standardised testing are centred around the following three main points:

- bias against minority and special education groups, as well as the selective interpretation of results in those groups
- lack of consideration of motivational, personality and social adequacy factors that are crucial for effective human functioning
- lack of adequate information given by standardised psychometric tests for actual intervention, prescriptive teaching, and remediation processes

75   **Requirement 14 : Avoidance of bias (3rd time):** The diagnostic reading instrument should not be biased against any group.

Grigorenko and Sternberg (1998:76) believe, together with authors such as Feuerstein, Rand and Hoffman, that dynamic testing will reduce educational inequalities by providing "more compassionate, fair and equitable means for assessing students' learning capacities".

It should be stressed that in the dynamic assessment approach the emphasis is on individual learners, integrating intervention (or learning support) and assessment.

The researcher acknowledges the importance of following a dynamic approach in instruction and especially in learning support, but is of the opinion that it is not always practical or feasible for many regular class teachers to assess and provide learning support to learners individually. There is, therefore, a need for reading materials that could be administered in a group and yet provide teachers with diagnostic information to understand their learners' needs, difficulties and potential better, directing their planning of instruction and learning support and thus following a somewhat dynamic approach to assessment, especially in a follow-up phase.

76   **Requirement 12 : Early identification, interpreting results (17th time):** The diagnostic reading materials should provide enough information regarding learners' reading needs, for teachers to apply a dynamic approach in their normal classroom instruction and activities.

For the more individualised, differentiated learning support or intervention, a dynamic approach such as in test-teach-retest would be beneficial to learners.

Grigorenko & Sternberg (1998:103) further report that several authors view the goals of dynamic testing as multifaceted, and summarise these goals as follows:

- to provide a better estimate of a specified ability construct; increasing comparability of individual differences by
    - equating for background (e.g. training examinees beforehand in the content and relevant processes; or supplying the outcomes from prerequisite processes for solving problems)
    - eliminating test-related artifacts, such as anxiety
    - taking into account the cultural and other group differences between learners taking the test
- to improve the estimation of ability, as well as to measure a newly formed, or newly developed psychological function
- to improve learners' mental efficiency, with the major assumption that the level of ability itself must be changed, which would need fairly extensive training. This goal of dynamic testing is very closely linked to intervention, with the main purpose of modifying, changing and improving cognitive performance. Testing has the function of determining the starting point, as well as the direction and amount of intervention necessary

77   Requirement 14 : Avoidance of bias (4th time): The diagnostic reading materials should take into account the cultural and other group differences of the learners who are taking the test.

78   Requirement 8 : Mediated learning (5th time): It should further aim to modify, change and improve the learners' cognitive performance.

79   Requirement 12 : Early identification, interpreting results (18th time): The diagnostic reading materials should assist teachers in determining the starting point and direction of the required learning.

In the following section, leading modern approaches to dynamic testing, with the emphasis on intervention, are discussed.

(5)   Leading modern approaches to dynamic testing

Grigorenko and Sternberg (1998:81) are of the opinion that the leading approaches to the "individual-testing-orientated subfield of dynamic testing" can be divided into the following four major clusters of dynamic testing approaches, which will be discussed briefly:

- metacognitive intervention (e.g. Feuerstein's mediated learning)
- learning within the test (e.g. Campione and Brown's graduated-prompts approach)
- restructuring the test situation (e.g. Budoff's training test)
- training a single cognitive function (e.g. Swanson's Cognitive Processing Test with Working Memory emphasised)

(a)   Metacognitive intervention

Feuerstein's model of mediated learning is applied in his dynamic testing instrument the Learning Potential Assessment Device (LPAD). The LPAD is described as a method for assessing learners' potential for growth in specific cognitive processes, first by guided exposure to problems and processes of thought and subsequently by the learners' own independent efforts (Grigorenko & Sternberg 1998:83).

The LPAD thus evaluates the learner's ability to profit from instruction and to subsequently modify his/her cognitive functioning.

The role and effects of mediation should not be underestimated. Several studies have indicated that learners benefit more from mediation in the higher than in the lower levels of test item difficulty (Tzuriel 1997:92). Mediation differs from instruction in that teaching is tailored to the individual's specific needs in mediation, whereas in instruction teaching is more standardised (Tzuriel 1997:92). Grigorenko and Sternberg (1998:83) point out that, whereas static tests might identify deficient cognitive functions, dynamic tests reveal what might be done to overcome these difficulties.

(b)   Learning within the test

Campione and Brown's graduated-prompts approach to testing was developed to establish a supportive framework that would gradually help individuals until they can solve a test problem,

using the ZPD of Vygotsky as an explicit working concept. Transfer, or the ability to use learned information flexibly and in a variety of contexts, is the key concept (Grigorenko & Sternberg 93). The graduated-prompts testing approach uses a hinting procedure and targets academically weak, learning disabled and cognitively challenged learners. It is determined how much intervention or prompting individual learners need in order to transfer learned information to a variety of contexts. The learner and the administrator work collaboratively; if the learner runs into difficulty, the administrator provides a sequence of hints and suggestions about how the learner should proceed. The amount of assistance needed to master the specific procedure is an outcome of the learning components of the test.

In this approach it is not the improvement of learner performance that is emphasised, but rather how much assistance was needed to reach the specific criterion and how much help was needed to transfer the learned rules and principles to new tasks.

(c) *Reconstructing the test situation*

Budoff's training test or learning potential testing targets disadvantaged and mentally challenged learners (including learning disabled and recent-immigrant learning), whose cultural differences or lack of proper education lead to an underestimation of their actual abilities. The learners are trained in order to familiarise them with the demands of the test and to thus equalise their experiences.

(d) *Training a single cognitive function*

Swanson's Cognitive Processing-Test emphasises Working Memory (WM). It is viewed as an instrument for quantifying processing potential and to determine whether learners with specific learning disabilities (reading and maths) reflect generalised or specific WM deficits when compared with average achieving learners, and whether learners with WM deficits are distinct from the other groups experiencing learning problems e.g. slow learners (Grigorenko and Sternberg 1998:100).

Grigorenko and Sternberg (1998:99) define WM as a system that simultaneously holds old and new information that is being manipulated and transformed, with long-term memory regarded as a system of highly interconnected units representing semantic and episodic information. Working

Memory encoding occurs when long-term memory representations are engaged in the process of testing as a result of previous learning (Grigorenko 1998:99).

(6)   Limitations of Direct methods of testing

Callis (1994:31) stresses that a full application of the principle of authenticity would mean that all the tasks undertaken in the assessment situation would have to be real-life, interactive communicative operations. She (Callis 1994:31) concludes that full direct testing is not possible, since

• the direct testing situation is always simulated, taking place in an artificial context

• the direct testing procedure is administratively and financially impractical for large scale testing

• the test content is often restricted because of the constraints of time, and the validity of inferences about the learners' competence from isolated samples must consequently be questioned

2.5   FUNDAMENTAL REQUIREMENTS OF TEST DESIGN

2.5.1   Introduction

It is generally recognised that an assessment instrument should be a reliable and valid measuring instrument.

It is regarded as of the utmost importance to demonstrate that assessment instruments provide reliable or consistent test scores, and that the interpretations that are made from the performance scores are valid (Callis 1994:21). Davis (1990:6) states that an item analysis must be performed to determine test homogeneity, which means the more similar to one another test items are, the more likely it is that they are measuring functions or attributes in the same area (validity) and doing it consistently (reliability). The instrument should further meet the criterion of feasibility or practical use. For an instrument to be practicable, it also needs to be time- and cost-effective.

2.5.2   Reliability

Reliability is the term used to describe how consistently and accurately the measurement instrument

measures a construct during repeated administrations or across subjects. Swanson (1991:225) defines reliability as "the consistency of a child's obtained score on the same test or equivalent items on different occasions".

To be useful, an assessment instrument must therefore be consistent, or error free (Mertens 1998:287). Ebel and Frisbie (1991:76) state that "Scores that are highly reliable are accurate, reproducible and generalisable to other testing occasions and other similar test instruments".

If a test which proposes to measure learners' reading competence and performance is influenced by any factor other than their reading abilities and skills, such other influences cause error. The extent to which an assessment instrument is free from error indicates its reliability (Mertens 1998:287). Mertens (1998:287; 289) further explains that the more reliable an instrument is, the more closely can the researcher estimate the attribute that is being assessed.

The reliability coefficient of test items lies between the extremes of zero and one, with 1,0 indicating perfect reliability. Mertens (1998:289) states that good items have a reliability coefficient that ranges between 0,75 to 0,95. Owen (1996:63) declares that an instrument with a reliability coefficient of 0,6 can provide useful information, provided the test results are interpreted with requisite care and expertise, and describes instances where measuring instruments with reliability coefficients as low as 0,4 and 0,5 - and even 0,3 - were still useful.

80   Requirement 17 : Validity, reliability, practicability (3rd time): Items should be reliable and test results should be interpreted with care. The reliability coefficient of items should preferably range between 0,6 and 0,95.

The following two types of errors can influence performance on a measuring instrument (Mertens 1998:287):

- Systematic errors, which inflate or deflate performance in a fixed, constant and predictable way. These do not affect a measure's reliability, but might affect its validity
- Unsystematic errors, which vary at random in each situation and cannot be predicted. These will obviously affect the reliability of the measure

Swanson (1991:230) describes three techniques for estimating the reliability of a test:

- **Parallel form**: The relationship is determined between scores on two or more forms of the same test that were administered to the same testees on different occasions. Different items are paired in terms of content and degree of difficulty.
- **Split-half method**: The relationship is determined of the entire test to the two halves of the test. The test is administered once and subsequently is split into two equivalent halves that can be regarded as parallel.
- **Test-retest**: The same test is administered at two different points in time and the results are compared.

Owen (1996:51; 56 - 61) discusses a number of formulas that can be used to estimate the reliability of a measuring instrument, including the Kuder-Richardson formulas (K-R, K-R3, K-R8, K-R14, K-R20, K-R21), Ferguson's adaptation of the K-R20 formula, Cronbach's coefficient alpha, and reliability of a composite score of Mosier and Sichel. For the purposes of this study the appropriateness of each formula will not be discussed.

Owen (1996:62) cautions that reliability data relate only to the accuracy (consistency) with which the instrument measures and does not give any information about whether it in fact does measure what it is supposed to measure. Reliability is necessary for validity, but not *vice versa* (Beech & Singleton 1997:12).

2.5.3. Validity

Validity is the term used to describe that the test actually measures what it set out to measure, indicating that the functions or attributes measured by a test should fit into a specific theoretical framework or match the construct.

Callis (1994:22) warns that "every aspect of the test situation in which the test is given and every detail of the administration may have an effect on performance and therefore what is measured". She (Callis 1994:22) quotes Cronbach (1971:449) who emphasises that all measurement

procedures must be described with clarity, to reproduce specific test procedures accurately. The specific target group and the types of conclusions justified by test scores must be specified clearly. Callis (1994:23) concludes that in test validation it is not the validity of the test content or the test scores that are examined, but rather validity of the way in which the information gathered through the testing procedure is interpreted and used.

81   Requirement 20 : Clear description of test procedures (1ˢᵗ time):   Test procedures should be described clearly.   The target group and the conclusions that could be drawn from the learners' test performance should be specified clearly.

Van den Berg (1996:99) views validity as a unitary concept and explains different procedures that can be used to establish validity. He (Van den Berg 1996:98) focuses on three main classes of validation procedures, namely:

- content validity
- criterion-related or empirical validity
- construct validity

(1)   Content validity

Content validity is also called logical or sample validity, and is occasionally confused with face validity. Face validity concerns the rapport and public relations (Callis 1994:27), and only refers to the superficial appearance of a test - the test content must appear to be related to what the test professes to measure (Van den Berg 1996:100).

Content validity, on the other hand, includes both a rational and a logical evaluation of the test contents. Callis (1994:24) states that the sample of activities included in a test should be as representative of the target domain as possible.   Van den Berg (1996:100) explains that the most important consideration to determine content validity, is "whether the test items are an adequate sample of a specific defined universe of behaviour."   In a reading test, this would mean whether the test items represent all aspects of reading at the appropriate level of learning. A clear definition of

the learning area is thus required. Van den Berg (1996:100) suggests that the test items be scrutinised by a panel of competent people and specialists in the field from the early stages of the test construction.

<u>82</u>   Requirement 17 : Validity, reliability, practicability (4th time): A clear definition of reading is necessary, and test items should be scrutinised by a panel of specialists to ensure content validity.

Van den Berg (1996:102) regards content validity as a necessary, but not sufficient, precondition for empirical validity.

(2)   Criterion-related validity

Criterion-related validity is described as the accuracy with which test scores can predict criterion scores (Van den Berg 1996:98; 103). Individual test scores are used to predict the achievement of testees on the criterion.

Callis (1994:25) and Van den Berg (1996:103-109) distinguish between two different types of criterion-related validity, namely predictive and concurrent validity.

(a)   *Predictive validity* is primarily an empirical and statistical evaluation, and has the main aim of determining the correlation (validity coefficient) between the test scores and another appropriate measurement of the criterion (performance). The customary procedure is a pre-test — post-test operation, i.e. administering a test at the beginning of a programme, and following up these tests later, to obtain a specific criterion measurement for each individual in the sample, as well as a post-test score. The correlation between the test scores and criterion measurement is then calculated (Van den Berg 1996:103-108). The four basic requirements for an acceptable criterion are summarised as follows (Van den Berg 1996:108):

⦾   Relevance: The criterion is relevant according to the degree of similarity between a testee's position on the scale of validity measurement and his actual performance. Determining the relevance of a criterion measurement relies on professional opinion.

- **Absence of bias:** Irrelevant factors, such as age, gender and race, should not influence testee's score.

- **Reliability:** Any criterion that has no reliability in itself, cannot be predicted by something else.

- **Availability or convenience:** The selection of a suitable criterion should take practical constraints into consideration.

83   Requirement 21 : Comparable Forms (1ˢᵗ time): Two comparable forms should be designed for the diagnostic reading materials.

(b)   Concurrent validity is   defined by Van den Berg (1996:109) as the accuracy of the identification or diagnosis of current individual behaviour or status by means of a test.

Concurrent validity is investigated by calculating a correlation coefficient between test data and criterion data.

Simultaneously to the administration of the test to a representative sample of the target population other criterion information, for example school marks, are obtained and used to calculate the correlation between test scores and indices of criterion status.

84   Requirement 12 : Early identification, interpreting results (19ᵗʰ time): The diagnostic reading materials should make provision for the teacher to comment on each learner's reading performance in class, to compare regular performance with the learner's score profile on the diagnostic materials.

(3)   Construct validity

Construct validity is defined by Van den Berg (1996:112) as the degree to which a test measures the theoretical construct it claims to measure.   He (Van den Berg 1996:112) emphasises that a single quantitative index of construct validity is not appropriate and that construct validity could only be evaluated in the light of all known aspects and facts accumulated about the specific construct, declaring that "the definition of a construct must be based on rules and concepts which are in turn based on observable information".

Callis (1994:26) states that the systematic development of tests requires a knowledge of the construct related theory to guide the initial selection of item content. Construct validity concerns the extent to which test performance is then consistent with the predictions that are made on the basis of the theory of the skills which are targeted by the items.

85   Requirement 6 : All known aspects (12th time): The theory regarding reading should be reflected in the content of the items contained in the diagnostic reading materials.

Callis (1994:27) points out that construct validity need not necessarily be verified by statistical means only, but may also be evaluated logically by specialists in the field.

86   Requirement 17 : Validity, reliability, practicability (5th time): Specialists in the field of reading development should verify the construct validity of the diagnostic reading materials.

2.5.4   Practicability or test efficiency

Callis (1994:30) in no uncertain terms summarises the importance of test efficiency as follows: "A valid and reliable test is of little use if it is not practical. This involves questions of economy, ease of administration, scoring, and interpretation of results. However problematic, there is a need to try and develop effective, economical and practical tests. The importance of this aspect of test development is all too frequently underrated".

87   Requirement 17 : Validity, reliability, practicability (6th time): The diagnostic reading materials should be practical, economical and effective to administer and interpret.

Herman (1997:201) reports a finding that, whilst alternative assessment programmes are beneficial for the curriculum and for teaching practice, teachers need much more time to understand such assessments and their learners' performance, and concludes that this puts an extra burden and pressure on the teachers which is sometimes not realistic nor practical.

Alternative or performance assessment which is truly authentic is not always feasible, in that the cost of the development, administration and reporting of alternative assessment is too high.

Herman (1997:203) realistically declares that, judged by recent history, alternative assessment alone will not suffice. Yet, she also warns that one should not solely rely on standardised, multiple- choice testing for purposes of accountability. To meet diverse assessment purposes, an optimal combination of both is recommended (Herman 1997:201).

<u>88</u>   Requirement 18 : MCQs (4th time):   Standardised, multiple-choice testing could be used in combination with alternative assessment.

2.6 CONCLUSION : SYNTHESIS

2.6.1 Requirements for the test design

Throughout Chapter Two, green print was used for observations and field notes derived from case studies, as verification/comment on the theoretical issues concerning reading.

Red print was used for implications and requirements which theory and practice appeared to have for the development of the diagnostic reading assessment materials. This integration has included

- the various approaches to reading
- the various approaches to assessment
- fundamental aspects of test design

The text printed in red throughout this chapter and representing the requirements to be met by the diagnostic reading materials, comprises 21 main criteria listed below, with the relevant comments grouped together:

<u>Criterion 1 : Comprehension and making meaning – raised 17 times</u>

<u>1</u>   The diagnostic reading materials should be designed in a way that would ensure that words are associated with meaning, even when not appearing in context.

<u>4</u>   Learners should be taught from the very beginning to perceive reading as "reading for meaning", and actively to utilise their schemata when reading. The diagnostic reading materials for the Foundation Phase should thus contain a section to assess this aspect of reading.

7   A reading assessment battery should be designed to assess the multiple aspects of reading for meaning, including predictive and associative skills and use of schemata in integrated, authentic fashion. The reading assessment materials should assist the regular class teachers in planning their instruction. A format should be chosen that would effectively supply the needed information concerning the details of learners' processing.

8   In keeping with the principles of mediation to determine learning potential in dynamic assessment, the design of the diagnostic reading materials should provide learners with sufficient practice examples to make them consciously aware of the effect that errors like these (e.g. incorrect letter sequence and letter reversals) would have on the meaning of the text.

9   The diagnostic reading materials would have to be designed to enhance the beginning readers' realisation that, even when only single words are read, meaning and comprehension are important, and reading activities need not be boring. Reading tasks and texts would have to be formulated to challenge young readers to think and attach meaning to the words, and should "invite" them consciously to use their schemata and metacognitive skills when reading.

10   The diagnostic reading materials should have to subscribe to a view of reading as communication, which must at all times be meaningful and accurate.

12   It would be the aim to include items in the diagnostic reading test, even in word reading, that would confirm that, because of meaning, reading is enjoyable.

13   The diagnostic reading materials should assess the beginning readers' level of skill in using cognitive strategies and linking meaning to individual words, thus emphasising the making of meaning.

15   Although an analysis of the above-mentioned phonological awareness skills is relevant in research studies that aim to understand reading and to predict future reading competence, some of these aspects are of less functional value in a **diagnostic** assessment of the individual's reading competence. The aim of a diagnostic reading assessment should be to understand the reason(s) for, and the correlates of poor reading performance.

In reading for diagnostic purposes, readers should be allowed to read and process meaningful printed text (single words or prose texts) holistically and integratively.

However, phonological awareness tasks should be considered for inclusion in the design of the diagnostic test. Phoneme deletion tasks tap into relevant skills for reading and would also be practicable for group assessment. Pseudo words are, however, viewed as unsuitable for young

beginning readers, and readers with reading difficulties. Meaningful words are viewed as the preferred format even for diagnostically assessing phonological skills.

19   In the reading materials is must be clear that reading should be seen as a communicative process.

21   Items which assess the ability to retain a sequence of words or a statement and use the information later to understand another portion of the text, as well as the ability to infer or deduce information, should be included in the diagnostic reading materials.

25   The diagnostic reading materials should target word identification and decoding skills combined with meaningful comprehension strategies, for beginning readers to experience that reading is a communicative, dynamic, interactive and integrative process.

26   The diagnostic reading materials should be designed for learners to realise that the author communicates with them through a total written message, and that all segments of the full message should be interpreted and comprehended for it to make sense.

38   The diagnostic reading materials should sensitise the teachers to teach reading strategically and assist them in letting the learners realise that reading is a complex, communicative and integrative process.

43   The diagnostic reading materials should contain items that reflect reading-as-communication, and include all known components of reading. The materials should be practical and realistic, to be used as a classroom activity. It should furthermore not only provide useful diagnostic information to teachers about the possible learning difficulties learners in their class are experiencing, but should also recommend future instructional activities for reading (formative assessment). Examples of how individual intervention programmes could be planned would be beneficial and empowering to teachers and learners.

52   The diagnostic reading materials should be designed to ensure that teachers and learners do not view reading as barking-at-words, but will form the perception that reading is an integrated act, emphasising higher-order cognitive skills, even in word recognition tasks.

63   The diagnostic reading instrument should also include "higher-order cognitive skills".

Criterion 2 : Word recognition and decoding – raised 4 times

2   Regular CVC words, as well as irregularly spelled high frequency words which could be expected to form part of a learners' sight word vocabulary, should be included in the diagnostic

materials. Individual learners' performance on these different types of words should then be compared and the instruction planned accordingly.

14   The diagnostic reading materials should assist teachers in determining the decoding skills of each reader in the class, and analysing errors qualitatively in order to distinguish meaning- and language-based difficulties from decoding difficulties. The materials should assist teachers in differentiating effectively between authentically good and poor readers in all respects.

33   The lexical, direct, visual route, as well as the non-lexical, indirect, secondary phonological route, should be accommodated in the diagnostic reading materials, to assist teachers in identifying young readers who have memorised the words in their reading lessons, but who do not have access to the direct route, and those who may have a limited sight word vocabulary, but who are able, through the indirect route, to apply the grapheme-to-phoneme correspondence rules and read unfamiliar words.

62   The diagnostic reading instrument should also include "lower-cognitive skills" or "basics", but it should be clear that components of reading are not merely splinter skills that are being assessed.

Criterion 3 : Written language – raised 3 times

3   Since beginning readers are not yet sufficiently experienced in expressing their ideas or their understanding of diagnostic reading materials (for group application) in writing, it would not be advisable to use open-ended questions. In endeavouring to assess reading skills the results should not be contaminated by any constraints existing in the learner's spoken and/or written expressive language skills.

17   In the diagnostic reading test, only reading skills, not spelling, should be assessed.

18   Orthographic visual matching tasks (drop : droq, drop, borq, borp, bord) could possibly be included in the diagnostic reading materials. However, orthographic choice tasks (rume:room – Which one is spelled correctly?) and homophone choice tasks (pair:pear – which one is a fruit) would be too difficult for beginning readers, as well as for L2 readers or readers with a reading difficulty. Both of these tasks do not assess reading per se and the readers have perhaps not yet been exposed sufficiently to print and tuition for such a test to yield valid results.

Criterion 4 : Schemata – raised 7 times

4   Learners should be taught from the very beginning to perceive reading as "reading for meaning", and actively to utilise their schemata when reading. The diagnostic reading materials for the Foundation Phase should thus contain a section to assess this aspect of reading.

27   The diagnostic reading materials should be designed for learners to realise that their background information or prior knowledge could be useful for understanding the author's message.

28   The diagnostic reading materials should be designed to invite learners to interact with the text.

30   Items that encourage learners to consciously utilise their schemata should be included in the diagnostic reading materials, for the identification of learners who either lack the necessary schemata, or do not know how to tap this resource.

36   The diagnostic reading instrument should help the teachers to ensure that their learners know how to use their schemata and engage with text metacognitively when they read. The principle of mediated learning could be used very effectively to teach the learners how to engage with text metacognitively and how to use their schemata. Mediated learning could be demonstrated, by including sufficient practice examples. Mediated learning would allow for change *en route*.

54   The diagnostic reading materials should contain items that specifically call for the use of schemata.

59   The diagnostic reading materials would have to contain all known aspects and components of reading, including stories. The materials should be designed for formative assessment, to ensure that there are learning opportunities (perhaps for both teachers and learners in some cases? – e.g. items that repeatedly require learners to use their schemata might influence them to change their perception of reading from, possibly, a word recognition act to reading as communication, and requires integration and interaction of many "participants").

Criterion 5 : Word reading materials – raised 4 times

5   Since learners in the first year of the Foundation Phase, as well as readers with a learning difficulty, are easily threatened by lots of print on a page, these learners might regard a word

reading test as more learner-friendly. A well designed word reading test, using high frequency, familiar concepts and words, could supply practical, relevant and useful information regarding various components of the learning-to-read process. Word reading tests could meet the practical demands of task- and time-effectiveness, and contain a realistic amount of work for beginning readers. It would be possible to use different word reading tests, progressively rising in level of difficulty, for various stages throughout the first year, leading up to a prose reading test to fully assess a reader's reading competence.

<u>9</u>   The diagnostic reading materials would have to be designed to enhance the beginning readers' realisation that, even when only single words are read, meaning and comprehension are important, and reading activities need not be boring. Reading tasks and texts would have to be formulated to challenge young readers to think and attach meaning to the words, and should "invite" them consciously to use their schemata and metacognitive skills when reading. In the design of the diagnostic reading materials it should be clear that the components of reading are not viewed as splinter skills being assessed.

<u>12</u>   It would be the aim to include items in the diagnostic reading test, even in word reading, that would confirm that, because of meaning, reading is enjoyable.

<u>40</u>   Word reading tests could be used effectively in the diagnostic reading materials, providing empirical information on the decoding skills underpinning reading comprehension.

Criterion 6 : All known aspects and components of reading - raised 12 times

<u>6</u>   Decoding skills and strategies, as well as the use of schemata and metacognitive strategies are important when reading, as illustrated by Case Studies C and D, and the diagnostic reading materials should assess all these aspects. Discrete components of the results should steer the inexperienced teacher's instruction in the direction of reading for meaning, using metacognition and schemata, but also emphasising accuracy in word recognition.

<u>20</u>   In assessment materials for the beginning reading phase, both lower-order processes and higher-order processes should be included.

<u>22</u>   The diagnostic reading materials should aim to help inexperienced teachers as well as learners to realise that reading comprehension and making inferences whilst reading are important, but should also assess the learners' word recognition and decoding skills.

<u>31</u>   All known aspects of reading should be addressed in the diagnostic reading materials.

43   The diagnostic reading materials should contain items that reflect reading-as-communication, and include all known components of reading. The materials should be practical and realistic, to be used as a classroom activity. It should furthermore not only provide useful diagnostic information to teachers about the possible learning difficulties learners in their class are experiencing, but should also recommend future instructional activities for reading (formative assessment). Examples of how individual intervention programmes could be planned would be beneficial and empowering to teachers and learners.

45   The test items should be a representative sample of the reading components, but the diagnostic reading materials should also be practical to administer.

50   The construct of reading of should be defined very clearly and the diagnostic reading materials should reflect the definition of reading.

59   The diagnostic reading materials would have to contain all known aspects and components of reading, including stories. The materials should be designed for formative assessment, to ensure that there are learning opportunities (perhaps for both teachers and learners in some cases? – e.g. items that repeatedly require learners to use their schemata might influence them to change their perception of reading from, possibly, a word recognition act to reading as communication, and requires integration and interaction of many "participants").

65   In reading, this would mean all known aspects of reading and cognitive processes, complex thinking and problem solving skills should be included in the assessment materials.

66   The assessment materials should contain sufficient items to ensure that scores are a true reflection of the level of competence in each aspect of reading.

71   In the assessment of a learner's reading abilities, where no subject content, but rather reading skills and abilities are measured, it would be important to include all aspects of reading, so that the teachers could identify the learners with difficulties, as well as to get a better understanding of what types of difficulties the learners are still experiencing. The individual teacher might need guidance on how to interpret the test results.

It should be the aim of the diagnostic reading materials to benefit and help the teachers to a better understanding of the complexity of the reading process and also help then to direct their instruction of, *inter alia*, reading comprehension and of how to use schemata.

<u>85</u>   The theory regarding reading should be reflected in the content of the diagnostic reading instrument.

Criterion 7 : Metacognition – raised 5 times

<u>6</u>   Decoding skills and strategies, as well as the use of schemata and metacognitive strategies are important when reading, as illustrated by Case Studies C and D, and the diagnostic reading materials should   assess all these aspects. Discrete components of the results should steer the inexperienced teacher's instruction in the direction of reading for meaning, using metacognition and schemata, but also emphasising accuracy in word recognition.

<u>7</u>   A reading assessment battery should be designed to assess the multiple aspects of reading for meaning, including predictive and associative skills and use of schemata in integrated, authentic fashion. The reading assessment materials should assist the regular class teachers in planning their instruction.   A format should be chosen that would effectively supply the needed information concerning the details of learners' processing.

<u>29</u>   Items that assess the use of metacognitive strategies should be included in the diagnostic reading materials.

<u>36</u>   The diagnostic reading instrument should help the teachers to ensure that their learners know how to use their schemata and engage with text metacognitively when they read.   The principle of mediated learning could be used very effectively to teach the learners how to engage with text metacognitively and how to use their schemata.   Mediated learning could be demonstrated, by including sufficient practice examples. Mediated learning would allow for change *en route*.

<u>53</u>   A specific challenge in the design of the diagnostic reading materials would be to design items in such a way that even in word reading activities learners would still be expected to apply metacognitive, meaning-seeking strategies.

Criterion 8 : Mediated learning – raised 5 times

<u>8</u>   In keeping with the principles of mediation to determine learning potential in dynamic assessment, the design of the diagnostic reading materials should provide learners with sufficient practice examples to make them consciously aware of the effect that errors like these (e.g. incorrect letter sequence and letter reversals) would have on the meaning of the text.

36 The diagnostic reading instrument should help the teachers to ensure that their learners know how to use their schemata and engage with text metacognitively when they read. The principle of mediated learning could be used very effectively to teach the learners how to engage with text metacognitively and how to use their schemata. Mediated learning could be demonstrated, by including sufficient practice examples. Mediated learning would allow for change *en route*.

37 The diagnostic reading materials should aim to let the learners learn (e.g. how to classify, how to use schemata) while they are dealing with the materials. The diagnostic reading materials should be user-friendly and effective, so that teachers and learners could be enthusiastic about the procedure, and motivated by the results.

57 The teachers should be guided to realise the importance of observing the test behaviour of the learners in their classes, and to ensure that all the learners understand what is expected of them. Sufficient practice examples should be included in the test instructions to ensure that learners know how to complete the materials.

78 It should further aim to modify, change and improve the learners' cognitive performance.

Criterion 9 : Perceotual skills – raised twice

11 The diagnostic reading materials should, *inter alia*, contain items open to letter and word reversals, sequential errors and discrimination errors in reading in order to identify areas of weakness, related to perceptual problems that need attention. The assessment of the learner's knowledge of phonics would also specifically have to be included.

18 Orthographic visual matching tasks (drop : droq, drop, borq, borp, bord) could possibly be included in the diagnostic reading materials. However, orthographic choice tasks (rume:room - which one is spelled correctly?) and homophone choice tasks (pair:pear - which one is a fruit) would be too difficult for beginning readers, as well as for L2 readers or readers with a reading difficulty. Both of these tasks do not assess reading *per se* and the readers have perhaps not yet been exposed sufficiently to print and tuition for such a test to yield valid results.

Criterion 10 : Phonological awareness – raised twice

11 The diagnostic reading materials should, *inter alia*, contain items open to letter and word reversals, sequential errors and discrimination errors in reading in order to identify areas of

weakness, related to perceptual problems that need attention. The assessment of the learner's knowledge of phonics would also specifically have to be included.

15   Although an analysis of the above-mentioned phonological awareness skills is relevant in research studies that aim to understand reading and to predict future reading competence, some of these aspects are of less functional value in a **diagnostic** assessment of the individual's reading competence. The aim of a diagnostic reading assessment should be to understand the reason(s) for, and the correlates of poor reading performance.

In reading for diagnostic purposes, readers should be allowed to read and process meaningful printed text (single words or prose texts) holistically and integratively.

However, phonological awareness tasks should be considered for inclusion in the design of the diagnostic test. Phoneme deletion tasks tap into relevant skills for reading and would also be practicable for group assessment. Pseudo words are, however, viewed as unsuitable for young beginning readers, and readers with reading difficulties. Meaningful words are viewed as the preferred format even for diagnostically assessing phonological skills.

Criterion 11 : Language – raised 3 times

14   The diagnostic reading materials should assist teachers in determining the decoding skills of each reader in the class, and analysing errors qualitatively in order to distinguish meaning- and language-based difficulties from decoding difficulties. The materials should assist teachers in differentiating effectively between authentically good and poor readers in all respects.

34   Items requiring readers to use their knowledge of the language rules, semantics and idiomatic use of the language should be included in the diagnostic reading materials test for teachers to identify a specific difficulties timeously and correctly.

73   Although ideally one could plead for a standardised South African pronunciation of words, words with the /i / sound should rather not be included in instructions or examples where incorrect pronunciation could cause learners to make mistakes.

Criterion 12 : Early identification – raised 19 times

16   It is of the utmost importance, especially given the South African situation, to design diagnostic reading materials to distinguish between reading difficulties related to problems in decoding and those related to a language factor of whatever nature. Early identification of the L1

or L2 learner with/without a deficit in phonological skills as reflected in decoding errors, as well as with/without reading comprehension difficulties, is important.

23   The reading materials should be designed as a diagnostic, dynamic, authentic assessment that is criterion-referenced or performance based. It should supply teachers with sufficient information to interpret their learners' reading performance and to understand the reading difficulties that learners are experiencing, so that learning support and class tuition could be planned efficiently according to individual needs. It should not be biased against a minority group, and it should, *inter alia*, help teachers to observe which learner possibly has an attention difficulty, lacks self-discipline, does not like reading, or has difficulty with task completion.

24   The reading materials would have to be learner-friendly and teachers should be encouraged to motivate the learners whilst engaging with materials, to obtain true reflection of the learners' reading performance. The materials should aim to distinguish between the various types of difficulty in the cognitive area (e.g. language difficulty, ability to infer, inadequate use of metacognition etc.).

32   The diagnostic reading materials should assist the teachers in timeously identifying the learners in their class who are compensating for a deficiency in either the lower-, or the higher-order reading processes, to support such learners according to their specific needs.

Teachers should be provided with detailed guidelines on how to interpret the results of each individual learner.

41   The diagnostic reading materials should not be viewed as having the function to predict a learner's future reading performances, but rather to

- identify learners with possible difficulties
- indicate what each learner's special reading needs are
- help learners to experience that reading is more than just word recognition,
- and to form the perception that reading is an interactive act.

The reading materials should thus be used for purposes of diagnostic learning support (formative for empowerment), not for purposes of classification or judgement (summative).

42   Guidelines for the interpretation of test results would be essential.

43   The diagnostic reading materials should contain items that reflect reading-as-communication, and include all known components of reading. The materials should be practical and realistic, to be used as a classroom activity. It should furthermore not only provide useful

diagnostic information to teachers about the possible learning difficulties learners in their class are experiencing, but should also recommend future instructional activities for reading (formative assessment). Examples of how individual intervention programmes could be planned would be beneficial and empowering to teachers and learners.

51   The diagnostic reading materials should aim to provide direction for instructional planning; by administering the materials teachers should better understand what learning support their learners need.

55   The diagnostic reading materials should be intended to be used by the regular class teacher. The instructor's manual would have to contain guidelines for the inexperienced teachers on how to promote an interest for reading, and also take a lack of interest and a negative attitude towards reading into consideration in the interpretation of individual readers' overall performance on the reading materials

56   The diagnostic reading materials would have to produce scores that are informative and useful for planning instruction and learning support. This would require an experimental application of the diagnostic reading materials, in order to obtain a frequency distribution of all possible error types, so that teachers could for instance get reliable information on how significant/insignificant it is, if a grade 2 learner still has a specific number of, say, b x d x p x q reversals.

60   If the diagnostic reading materials are to produce results that are specific enough to influence further instruction, teachers should obtain clear information about why the learners are experiencing particular reading difficulties. An experimental application of the diagnostic reading materials in order to obtain information on whether or when a specific error should be regarded as being an indication of a difficulty.

64   The diagnostic reading instrument should assist the teachers in diagnosing specific areas in which learners are not achieving, irrespective of class size.

67   Items and/or results should be grouped to reflect the level of competence in different areas of reading, so that teachers could understand the nature of difficulties which each learner is experiencing.

70   Reading assessment materials that could be used by the regular class teachers would constitute to the full integration of teaching and assessment.

<u>74</u>   The diagnostic reading materials should be designed in such a way that teachers could render learning support concerning the difficulties experienced by a learner in the course of the assessment, or immediately after the assessment.

<u>76</u>   The diagnostic reading materials should provide enough information regarding learners' reading needs, for teachers to apply a dynamic approach in their normal classroom instruction and activities.

For the more individualised, differentiated learning support or intervention, a dynamic approach such as in test-teach-retest would be beneficial to learners.

<u>79</u>   The diagnostic reading materials should assist the teachers in determining the starting point and direction of the required learning.

<u>84</u>   The diagnostic reading instrument should make provision for the teacher to comment on each learner's reading performance in class, to compare regular performance with the learner's score profile on the diagnostic materials.

Criterion 13 : Criterion-referenced testing – raised twice

<u>23</u>   The reading materials should be designed as a diagnostic, dynamic, authentic assessment that is criterion-referenced or performance based. It should supply teachers with sufficient information to interpret their learners' reading performance and to understand the reading difficulties that learners are experiencing, so that learning support and class tuition could be planned efficiently according to individual needs. It should not be biased against a minority group, and it should, *inter alia*, help teachers to observe which learner possibly has an attention difficulty, lacks self-discipline, does not like reading, or has difficulty with task completion.

<u>49</u>   The diagnostic reading materials should be criterion-referenced rather than norm-referenced.

Criterion 14 : Avoidance of bias – raised 4 times

<u>23</u>   The reading materials should be designed as a diagnostic, dynamic, authentic assessment that is criterion-referenced or performance based. It should supply teachers with sufficient information to interpret their learners' reading performance and to understand the reading difficulties that learners are experiencing, so that learning support and class tuition could be planned efficiently according to individual needs. It should not be biased against a minority group,

and it should, *inter alia*, help teachers to observe which learner possibly has an attention difficulty, lacks self-discipline, does not like reading, or has difficulty with task completion.

<u>72</u>   Contents used in the comprehension passages should consider all learners in South Africa and be free of bias.

<u>75</u>   The diagnostic reading instrument should not be biased toward any group.

<u>77</u>   The diagnostic reading instrument should take into account the cultural and other group differences of the learners who are taking the test.

Criterion 15 : <u>Identification of attention or motivational difficulties... - raised 3 times</u>

<u>23</u>   The reading materials should be designed as a diagnostic, dynamic, authentic assessment that is criterion-referenced or performance based. It should supply teachers with sufficient information to interpret their learners' reading performance and to understand the reading difficulties that learners are experiencing, so that learning support and class tuition could be planned efficiently according to individual needs It should not be biased against a minority group, and it should, *inter alia*, help teachers to observe which learner possibly has an attention difficulty, lacks self-discipline, does not like reading, or has difficulty with task completion.

<u>24</u>   The reading materials would have to be learner-friendly and teachers should be encouraged to motivate the learners whilst engaging with the materials, to obtain true reflection of the learners' reading performance.   The materials should aim to distinguish between the various types of difficulty in the cognitive area (e.g. language difficulty, ability to infer, inadequate use of metacognition etc.).

<u>55</u>   The diagnostic reading materials should be intended to be used by the regular class teacher.   The instructor's manual would have to contain guidelines for the inexperienced teachers on how to promote an interest for reading, and also take a lack of interest and a negative attitude towards reading into consideration in the interpretation of individual readers' overall performance on the reading materials.

Criterion 16 : <u>Continuous assessment</u> – raised 4 times

<u>35</u>   The diagnostic reading assessment materials should aim to help teachers in the ongoing process of assessment.

43   The diagnostic reading materials should contain items that reflect reading-as-communication, and include all known components of reading. The materials should be practical and realistic, to be used as a classroom activity. It should furthermore not only provide useful diagnostic information to teachers about the possible learning difficulties learners in their class are experiencing, but should also recommend future instructional activities for reading (formative assessment). Examples of how individual intervention programmes could be planned would be beneficial and empowering to teachers and learners.

58   It should be clearly understood that the diagnostic reading materials should not aim, nor claim to replace continuous assessment by regular class teachers. It should rather attempt to support and assist teachers better to understand the learners (and the difficulties they are experiencing) in their classes.

69   No reading assessment materials can totally replace authentic, continuous classroom assessment. The diagnostic reading instrument should rather aim to assist the teachers in their understanding of the difficulties the readers in their classes are experiencing.

Criterion 17 : Validity, reliability, practicability – raised 6 times

44   Standardised testing could provide valid and reliable insight into the difficulties that readers are experiencing and make exact replications of investigative procedures possible.

68   Assessment materials for groups, which could be taken by all learners in the class, would be beneficial and practical.

80   Items should be reliable and test results should be interpreted with care. The reliability coefficient of sub-sets should preferably range between 0,6 and 0,95.

82   A clear definition of reading is necessary, and test items will have to be scrutinised by a panel of specialists to ensure content validity.

86   Specialists in the field should verify the construct validity of the diagnostic reading instrument.

87   The diagnostic reading instrument should be practical, economical and effective.

Criterion 18 : Multiple-Choice Questioning - raised 4 times

46   The multiple-choice format of questioning would be an appropriate and fair way of assessing the reading skills of L2 learners, as it may take up to another five years to develop

adequate writing skills required to demonstrate reading skills by means of open questions.

<u>47</u>   Distracters in MCQs should require true insight and fine discriminating skills in order to answer the question correctly.

<u>48</u>   The multiple-choice format of questioning would meet all the requirements and criteria for practicability. Items should be well designed, so as to not sacrifice validity and reliability.

<u>88</u>   Standardised, multiple-choice testing could be used in combination with alternative assessment.

Criterion 19 : Integration of conventional and alternative approaches to assessment – raised once

<u>61</u>   The conventional and the alternative assessment approaches should be merged merge in an attempt to obtain all the information required to benefit teaching and learning.

Criterion 20 : Clear description of test procedures – raised once

<u>81</u>   Test procedures should be described clearly. The target group and the conclusions that could be drawn by the learners' test performance should be specified clearly.

Criterion 21 : Comparable Forms – raised once

<u>83</u>   Two comparable forms should be designed for the diagnostic reading instrument.

2.6.2   The diagnostic reading materials for South African learners in the Foundation Phase using English as the language of learning.

The outcome of the integration of theory, praxis and practice regarding the latest developments in reading, assessment and test construction, is the reading materials, dubbed, *Let us Read*. Requirements listed in 2.6.1 were considered in the design.

In the interest of confidentiality and copyright, a detailed user's manual with memoranda of *Let us Read* : Experimental Application, as well as the diagnostic reading materials of *Let us Read* : Experimental Application are not included in the dissertation, but are provided to the examiners under separate cover.

It should be noted that an additional section (not used in the experimental application of the group reading sections reported on in Chapter Three) is included in the manual. The additional section contains:

PART D

● Three oral reading paragraphs, one for each of the Grade 1, 2 and 3-levels.

PART E

● A section each for Grade 1, 2 and 3, containing twelve sentences with one word which is incorrect. The learner is required to correct the sentence after reading it silently.

Part D and Part E are intended for individual learners in Grade 1, 2 and 3, whose reading performance on *Let us Read* is very poor, and for whom a specialised analysis of reading is therefore required.

CHAPTER THREE

EXPERIMENTAL APPLICATION:
DATA COLLECTION, ANALYSIS, ITEM SELECTION AND INTERPRETATION

3.1 ORIENTATION: FIRST RESEARCH PHASE

3.1.1 Introduction

The aim of the research is to develop appropriate materials for the diagnostic assessment of the development of English reading competence of learners in the Foundation Phase, in order to identify and address possible difficulties. The materials should be flexible, time- and cost-effective group activities in a user-friendly format suitable for all South African young learners and their teachers in schools which use English as the language of instruction and learning.

The diagnostic materials should assess reading performance in terms of its essential nature and should be criterion-referenced, reflecting the appropriate level of competence that could be expected of learners at various stages of reading development during the first three years of schooling. The materials should be designed to address the complex reading act in terms of its component parts, supporting early, reliable and knowledgeable identification of young readers who are experiencing reading difficulties by enabling teachers to perform an error analysis, to gain a better understanding of individual learners' processes of reading, ultimately to direct their learning support at discrete difficulties experienced by particular learners.

Analysis of the data should provide an accommodating framework for the individual differences of South African learners on account of the variety of linguistic, educational, cultural and socio-economic contexts existing in the country.

By administering the materials teachers should be sensitised to the importance of teaching a strategic approach to reading.

3.1.2 Research design

(1)   Literature review

The literature review was conducted on the latest models and theories of beginning reading, emphasising their respective views of the reading process and strategies, reading assessment and test construction.   Theory, praxis and practice as demonstrated in the researcher's field notes on casework, were integrated.

(2)   Test construction

From this review, the requirements for the development of diagnostic reading materials for learners in the Foundation Phase were derived, to form the terms of reference and item rationales for the diagnostic assessment model, briefly presented in 3.1.3.

Existing reading tests were examined against the rationales as formulated.   Texts and item types were conceptualised, developed, qualitatively piloted and refined.

Two extensive batteries of comparable texts and items were developed by the researcher and submitted for approval to an advisory committee comprising experts in the field and researchers of the HSRC.   The design of the battery was scrutinised by the committee collectively.   The items were scrutinised by individual Committee-members. The final selection and editing of the texts and items were performed by the researcher.

(3)   Experimental administration

The instrument was experimentally administered in four former model C schools, to learners in Grade 1 – 3 representing households of a low average to average socio-economic status, as judged by the teachers. The sample included 31,2% to 38,8% non-first language speakers of English from all population groups in South Africa in the various grades. The sample could not be accurately stratified, which obviously compromised the reliability of the test data.

The responses were coded, the coded data were captured and the first round of statistical computations was executed.

(4)   Item selection and frequency analysis

The items which best met the statistical requirements as well as criteria of relevance and representativeness across the two forms were selected in sub-sets to constitute two comparable batteries of tests for each of the three grades.

A frequency distribution of the reading difficulties represented by the distracters was calculated to be utilised in a procedure of error analysis.

3.1.3   The assessment model

(1)   Outcomes-based instruction and assessment

The instrument expressly follows the outcomes-based model of assessment in its focus on skills and strategies integrated in reading comprehension, thus in the particular modes of functionalisation applied in assessing these.   It also accommodates the linguistic-cognitive competencies essential to early reading development.

(2)   Criterion-referenced assessment

Diagnostic instruments should be mainly criterion-referenced if they are to yield meaningful information to support learning.   Interpreting the level of performance on developmental tasks such as learning-to-read should, however, at least partly be based on normed data - especially in a country where the majority of learners have language-related special educational needs.

It therefore proved necessary to take the diagnostic materials through the whole process of statistical data analysis, to determine when and how particular reading needs and difficulties manifest among South African learners.   An understanding is required of the general trend in the reading development of the various groups of South African learners using English as the language of learning, to serve as a frame of reference for a valid interpretation of individual learners' performance.

The data analysis could serve as a criterion-referenced guideline in selecting the final items and sub-sets and especially in determining the cut-off scores regarding particular skills domains, below which difficulties could be suspected to hamper overall reading development.

(3)   <u>Authentic, alternative, formative, continuous and dynamic assessment</u>

The principles of authentic, alternative, formative, continuous and dynamic assessment and its relevance and usefulness in indicating learners' special needs are fully endorsed. The diagnostic materials under development are intended to support that process. Teachers' diagnostic skills should be considerably enhanced if they could utilise the diagnostic materials to verify their identification of learners with possible reading difficulties and, in addition, could be encouraged to apply the assessment model represented in the materials in analysing and interpreting their learners' regular performance.

However, the understanding required of teachers who lack expertise for whatever reason to deal effectively with their learners' special reading needs, could perhaps also be met directly by making a specialist measure available for use as needed. Two forms of the diagnostic materials were developed to enable teachers to re-assess learners after a period of specific learning support if needed.

(4)   <u>The range of reading skills and strategies assessed</u>

The diagnostic materials are comprehensive, assessing multiple aspects of reading. It is intended to identify learners with reading difficulties related to the following:

- Deficiencies in perceptual skills, including phonic skills
- Learning to read in a second language
- Language difficulties pertaining to vocabulary, syntax and figurative use of language
- Difficulties in bringing pre-knowledge or schemata to the text
- Deficits in cognitive potential and/or higher order cognitive skills
- Poor comprehension generally
- Specific learning disabilities

The set of diagnostic materials begins with the recognition of single sounds/letters, then progresses to word recognition skills and sight vocabulary and finally assesses higher-order reading comprehension skills, requiring learners to use their schemata, to engage metacognitively with the text and to make inferences and deductions from implied facts.

Although the diagnostic materials are not intended to assess learners' perceptual development *per se*, the items have been designed to yield some information concerning the level of perceptual skill which they apply in their reading activities. The instrument could thus screen for various perceptual difficulties and could indicate specific developmental needs.

The collection of diagnostic reading materials are divided into four sections for Grade 1 learners, and one each for Grade 2 and 3 learners.

The four sections of the Grade 1 set are as follows:

- A1 - 6, basically at a perceptual level, with letter and word recognition, decoding and sight word recognition tasks

- A7 - 11, basically consisting of word reading tasks, but also requiring learners to use higher order cognitive comprehension skills in reading for meaning. Distracters in this section do not contain options that could cause learners to answer incorrectly due to e.g. perceptual difficulties, but rather use words that ensure higher-order reading comprehension

- B1 - 3, where learners read a story, and where they are required to engage with the text metacognitively. A high level of reading comprehension is expected. The words used in the stories are high frequency. Figurative speech is introduced

- C1 - 3, beyond Grade 1- level and requiring advanced comprehension skills

Figure 3.1 contains the components of the diagnostic reading materials, dubbed *Let us Read*.

Target responses do not appear directly in the text - the wording is adapted, so that the readers must really comprehend what they are reading in order to answer the question correctly.

FIGURE 3.1 Components of *Let us Read* (2 Forms – Form X (green) and Form Z (red) – for re-assessment)

GROUP ADMINISTRATION (to be administered by the class teacher)	Number of items developed for each of Forms X and Z	Number of items selected for national data collection
PART A: LETTERS AND WORDS Gr 1 multiple-choice options		
FIRST SITTING: LETTERS AND WORD RECOGNITION :		
A1 Recognition of initial letters in words	18	10
A2 Recognition of last letters in words	17	10
A3 Synthesis: words	19	10
A4 Analysis: omitting a letter in a word	12	10
A5 Analysis: adding a letter in a word	16	10
A6 Word recognition	20	10
SECOND SITTING: COMPREHENSION: WORDS		
A7 Which word answers the question?	12	9
A8 Which word completes the sentence?	7	5
A9 Which word goes best with the given word?	8	7
A10 Which one of the four words does not go with the others?	12	6
A11 Which word goes best with the two sentences?	5	4
PART B: PARAGRAPHS multiple-choice questions		
3 possible paragraphs; 2 to be selected (1 each, Form X and Z)		
Grade 1 level		
Example Dad's car (Yellow)		
B1 Ben and Ken (Blue)	12	8
B2 Flap and Pog (Pink)	12	not selected
B3 Tub and Tod (Green)	12	8
PART C: PARAGRAPHS multiple-choice questions		
Beyond Grade 1 (for learners who could do Parts A & B)		
Example Dad's car (Yellow)		
C1 Lu and Jo (Blue)	9	7
C2 Sam (Pink)	9	not selected
C3 Jim (Green)	9	7
Grade 2 level		
Example Dad's car (Yellow)		
C4 Brad (Blue)	14	not selected
C5 Pam (Pink)	14	12
C6 Birds (Green)	14	12
Grade 3 level		
Example Dad's car (Yellow)		
C7 Rob (Blue)	17	not selected
C8 Bob (Pink)	17	10
C9 Matt (Green)	17	10

The distracters have been specifically designed to allow broad-based screening for learners' specific difficulties such as the following, by means of various scoring stencils which should be developed after data collection on a nationally stratified sample:

- **Poor position in space**

  Learners confuse words containing b x d x p x q; t x f; w x m; n x u.

  Word or syllable reversals (on x no; was x saw; temper x temrep)

- **Poor visual discrimination**

  Learners confuse net x met; vet x wet; nest x rest; hot x not.

- **Poor visual sequential memory**

  Learners select pots x stop x tops for spot

- **Insufficient knowledge of sound-letter relationship**

  Learners confuse similar words containing different vowels/consonants, e.g.

  cup x cap x cop; keen x teen

- **Blending difficulties**

  Learners select fat for flat

- **Limited vocabulary**

  Learners fail to recall the correct word and/or respond in linguistically incorrect terms

  in: A baby dog is called a ... (cub x kitten x puppy x small)

- **Difficulties pertaining to idiom**

  Learners fail to distinguish between figurative and literal expressions, e.g.

  It is a first class car means ...　　It is in a class　　It is a bad car

  　　　　　　　　　　　　　　　　It looks like a fist　　It is a good car

- **Limited schemata**

  Learners fail to relate their reading to their schema of the particular subject, as in:

  Then he puts on his shoes. Last of all he takes his socks and wants to put them on.

  What does Sam do *wrong*?

  He puts on ...

(5)   Format and learner-friendliness of the instrument

The set of materials is in the multiple-choice format, which has been established by research as

reliable and because it can be utilised for beginning reading skills which cannot readily be assessed by means of a group activity using the communicative model.

True to the principles of mediated learning in the dynamic approach, sufficient practice examples are provided to demonstrate exactly what learners are expected to do. Instead of using numbers as is customary in instruments for older learners, markers are in the form of pictures to which school beginners can relate. All sub-sets and stories are printed in correct font type and size and printed on white paper to ensure homogeneity. The cover of each story is on either a blue, pink or green page to distinguish between the various stories. The front pages of Forms X and Z are respectively dark green and red.

(6)   The Whole Language, Phonological and Cognitive approaches to reading

The diagnostic materials subscribe fully to the Cognitive approach to reading instruction and thus focus on the construction of meaning and reading as communication. Reading comprehension is consistently emphasised onwards from sub-set 3, even when learners are engaged in sight word recognition. However, words have been selected with care simultaneously to assess aspects of phonic skill in order to cover a fuller range of relevant reading skills.

This rationale is in line with basic theory on reading development, and would enable teachers to recognise learners' difficulties encountered in decoding as well as comprehension skills during the early phases of learning to read.

(7)   The curriculum base of the reading materials

In the integrated approach of Curriculum 2005 to the development of language, literacy and communication, the level of print complexity is obviously not stringently controlled. Especially at the first reading level (Grade 1) of the reading materials, the level of reading complexity is age-appropriate and does not reflect the complexity of their spoken language. High frequency words are used. Words that could possibly cause a misinterpretation of reading needs because of the factor of group-specific pronunciation (e.g. sit as [sit]/[si:t]/[sət]), have been excluded.

3.2   EXPERIMENTAL APPLICATION

3.2.1   Background to the experimental application of the reading materials

During 1994 the HSRC was involved in discussions with the Auxiliary Services of the Departments of Education of Gauteng and the Western Cape concerning the need for a diagnostic reading instrument for South African learners who use English as the language of learning. Participants agreed that no suitable South African diagnostic reading instrument existed by means of which learners' competence in the reading of English could be assessed reliably in the early years of schooling.

The development of *Let us Read*, the diagnostic English reading materials for the Foundation Phase, began in March 1995 when the researcher, the University of Pretoria and the HSRC agreed to collaborate on the project.

A literature survey was conducted on the latest developments in reading, assessment and test construction, the materials were developed, a limited scale pilot study was conducted, the items were refined, the "final" product was scrutinised by an advisory committee of experts in the field and researchers of the HSRC, and approved as a valid sample of reading skills. The materials were printed and ready for the experimental application in February 1996.

However, a national moratorium had been placed on all testing for test development in South African schools and the researcher could not obtain permission to administer *Let us Read* at any school.

Authorisation for access to schools was only received in December 1997. On account of the long delay and increasing budgetary constraints in the HSRC, it had by then become impossible to perform a formally stratified data collection exercise. Instead, *Let us Read* was experimentally administered on a limited sample dictated by logistical considerations in 1998. The responses were coded, the Computer Centre of the HSRC captured the coded data and executed the first round of statistical computations. In 1999, the item selection was executed for the proposed diagnostic battery, to be administered to a national, representative sample

upon completion of this thesis. In conclusion, frequency distributions of the learners' performance and error types were performed and contemplated.

3.2.2 Subjects

Let us Read was experimentally administered to a sample of 726 learners in four former model C schools in Gauteng during February and March 1998.

Since the battery was administered early in the first term, the materials for Grade 1 were administered to Grade 2 learners, the materials for Grade 2 to Grade 3 learners and those for Grade 3 to Grade 4 learners.

As explained above, it was not possible to use an accurately stratified sample for the experimental application. This would definitely compromise the reliability of the data, making it virtually impossible to draw valid conclusions. The large total number of data points in terms of both the sample size and the sub-sets of reading activities and items could, however, argue in favour of careful tentative and contextual interpretation and might at the very least suggest fruitful directions for further research on the set of materials. No analysis in terms of L1/L2 or gender will be attempted. The sample distribution is indicated in **Table 3.1.**

The sampling in <u>School A</u> was performed differently from that in School B, C and D in that the group from whom the random sample was taken had first been selected by the teachers to contain only readers with average reading skills. Logistical difficulties were, however, caused by this method of sampling since only particular learners from each class were involved in the reading procedures. Schools B, C and D therefore requested whole classes at a time to be involved in all procedures. All the Grade 2 – 4 learners in <u>School B</u> were included in the sample. In <u>School C</u>, only all the Grade 2 learners were included, and one class of learners

TABLE 3.1   Sample distribution

SCHOOL	A		B		C		D		TOTAL	PERCEN-TAGE
GRADE 2 Total learners	30		116		106		97		349	
Form X + Z	X	Z	X	Z	X	Z	X	Z		
Learners	15	15	58	58	71	35	46	51		
Language L1	8	9	34	35	51	24	27	32	220	63,0
Language L2	7	6	24	23	20	11	19	19	129	37,0
Gender : Boys	8	8	30	29	36	19	21	25	176	50,4
Gender : Girls	7	7	28	29	35	16	25	26	173	49,6
GRADE 3 Total learners	30		103		28		27		188	
Language L1	19		64		20		12		115	61,2
Language L2	11		39		8		15		73	38,8
Gender : Boys	15		52		13		15		95	50,5
Gender : Girls	15		51		15		12		93	49,5
GRADE 4 Total learners	30		104		28		27		189	
Language L1	17		75		20		18		130	68,8
Language L2	13		29		8		9		59	31,2
Gender : Boys	16		51		14		14		95	50,3
Gender : Girls	14		53		14		13		94	49,7

each in Grade 3 and 4. In <u>School D</u>, all the Grade 2 learners and one class of Grade 3 learners were again included for all activities; but, since not enough texts had been printed, each learner in the one Grade 4 class did only one of the texts. **Table 3.2** provides an overview of the data records collected.

TABLE 3.2: Data records per section of *Let us Read*

		GRADE 1										GRADE 2			GRADE 3		
		X 1-6	X 7-11	Z 1-6	Z 7-11	Ben	Flap	Tub	Lu	Sam	Jim	Brad	Pam	Birds	Rob	Bob	Matt
Gr 2: 349	(Gr 1 set)	188	190	159	159	189	190	189	190	190	190						
Gr 3: 188	(Gr 2 set)											185	177	184			
Gr 4: 189	(Gr 3 set)														170	170	170

Of the 349 Grade 2 learners, 190 were assessed in groups constituting full classes on sub-sets 1 – 11 on Form X and 159 on Form Z. Each learner further did one, a combination or even all six of the texts (three stories on Grade 1- level and three stories beyond Grade 1 - level). *Ben and Ken* was read by 189, *Tub and Tod* by 189 and *Flap and Pog; Lu and Jo; Sam* and *Jim* each by 190. Of the 188 Grade 3 learners assessed on the Grade 2 texts, 185 learners dealt with *Brad,* 177 worked on *Pam* and 184 responded to *Birds.* Of the 189 Grade 4 learners assessed on the Grade 3 texts, 161 dealt with all three stories. In one Grade 4 class, 27 learners each did one of the possible three stories resulting in 170 learners reading *Rob, Bob* and *Matt.*

Class teachers assisted the test administrators by observing their learners and by checking that the learners were completing the reading material forms correctly.

The testing time was approximately 120 minutes for Part A1-6 (Form X or Z) and approximately 75 minutes for Part A7-11 (Form X or Z). Testing times for Parts B and C ranged between 15 and 90 minutes, depending on the work rate of each individual learner.

Teachers were generally very positive about the content of *Let us Read*, but commented that the amount of work that had to be completed in three sessions over three consecutive days was too much for some of the Grade 2 learners. The amount of work for the Grade 3 and 4 learners was regarded as realistic.

The completed reading materials were subsequently coded, the coded data were captured and the first round of statistical computations was executed. A discussion of the statistical procedures used to analyse the experimental application follows.

3.2.3 Statistical procedures

(1) Method of Item Analysis

(a) *The X-ITEM-K programme*

The item analysis was performed using the X-ITEM-K programme. The main aim of the procedure was to establish the success of each item in the battery. The X-ITEM-K programme provides the following information on each item:

- the percentage of learners who did not answer the item
- the percentage of learners who selected each of the four options of the item respectively
- the percentage of learners who did not reach that particular item in the test (see footnote[10])
- the percentage of learners who did not select the correct answer

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[10] Since the researcher and the assistant administered all materials personally and were assisted by class teachers, it was possible to ensure that all the items were answered (and only one option chosen) by all the learners in the group, before moving to the next item. Therefore a section was unanswered only in cases where a learner was absent. In **Tables 3.3** and **3.4** (and in Appendix C, **Tables 1a(i) - 11a(i)** [Form X], **1a(ii) – 11a(ii)** [Form Z] and **12a - 23a**, each **Table a** with a corresponding **Table b** which contain the X-ITEM-K statistics, the incomplete records are not included.

At the end of the item analysis of each sub-set the following data are supplied:

- the mean score obtained by all the learners
- the standard deviation
- the number of learners who participated in the experimental application
- the K-R14 and the K-R8 reliability coefficient
- the standard error of measurement

(b) *The correct response and/or difficulty level*

It is regarded as an essential requirement of a good item that the percentage of learners who selected the correct response should obtain a higher average in the test than those who selected any of the alternative answer options (Owen:1996:36).

The difficulty level of the test could be derived by doing the following calculation:

$$p = \frac{R}{n}$$

with R being the number of learners who answered the item correctly n the number of learners who attempted the item (Owen 1996:31). In **Tables 3.3(i)** and **3.3(ii)** (and in Appendix C **Tables 1a(i) – 11a(i)** [Form X] and **Table 1a(ii) – 11a(ii)** [Form Z] and **Table 12a - 23a** [stories] containing the data of the diagnostic reading materials, the p value could be calculated as follows:

If 93,1% of the learners answered the item correctly, the difficulty level would be

$$p = \frac{93,1}{100} = 0,931$$

The higher the value of p, the easier the item.

The difficulty level of an item should be taken into account in item selection, but is not decisive in its own right. The item correlation and the discrimination value play a more important role.

(2) The statistical properties of *Let us Read*

(a) *The mean*

The mean is the average score obtained when all the individual learners' scores for the test/sub-

set are added and then divided by the number of learners whose scores have been summed (Barnard and Chamberlain 1993:24).

(b) Item correlation and item discrimination value

The item correlation value is used to indicate how the item correlates with an external criterion, and to determine whether the item measures the same ability as the criterion concerned (Owen 1996:33). When an external measure is not available, the total score of the test/sub-set is used as the criterion (Owen 1996:32). The contribution that an item makes to its field is obtained by correlating the item score with the total score for that field (Owen 1996:35).

The discrimination value indicates to what extent an item discriminates between good and poor performers, and could be viewed as a possible index of item validity. It indicates whether those testees who performed well on the whole test tended to perform well or poorly on each item in the test (Callis 1994:77).

Owen (1996:32) states that the item analysis programmes of the HSRC use the point biserial correlation technique:

$$r_{it} = \frac{\bar{x}_r - \bar{x}_t}{s_t} \cdot \sqrt{\frac{p}{q}}$$

where r_{it} = the correlation between the item score and the test's total score

$\bar{x}_r$ = the mean in the test of everyone who got the item right

$\bar{x}_t$ = the mean in the test for the total group

s_t = the standard deviation of the total score of the whole group

p = item difficulty value

q = $1 - p$

(c) Standard error of measurement (or SEM)

According to Owen (1996:63), the standard error of measurement is actually the reliability of the test expressed in a slightly different form. The explanation of what this score means, could be adapted as follows for the diagnostic reading materials: If a learner managed to obtain a score of 13, and the standard error of measurement is 0,991, the learner's true score could be

assumed with a fair degree of certainty, to lie between 12,009 - 13,991 (13 - 0,991 and 13 + 0,991). The smaller the SEM, the more reliable the test (Barnard & Chamberlain 1993:25).

(d)   *Reliability*

The Kuder and Richardson formulas, abbreviated as K-R, are based on the consistency or the constancy of the learners' responses to the various test items (Owen 1996:56). These formulas are numbered. The higher the number, the stricter the conditions that the measurements must satisfy (Owen 1996:56).

According to Owen (1996:57), the K-R8 formula gives a very clear **underestimate** of the reliability of an item, if the difficulty values for items are not the same. When the p-values (percentage of respondents who answered the items correctly) vary, a reliability coefficient of 0,78 is obtained with the K-R8, whereas a very high reliability coefficient of 0,91 is obtained with the K-R20 formula. The K-R14 is used when one assumes that all the correlations between the items in the item correlation matrix are equal (Owen 1996:58).

Owen (1996:58-59) warns that although the K-R formulas are undoubtedly the best to use for homogeneous test items, an underestimate of the reliability coefficient will be produced if test items are not homogeneous. The difficulty level of the various items on each sub-set of the diagnostic reading materials should therefore be taken into account when the data is analysed. Although no unique cut-off point for an acceptable reliability coefficient can be given it can generally be accepted that an instrument with a reliability coefficient of about 0,600 could supply useful information, provided the results are interpreted with care and expertise (Owen 1996:63). The higher the reliability coefficient, the more reliable the test, with perfect reliability being 1,000.

(e)   *Standard deviation*

The standard deviation is the measure of variability that is the sum of the deviations from the mean standard, and is an indication of how adequate the mean is as a summary statistic for a set of data (Mertens 1998:332).

3.2.4   Statistical analysis

(1)   Introduction

An analysis of the statistical data of the experimental application of *Let us Read* can give strong direction to the selection of items to be finally evaluated by means of a scientifically designed data collection exercise.

In the interest of both economy and integration of the vast number of data points, an attempt has been made to structure and integrate the findings from the outset and to suggest item selections in that context, rather than to present discrete aspects of the data followed by separate discussion of each.   The complete data printouts of the X-ITEM-K analysis and all other data processed are available for inspection from the researcher on request.

- As an example of the item analysis and selection procedure **Table 3.3(i)**, containing the analysis of the first sub-set (A1) of Form X and **Table 3.3(ii)**, containing the analysis of the first sub-set (A1) of Form Z will be discussed.   Appendix C contains **Table 1a(i) – 11a(i)**, [Form X]; **Table 1a(ii) – 11a(ii)** [Form Z] and **Table 12a – 23a** [stories], which are similar in format and method.

- **Table 3.4** will serve as an example of the frequency distribution of the learners' total scores.   In Appendix C, each previously mentioned **Table a** is followed immediately by the corresponding **Table b**.

- **Tables 3.5** and **3.6** will display further summary data of the various sub-sets on Form X and Z and the stories, namely the reliability coefficients (KR-14 and KR-8), error of measurement, standard deviation and the mean of the results.

- **Table 3.7** contains the difficulty values of all selected items.

- **Table 3.8** contains the discrimination indices.

- **Tables 3.9 – 3.28** contain the frequency distributions of the various error types.   This analysis is useful for diagnostic purposes and for planning learning support.

(2)   Discussion

(a)   Item analysis and item selection

The following information regarding each item is integrated in **Table 3.3(i)** and **3.3(ii)**:

- Error analysis (the possible reason why the specific distracter could have been chosen)
- The percentage of learners who chose the correct answer (which correlates with the difficulty value of the item) and each of the distracters
- How well the item correlates with the other items in the original sub-set (or how often the item was answered correctly by the high performers)
- The correlation of selected items with the set of selected items
- How items with an unsatisfactory item correlation which were selected, have been adapted

Table 3.3(i) contains the information of sub-set A1, Form X, and **Table 3.3(ii)** that of sub-set A1, Form Z.

Errors that occurred in sub-set A1 (Forms X and Z) include:

- errors presumably because of difficulty with grapheme- phoneme correspondence (e.g. j x g; h x g)
- errors presumably because of visual perceptual difficulties (e.g. visual position in space – pan x nap; b x d x p x q; t x f; w x m; n x u; visual sequential memory – st x ts; visual discrimination – m x n; n x h; r x h; v x w; visual memory – th x sh)
- errors presumably because of auditory perceptual difficulties (e.g. voiced/unvoiced sounds – /kr/ x /gr/; auditory discrimination – /ɵ/ x /f/; auditory analysis and synthesis – omission of a sound in a blend – spl x sl x sp; position of the sound in the word – last instead of first)

TABLE 3.3(i) : Item analysis and selection : Sub-set A1 - Recognition of initial consonants, Form X

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(1) goat	j	j/g recognition of letters	g *	Correct answer	h	h/g recognition of letters	t	Position of sound: last instead of first	
Original test: difficulty value	0,0%		99,5%		0,5%		0,0%		- 0,078
Not Selected	**Reason** : Item correlation low								
(2) dam	p	p/d reversal	t	Voiced / unvoiced auditory	b	b/d reversal	d *	Correct answer	
Original test: difficulty value	0,0%		1,1%		5,9%		93,1%		0,228
Selected items	**Now** Item 1								0,253
(3) soft	s*	Correct answer	z	Voiced / unvoiced	F	Middle sound	t	Position of sound in word	
Original test: difficulty value	98,9%		0,0		1,1		0,0		0,070
Not Selected	**Reason** : Item correlation low								
(4) fox	x	Position of sound: last instead of first	t	f/t reversal visual	f*	Correct answer	j	j/f visual form of letter	
Original test: difficulty value	1,1		0,0		97,9		0,5		0,124
Not Selected	**Reason** : Item correlation low								
(5) not	n*	Correct answer	r	r/n visual discrimi-nation	t	Position of sound in word	h	n/h visual discrimi-nation	
Original test: difficulty value	97,3		0,5		1,1		1,1		0,234
Selected items	**Now** Item 2								0,219

TABLE 3.3(i) : Item analysis and selection : Sub-set A1 - Recognition of initial consonants, Form X (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(6) clown	cr	cl/cr consonant blend	cl *	Correct answer	co	co/cl consonant blend	gr	Voiced / unvoiced, consonant blend	
Original test: difficulty value	0,5%		97,9%		1,1		0,0		0,190
Not Selected	**Reason** : Item correlation low								
(7) flank	tl	t/f reversal visual	nk	Position of sounds in word	fl*	Correct answer	fk	Omission of middle letters	
Original test: difficulty value	9,0		0,0		87,8		3.2		0,152
Not Selected	**Reason** : Item correlation low								
(8) plant	bl	b/p reversal visual	pl*	Correct	nt	Position of sound in word, auditory	pt	Omission of middle letters, Auditory	
Original test: difficulty value	1,6		96,8		0,0		1,6		0,256
Selected items	**Now Item 3**								0,266
(9) snack	sn*	Correct	kn	Position of sound in word, blend	sr	r/n visual discrimi-nation	sa	Consonant blends, auditory	
Original test: difficulty value	87,2		0,0		10,1		2,7		0,193
Selected items	**Now Item 4. Suggested new item 4 to be more in line with Form Z : <u>swift</u> with options pt x sm x sw x st**								0,026
(10) twist	st	Position of sounds in words	ts	Visual sequence and position of sounds	to	sound-letter associa-tion, blends tw/to, auditory	tw*	Correct	
Original test: difficulty value	2,1		2,1		2,1		93,6		0,287
Selected items	**Now Item 5**								0,299

TABLE 3.3(i) : Item analysis and selection : Sub-set A1 - Recognition of initial consonants, Form X (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(11) splash	sl	Omission of middle sound in blends	sps	Omissions of sounds in word, auditory	spl*	Correct	sp	Conso-nant blends, auditory	
Original test: difficulty value	4,3		4,8		**64,9**		26,1		0,319
Selected items	Now Item 6								0,361
(12) string	srt	Letter sequence, visual/ auditory	tsr	Letter sequence, visual/ auditory	str*	Correct	st	Conso-nant blends, omission, auditory	
Original test: difficulty value	7,4		0,5		**86,7**		5,3		0,225
Selected items	Now Item 7								0,277
(13) chair	sh	Digraphs, auditory	ch*	Correct	th	Digraphs, visual memory	j	Recog-nition of sounds, auditory	
Original test: difficulty value	4,3		**91,0**		3,7		1,1		0,205
Selected items	Now Item 8. **Suggested new item 8 <u>chick</u>, options sh x th x j x ch – the digraph could have caused the difference between X & Z scores**								0,161
(14) sharp	ch	Digraphs, auditory	th	Digraphs, visual memory	s	Digraphs, auditory	sh*	Correct	
Original test: difficulty value	8,5		1,6		12,2		**77,1**		0,254
Selected items	Now Item 9								0,309
(15) think	tch	Digraphs, visual memory	th*	Correct	f	Auditory discrimi-nation	ch	Digraphs, visual memory	
Original test: difficulty value	4,8		**87,8**		4,3		2,7		0,245
Selected items	Now Item 10								0,205

TABLE 3.3(i) : Item analysis and selection : Sub-set A1 – Recognition of initial consonants, Form X (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(16) what	wt	Digraphs, omission of middle sound	sh	Digraphs, visual memory	wh*	Correct	th	Digraphs, visual memory	
Original test: difficulty value	28,7		0,0		**68,1**		2,7		0,238
Not Selected	**Reason** : Different item selected on comparable Form (Form Z) on account of high difficulty value (59,1%)								
(17) pancake	pan*	Correct	ban	b/d reversal, voiced/ unvoiced	dan	d/p reversal	nap	Word reversal	
Original test: difficulty value	**97,3**		2,1		0,5		0,0		- 0,059
Not Selected	**Reason** : Item correlation low								
(18) picnic	cip	Syllable reversal	nic	Position of syllable	cin	Syllable/ Word reversal	pic*	Correct	
Original test: difficulty value	2,1		3,7		1,6		**92,6**		- 0,080
Selected items	**Reason** : Item correlation low								

TABLE 3.3(ii) : Item analysis and selection : Sub-set A1 - Recognition of initial consonants, Form Z

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(1) gate	j	j/g recog-nition	g*	Correct	h	h/g recog-nition	t	Position of sound	
Original test: difficulty value	1,9		96,2		0,6		1,3		0,173
Not Selected	**Reason** : Item correlation low								
(2) big	p	b/p reversal visual	g	Auditory, position of sound	d	b/d reversal	b*	Correct	
Original test: difficulty value	1,3		0,6		5,0		93,1		0,240
Selected items	**Now Item 1**								0,222
(3) taps	t*	Correct	p	Middle sound	d	Voiced / unvoiced	s	Position of sound	
Original test: difficulty value	95,0		2,5		0,6		0,6		0,286
Not Selected	**Reason** : Item correlation low on same test of comparable form								
(4) hut	t	Position of sound	n	n/h visual discrimi-nation	h*	Correct	j	j/h recogni-tion	
Original test: difficulty value	4,4		0,6		95,0		0,0		0,274
Not Selected	**Reason** : Item correlation low on same test of comparable form								
(5) peg	p*	Correct	q	p/q reversal visual	g	Position of sound, auditory	b	b/p reversal visual	
Original test: difficulty value	95,6		3,1		0,6		0,6		0,195
Selected items	**Reason** : Now item 2. **Change to net, options m x t x h x n to get more in line with Form X**								0,167

TABLE 3.3(ii) : Item analysis and selection : Sub-set A1 - Recognition of initial consonants, Form Z (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(6) drum	br	b/d reversal visual	dr*	Correct	du	dr/du conso-nant blend	dm	Omission of middle letters	
Original test: difficulty value	10,1		**84,3**		2,5		2,5		0,371
Not Selected	**Reason** : Difficulty level varies on X and Z. Item correlation low on same item of comparable form								
(7) flock	fl*	Correct	tl	f/t reversal visual	fk	Omission of middle letters	fo	Conso-nant blends	
Original test: difficulty value	**95,0**		0,0		3,1		1,9		0,204
Selected items	**Reason** : Item correlation low on same item of comparable form								
(8) blend	pl	p/b reversal visual	bl*	Correct	nd	Position of sounds, auditory	bd	Omission of middle sounds, auditory	
Original test: difficulty value	2,5		**94,3**		1,9		1,3		0,380
Selected items	**Now** Item 3								0,323
(9) swept	pt	Position of sounds	sm	w/m reversal visual	sw*	Correct	st	Omission of middle sounds, auditory	
Original test: difficulty value	1,3		2,5		**91,8**		3,8		0,663
Selected items	**Now** Item 4								0,626
(10) twins	ns	Position of sounds	sn	Letter sequence and position of sounds	to	Sound/ letter associa-tion	tw*	Correct	
Original test: difficulty value	0,6		3,8		6,9		**88,1**		0,556
Selected items	**Now** Item 5								0,540

TABLE 3.3(ii) : Item analysis and selection : Sub-set A1 — Recognition of initial consonants, Form Z (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(11) splat	slp	Letter sequence visual	pls	Letter sequence visual	spl*	correct	sp	Omission of sound in Conso-nant blend, auditory	
Original test: difficulty value	11,9		4,4		**73,6**		9,4		0,288
Selected items	**Now** Item 6								0,270
(12) spring	sr	Omission of middle sound, auditory	spn	r/n visual discrimi-nation	spr*	correct	sp	Omission of sound in conso-nant blend, auditory	
Original test: difficulty value	9,4		7,5		**69,8**		12,6		0,346
Selected items	**Now** Item 7								0,335
(13) chest	sh	Digraph, Auditory	ch*	Correct	th	Digraph, Visual memory	j	j/ch recogni-tion of sounds, auditory	
Original test: difficulty value	6,3		**86,2**		3,8		2,5		0,431
Selected items	**Now** Item 8								0,424
(14) shunt	ch	Digraph, auditory	th	Digraph, visual memory	s	s/sh recogni-tion of letters, auditory	sh*	Correct	
Original test: difficulty value	12,6		4,4		1,3		**81,8**		0,344
Selected items	**Now** Item 9								0,293
(15) thank	tch	Recogni-tion of letters, visual memory	th*	Correct	f	Auditory discrimi-nation th/f	ch	Digraphs, visual memory	
Original test: difficulty value	6,3		**81,8**		8,2		3,1		0,351
Selected items	**Now** Item 10								0,326

TABLE 3.3(ii) : Item analysis and selection : Sub-set A1 – Recognition of initial consonants, Form Z (cont.)

ITEM	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	OPTION CHOSEN	ERROR TYPE	ITEM CORRE-LATION
(16) when	wn	Digraphs, omission of middle sounds	sh	Digraphs, visual memory	wh*	Correct	th	Digraphs, visual memory	
Original test: difficulty value	39,6		0,6		59,1		0,6		0,422
Not Selected	**Reason** : Difficult item								
(17) pencil	pen*	Correct	ben	b/p reversal, voiced/ unvoiced sound	den	d/p reversal visual	nep	Word reversal visual	
Original test: difficulty value	95,0		1,9		1,9		1,3		0,357
Not Selected	**Reason** : Item correlation low on same item of comparable form								
(18) piglet	gip	Word / Syllable reversal visual	let	Position of syllable	tel	Syllable/ word reversal visual	pig*	Correct	
Original test: difficulty value	3,1		3,1		1,3		92,5		0,338
Not Selected	**Reason** : Item correlation low on same item of comparable form								

As could be expected when diagnostic reading materials on a Grade 1 level were dealt with by early Grade 2 learners, the vast majority of these learners found the recognition of initial sounds in words easy. In eleven of the eighteen items in Form X (and ten in Form Z), above 90% of the learners chose the correct answer, and in four more items on Form X (five on Form Z), 80 - 89% of the Grade 2 learners were successful. Only the following three distracters in the entire sub-set A1 (Forms X and Z) were chosen by more than 20% of the learners:

- Form X item 11 : splash

  - correct answer : spl

  - distracter sp chosen by 26,1% of the learners

  - error: omission of third sound in three - blend

  - reason: auditory analysis and synthesis difficulty

- Form X item 16 : what

  - Correct answer : wh

  - distracter wt chosen by 28,7% of the learners

  - error: not recognising digraph, selecting first letter in digraph and last sound of word

  - reason: poor visual memory for wh digraph, auditory analysis/synthesis

- Form Z item 16 : when

  - Correct answer: wh

  - distracter wn chosen by 39,6% of learners

  - error: n x h, not recognising digraph, selecting first letter in digraph and last sound of word

  - reason: poor visual memory for wh digraph, visual discrimination h x n or auditory analysis/synthesis

The Grade 2 learners who dealt with the Grade 1 materials sub-set A1 did not make as many d x p or p x b reversals (0,0; 1,3% respectively) as b x d reversals (5,9% Form X; 5,0% Form Z). Furthermore, not a single Grade 2 learner made a t x f reversal in simple CVC words in sub-set A, whilst in words containing **consonant blends** (e.g. flank) 9,0% t x f reversals were noted.

Regarding item selection, difficult items were not selected, even if they have a high item correlation value (e.g. on item 16, Form Z with an item correlation of 0,422, where 40,1% of learners had the item wrong, the item was not selected).

Items were only selected if the item correlation value was sufficiently high on both Form X and Z, and the difference in the difficulty levels between X and Z for the specific item was not more than 12%.

Of the twenty selected items on sub-set A1 Form X and Z, three items needed to be examined and changed after the second X-ITEM-K programme had been executed and the items showed a low item correlation in the new set.

Of the twenty final items (10 Form X and 10 Form Z) three items had an item correlation of between 0,433 and 0,626, five items between 0,300 and 0,349 and nine items between 0,200 and 0,299, indicating that sub-set A1 of the diagnostic reading materials provides reliable information.

The item analysis and item selection of all other diagnostic reading materials (sub-set A2 – A11, as well as the stories) were performed in a similar way (see Appendix C).

(b)   *Validity*
Reading is a complex act comprising many components, which should all be addressed when attempting a diagnostic assessment of a learner's competence.

Develop reading assessment materials to contain homogeneous items for each subtest across two forms held a particular challenge. Even in a relatively simple task such as the recognition of initial sounds in words, it is found that not even the same item necessarily assesses exactly the same skill. For example, if learners have to choose the letter that represents the first sound in mat, the error types represented by the options chosen are not necessarily homogeneous:

Mat: m   -   correct
        w   -   m x w reversal – visual position in space
        t   -   position of sound in word
        n   -   m x n visual discrimination

Van den Berg (1996:101) actually regards too much homogeneity in test items as detrimental to content validity since it does not reflect real-life situations and also declares that high item-test correlations are not sufficient evidence of content validity.

Indeed, the very heterogeneity of the possible reasons for error as represented in the frequency distribution of error types in **Table 3.3(i)** and **3.3(ii)** could be taken to establish the validity of *Let us Read* more strongly.

Specialists in the field, as well as researchers of the HSRC found the reading assessment materials, *Let us Read*, to be valid materials for the assessment of the reading competence of learners in the Foundation Phase.

(c)   Frequency distribution

Table 3.4(i) and **Table 3.4(ii)** indicate the frequency distribution of the total scores on Sub-set 1 - Recognition of initial letters , Form X and Z respectively.

TABLE 3.4(i)   Frequency distribution of total scores: Sub-set 1 – Recognition of initial letters, Form X

SCORE: SUBTEST 1	FREQUENCY	PERCENTAGE	CUMULATIVE FREQUENCY	CUMULATIVE PERCENTAGE
8	1	0,5	1	0,5
10	1	0,5	2	1,1
11	1	0,5	3	1,6
12	6	3,2	9	4,8
13	3	1,6	12	6,4
14	15	8,0	27	14,4
15	26	13,8	53	28,2
16	43	22,9	96	51,1
17	47	25,0	143	76,1
18	45	23,9	188	100,0

TABLE 3.4(ii)   Frequency distribution of total scores: Sub-set 1 – Recognition of initial letters, Form Z

SCORE: SUBTEST 1	FREQUENCY	PERCENTAGE	CUMULATIVE FREQUENCY	CUMULATIVE PERCENTAGE
5	1	0,6	1	0,6
7	3	1,9	4	2,5
8	2	1,3	6	3,8
9	1	0,6	7	4,4
10	1	0,6	8	5,0
11	4	2,5	12	7,5
12	4	2,5	16	10,1
13	7	4,4	23	14,5
14	12	7,5	35	22,0
15	18	11,3	53	33,3
16	30	18,9	83	52,2
17	37	23,3	120	75,5
18	39	24,5	159	100,0

Respectively 23,9% (Form X) and 24,5% (Form Z) of the learners in Grade 2 achieved full score (18); 85,6% of the learners obtained 15/18 or more on Form X and 85,5% obtained 14/18 or more on Form Z. The bottom 4,8% (Form X) and 5,0% (Form Z) learners who succeeded in respectively only 12 (Form X) and 10 (Form Z) or fewer recognition of initial letters items, might in terms of international incidence figures (3%) as adapted for developing countries (HSRC 1987:55), be regarded as those experiencing learning disability. The difference in the performance and number of errors of the bottom 14,5% of learners in Forms X and Z would suggest that the original versions of Forms X and Z are not totally parallel. Repetition of the frequency distribution analysis for the ten selected items of each form would therefore seem indicated.

It would, however, seem safe to recommend that learners who made four or more errors on sub-set A1 (Form X) and five or more errors on Form Z, be considered for preventative learning support.

Tables 3.5 and **3.6** summarise the integration of information provided by the X-ITEM-K programme, providing the reliability coefficients, error of measurement, standard deviation and mean performance of the various sub-sets of Forms X and Z (**Table 3.5**) and the stories (**Table 3.6**). These issues will be discussed briefly under the headings:

- Reliability
- Standard error of measurement
- Mean and standard deviation

TABLE 3.5   **Reliability coefficients, error of measurement, standard deviation and mean : Sub-sets 1–11**

SUB-SET	DESCRIPTION OF SUB-SET, AND SKILLS OR ERRORS		FORM X ORIGINAL ITEMS	FORM X SELECTED ITEMS	FORM Z ORIGINAL ITEMS	FORM SELECTED ITEMS
1	**Recognition of initial letters: consonants)** Which sound(s) do you hear first? Decoding skills, recognition of letters – which letter makes which sound, visual discrimination, reversals, position of sound in word – last instead of first letter, visual form of letter, omission of middle sounds, consonant blends, voiced / unvoiced, letter sequence, digraphs, auditory analysis skills, guessing.	Kr 14	0,539	0,540	0,770	0,688
		Error of measurement	1,171	0,942 9,4%	1,234	0,970 9,7%
		KR 8	0,642	0,672	0,807	0,761
		Standard deviation	1,725	1,389	2,574	1,738
		Mean	16,2 90,0% 18	8,8 88,0% 10	15,7 87,2% 18	8,6 86,0% 10
2	**Recognition of last letters: (consonants)** Which sound(s) do you hear last? Decoding, recognition of letters, visual discrimination, reversals, letter sequence, position of sound in word, visual form of letter, omission of sounds, consonant blends, voiced / unvoiced, auditory analysis, guessing.	KR 14	0,798	0,710	0,841	0,780
		Error of measurement	1,262	0,993 9,9%	1,425	1,040 10,0%
		KR 8	0,827	0,779	0,863	0,829
		Standard deviation	2,808	1,846	3,571	1,846
		Mean	14,7 86,5% 17	8,5 85,0% 10	13,3 78,2% 17	8,1 81,0% 10
3	**Synthesis skills** Which word can you hear if I say c-a-t. Simple CVC, blend VC, CV blend, blend V blend, digraph VC Same error types as 1 and 2. No words that could be pronounced incorrectly (eg. seat x sit) were used.	KR 14	0,598	0,503	0,697	0,592
		Error of measurement	1,477	1,024 10,0%	1,579	1,088 10,1%
		KR 8	0,657	0,624	0,738	0,686
		Standard deviation	2,329	1,453	2,868	1,705
		Mean	15,6 83,7% 19	8,5 85,0% 10	14,7 77,4% 19	8,2 82,0% 10
4	**Analysis skills : omitting letters / sounds** Cat without /c/ is? Stop without /s/ is? Clap without /l/ is? Damp without /p/ is? Went without /n/ is? Auditory analysis skills, omitting wrong sound, same error types as 1 - 3.	KR 14	0,730	0,740	0,619	0,603
		Error of measurement	1,073	0,906 9,1%	1,.087	0,916 9,2%
		KR 8	0,781	0,795	0,692	0,691
		Standard deviation	2,065	1,778	1,762	1,454
		Mean	10,1 84,2% 12	8,7 87,0% 10	10,3 85,8% 12	8,9 89,0% 10
5	**Analysis skills : adding letters / sounds** /p/ in the beginning of an /s/ in the beginning of lot /d/ at the end of ran /l/ after the /b/ in bed /n/ after the /e/ in bet auditory analysis, adding letter in wrong place, same error types as 1 - 4.	KR 14	0,814	0,765	0,788	0,681
		Error of measurement	1,365	0,983 9,8%	1,273	0,976 9,8%
		KR 8	0,838	0,813	0,817	0,746
		Standard deviation	3,162	2,026	2,762	1,728
		Mean	12,8 80,0% 16	8,4 84,0% 10	13,4 83,8% 16	8,6 86,0% 10

TABLE 3.5 Reliability coefficients, error of measurement, standard deviation and mean : Sub-sets 1–11 (cont.)

SUB-SET	DESCRIPTION OF SUB-SET, AND SKILLS OR ERRORS		FORM X ORIGINAL ITEMS	FORM X SELECTED ITEMS	FORM Z ORIGINAL ITEMS	FORM SELECTED ITEMS
6	**Word recognition** Look for the word <u>dog</u>. All error types, as in subtests 1 - 5. Traps for decoding errors occur throughout these sub-sets.	KR 14	0,690	0,615	0,684	0,614
		Error of measurement	1,547	1,272 12,7%	1,508	1,133 11,3%
		KR 8	0,737	0,699	0,730	0,712
		Standard deviation	2,780	2,052	2,684	1,824
		Mean	<u>16,3</u> 81,5% 20	<u>7,2</u> 72,0% 10	<u>16,6</u> 83,0% 20	<u>7,9</u> 79,0% 10
7	**COMPREHENSION: WORD READING (reading as communication)** Which one has four legs? In this sub-set, no traps were set for decoding errors (eg. no reversals, visual discrimination, letter sequence), meaning of words. Reading comprehension skills, as well as listening comprehension skills are assessed, the learners have to use their schemata and engage with the text metacognitively to be successful. A language difficulty, or a limited vocabulary could cause reading comprehension difficulties.	KR 14	0,453	0,477	0,732	0,660
		Error of measurement	0,963	0,763 8,5%	0,998	0,874 9,7%
		KR 8	0,595	0,637	0,781	0,744
		Standard deviation	1,302	1,055	1,928	1,499
		Mean	<u>10,5</u> 87,5% 12	<u>8,3</u> 92,2% 9	<u>10,5</u> 87,5% 12	<u>7,9</u> 87,8% 9
8	**COMPREHENSION: WORD READING** (Learners have to use contextual clues to complete a sentence as well as their schemata, listending comprehension is important - the learners have to listen to the complete sentence, and not guess after listening to a part of the sentence. Metacognitive engagement is important to be successful. A language difficulty, or a limited vocabulary could cause reading comprehension difficulties.	KR 14	0,484	0,521	0,643	0,560
		Error of measurement	0,750	0,675 13,5%	0,783	0,673 13,5%
		KR 8	0,677	0,720	0,768	0,763
		Standard deviation	1,045	0,976	1,311	1,014
		Mean	<u>6,2</u> 88,6% 7	<u>4,3</u> 86,0% 5	<u>5,9</u> 84,3% 7	<u>4,2</u> 84,0 5
9	**COMPREHENSION : ASSOCIATIONS** Word reading. Which word goes best with <u>hen</u>? Higher-level cognitive and metacognitive engagement, using schemata. A language difficulty, or a limited vocabulary could cause reading comprehension difficulties.	KR 14	0,526	0,537	0,572	0,608
		Error of measurement	0,905	0,852 12,2%	0,923	0,806 11,5%
		KR 8	0,666	0,686	0,686	0,725
		Standard deviation	1,314	1,252	1,410	1,288
		Mean	<u>6,8</u> 85,0% 8	<u>5,9</u> 84,3% 7	<u>6,8</u> 85,0% 8	<u>6,1</u> 87,1% 7

TABLE 3.5 Reliability coefficients, error of measurement, standard deviation and mean : Sub-sets 1–11 (cont.)

SUB-SET	DESCRIPTION OF SUB-SET, AND SKILLS OR ERRORS		FORM X ORIGINAL ITEMS	FORM X SELECTED ITEMS	FORM Z ORIGINAL ITEMS	FORM SELECTED ITEMS
10	**COMPREHENSION : READING WORDS** Which word does not belong with the other 3 words? Classifications, e.g. gender, domestic animals, poultry, colours etc, antonyms, e.g. actively / passively. A language difficulty, or a limited vocabulary could cause reading comprehension difficulties.	KR 14	0,635	0,544	0,504	0,573
		Error of measurement	1,493	0,980 16,3%	1,476	1,009 16,8%
		KR 8	0,703	0,696	0,622	0,713
		Standard deviation	2,469	1,451	2,097	1,544
		Mean	$\frac{7,2}{12}$ 60,0%	$\frac{4,4}{6}$ 73,3%	$\frac{5,7}{12}$ 47,5%	$\frac{4,0}{6}$ 66,7%
11	**COMPREHENSION** Reading 2 short sentences, describing something, choose the correct word. High-level metacognitive engagement, use of schemata and knowledge of the vocabulary are necessary to be successful. A language difficulty, or a limited vocabulary could cause reading comprehension difficulties.	KR 14	0,374	0,401	0,436	0,429
		Error of measurement	0,922	0,842 21,1%	0,938	0,804 20,1%
		KR 8	0,632	0,673	0,661	0,700
		Standard deviation	1,166	1,087	1,248	1,065
		Mean	$\frac{3,6}{5}$ 72,0%	$\frac{2,7}{4}$ 67,5%	$\frac{3,3}{5}$ 66,0%	$\frac{2,8}{4}$ 70,0%

TABLE 3.6   Reliability coefficients, error of measurement, standard deviation and mean :
Stories

Gr 1 – stories

	ORIGINAL BEN	SELECTED BEN	ORIGINAL TUB	SELECTED TUB	ORIGINAL FLAP
KR 14	0,725	0,707	0,717	0,665	0,600
Error of measurement	1,520	1,189 14,9	1,497	1,210 15,1%	1,557
KR 8	0,775	0,782	0,769	0,751	0,679
Standard deviation	2,900	2,196	2,816	2,090	2,464
Mean	7,0 58,3% 12	5,0 62,5% 8	6,3 52,5% 12	5,0 62,5% 8	6,1 50,8% 12

Beyond gr 1 - level stories

	ORIGINAL LU	SELECTED LU	ORIGINAL JIM	SELECTED JIM	ORIGINAL SAM
KR 14	0,723	0,723	0,627	0,623	0,605
Error of measurement	1,176	0,986 14,1%	1,243	1,024 14,6%	1,252
KR 8	0,787	0,802	0,722	0,772	0,710
Standard deviation	2,234	1,872	2,035	1,791	1,991
Mean	5,9 65,6% 9	5,1 72,9% 7	5,7 63,3% 9	4,9 70,0% 7	4,8 53,3% 9

Gr 2 – level stories

	ORIGINAL PAM	SELECTED PAM	ORIGINAL BIRDS	SELECTED BIRDS	ORIGINAL BRAD
KR 14	0,750	0,708	0,712	0,699	0,614
Error of measurement	1,484	1,355 11,3%	1,542	1,393 11,6%	1,583
KR 8	0,790	0,762	0,757	0,754	0,681
Standard deviation	2,971	2,508	2,873	2,541	2,548
Mean	9,7 69,3% 14	8,8 73,0% 12	9,4 67,1% 14	8,5 70,8 12	7,6 54,3% 14

Gr 3 - level stories

	ORIGINAL BOB	SELECTED BOB	ORIGINAL MATT	SELECTED MATT	ORIGINAL ROB
KR 14	0,597	0,660	0,706	0,723	0,616
Error of measurement	1,724	1,242 12,4%	1,578	1,230 12,3%	1,519
KR 8	0,671	0,733	0,770	0,780	0,691
Standard deviation	2,716	2,129	2,911	2,335	2,450
Mean	10,3 60,1% 17	7,3 73,0% 10	10,1 59,4% 17	7,3 73,0% 10	9,5 55,9% 17

(d)   *Reliability*

As was discussed in Chapter 2, the validity of a test is limited by its reliability.   Whereas a
valid test is necessarily reliable, a reliable test is not always a valid one.

For the purpose of the research the KR-8 and KR-14 formulas were applied to establish the reliability coefficients and the standard error of measurement. It should be remembered that although the KR-formulas are regarded the best formulas to judge reliability, they tend to produce an underestimate of the reliability coefficient if the items are not homogeneous, and also if the difficulty values of the tests are not the same. Owen (1996:63) declares that an instrument with a reliability coefficient of 0,600 could provide useful information when interpreted with care and expertise, but mentions instances where a reliability coefficient as low as 0,300 provided useful information.

In **Tables 3.5** and **3.6** it can be seen that the KR-8 reliability coefficients of the selected items of the diagnostic reading materials, *Let us Read*, were all above 0,600.

The reliability coefficients for the selected items range from:

0,624 to 0,813 (Form X, sub-sets 1 – 11)

0,673 to 0,829 (Form Z, sub-sets 1 – 11)

0,751 to 0,782 (Gr 1 story-level)

0,772 to 0,802 (Beyond gr 1 story-level)

0,754 to 0,762 (Gr 2 story-level)

0,733 to 0,780 (Gr 3 story-level)

The diagnostic reading materials developed in this research could therefore be regarded as providing useful and reliable information regarding the reading competencies of beginning readers.

(e) *Standard error of measurement*

The standard error of measurement (SEM) expresses the reliability of the instrument in another way – the higher the SEM the higher the fluctuation of the learner's scores, and the less reliable the test. In **Tables 3.5** and **3.6** it can be seen that the standard error of measurement for the diagnostic reading materials could be regarded as satisfactory:

Form X sub-sets 1 – 6   60 selected items   SEM ranges between 9,1% - 12,7%

Form Z sub-sets 1 – 6	60 selected items:	SEM ranges between 9,2% - 11,3%
Form X sub-set 7	9 selected items:	SEM 8,5%
Form Z sub-set 7	9 selected items:	SEM 9,7%
Form X sub-set 8	5 selected items:	SEM 13,5%
Form Z sub-set 8	5 selected items:	SEM 13,5%
Form X sub-set 9	7 selected items:	SEM 12,2%
Form Z sub-set 9	7 selected items:	SEM 11,5%
Form X sub-set 10	6 selected items:	SEM 16,3%
Form Z sub-set 10	6 selected items:	SEM 16,8%
Form X sub-set 11	4 selected items:	SEM 21,1%
Form Z sub-set 11	4 selected items:	SEM 20,1%

Gr 1 level stories	8 selected items each: SEM ranges between 14,1%-15,1%
Ben; Tub	
Beyond gr 1 level stories	7 selected items each: SEM ranges between 14,1%-14,6%
Lu and Jo; Jim	
Gr 2 level stories	12 selected items each: SEM ranges between 11,3%-11,6%
Pam; Birds	
Gr 3 level stories	10 selected items each: SEM ranges between 12,3%-12,4%
Bob; Matt	

(f)   *Mean and Standard deviation*

In **Table 3.5** indicates that Form X had one sub-set with a mean of above 90%, seven sub-sets with means between 80-89%, two sub-sets with means between 70-79% and one sub-set with a mean below 70% (67,5%), whilst Form Z had eight sub-sets beteen 80-89%, two sub-sets with means below 70% (66,7%). However, it is clear that the sub-sets are not totally parallel, with the difference between means of the same sub-sets on Form X and Z varying between 2% and 7%.

The Grades 1 and 3 level stories had the same mean for both stories (respectively 62,5% and 73,0%), as indicated in **Table 3.6**. The beyond Grade 1-level stories had

means of respectively 72,9% and 70,0%, whilst the Grade 2 stories had means of 73,0% and 70,8%. For the stories on the same grade level, the difference in means varies between 0,0% and 2,9%, which could be accepted as satisfactory.

Tables 3.5 and **3.6** indicate that the differences in standard deviation of sub-sets A1-11 (Forms X and Z) as well as the stories vary between 0,000 and 0,444. The differences between the standard deviation is 0,0 for one sub-set; between 0,022 and 0,093 for six sub-sets; 0,106 for one sub-set; between 0,206 and 0,298 for four sub-sets; between 0,324 and 0,349 for two sub-sets and 0,444 for one sub-set.

(g)   *Difficulty level*

Table 3.7 indicates that 88% of the items dealt with by Grade 2 learners in the sub-sets 1– 11 on Form X and 84,7% on Form Z ranged between 70 – 99%. However, performance was notably poorer in the comprehension questions on the stories, suggesting that the questions should be simplified: For the story *Ben and Ken*, only 25% of the questions were answered correctly by 70 – 79% learners and 50% of the questions drew only 50 – 59% correct responses, with a mean of 62,5% (**Table 3.5**). For *Tub and Tod* 12,5% questions fell in the range 70 – 79%, 37,5% in 60 – 69% and 50% in 50 – 59%, with a mean of 62,5% (**Table 3.5**).

The stories developed to be more advanced, *Lu and Jo* and *Jim*, drew better following performances by Grade 2 learners, with a mean of 72,9% for *Lu and Jo* and 70,0% for *Jim*, the latter even having a question in the 90 – 99% difficulty range and only one in 50 – 59%.

Judging by the performance profile of the Grade 3 and 4 learners, they appear decidedly more at ease with comprehension tasks, and the *Let us Read* materials appear correspondingly more appropriate. For both the Grade 2 level stories (read by Grade 3 learners) 58,33% of the questions fell in the 70 – 89% range, and the Grade 4 learners obtained a mean score of 73% for both the Grade 3 stories (**Table 3.6**).

TABLE 3.7   Difficulty levels : Number of items per 10% -range

	Total items	Difficult ←————————————————————→ Easy										
		40 – 49 %		50 – 59 %		60 – 69 %		70 – 79 %		80 – 89 %		90 – 99 %	
		X	Z	X	Z	X	Z	X	Z	X	Z	X	Z
Gr 1 Materials													
Sub-set 1	10	-	-	-	-	1	1	1	1	3	4	5	4
Sub-set 2	10	-	-	-	-	-	1	2	5	6	1	2	3
Sub-set 3	10	-	-	-	1	1	-	1	2	4	4	4	3
Sub-set 4	10	-	-	-	-	-	-	1	-	7	6	2	4
Sub-set 5	10	-	-	-	-	-	-	3	2	5	6	2	2
Sub-set 6	10	-	-	1	-	3	4	3	1	2	2	1	3
Sub-set 7	9	-	-	-	-	-	-	-	1	4	4	5	4
Sub-set 8	5	-	-	-	1	-	-	1	-	3	2	1	2
Sub-set 9	7	-	-	-	-	-	-	1	-	4	6	2	1
Sub-set 10	6	-	-	-	2	3	2	1	1	2	1	-	-
Sub-set 11	4	-	-	1	1	1	1	2	1	-	1	-	-
Sub-sets 1 – 11	91	-	-	2	5	9	9	16	14	40	37	24	26
(%)		-	-	2,1	5,4	9,9	9,9	17,6	15,4	44,0	40,7	26,4	28,6
Gr 1													
Ben & Ken	8	-	-	4	-	2	-	2	-	-	-	-	-
Tub & Tod	8	-	-	-	4	-	3	-	1	-	-	-	-
Beyond Gr 1													
Lu & Jo	7	-	-	-	-	3	-	3	-	1	-	-	-
Jim	7	-	-	-	1	-	3	-	2	-	-	-	1
Gr 2													
Pam	12	-	-	2	-	3	-	2	-	5	-	-	-
Birds	12	-	1	-	1	-	3	-	5	-	2	-	-
Gr 3													
Bob	10	-	-	2	-	2	-	2	-	4	-	-	-
Matt	10	-	-	-	2	-	-	-	6	-	2	-	-

The difficulty values of the various subsets are therefore not homogeneous and this factor would obviously lead to an underestimated reliability coefficient. The comprehension exercises especially require some adaptations.

(h)   Discrimination indices (item – criterion correlations)

Owen (1996:102) describes the perception of Cronbach that, since the reading abilities of no learner are homogeneous, it is not an indication of test content failure when some items have a low item correlation.

Table 3.8 contains a summary of the discrimination indices or the item – criterion correlations of the entire set of diagnostic reading materials. The table indicates how many items per sub-

set of the different forms (X and Z), as well as the various stories have item - criterion correlations below 0,189; 0,190 – 0,199; 0,200 – 0,299; 0,300 – 0,399; 0,400 – 0,499 and above 0,500.

TABLE 3.8   Index of Discrimination

	Total items	Below 0,189 Poor items - need revision		Between 0,190 – 0,199 Poor items – need revision		Between 0,200 – 0,399 Marginal		Between 0,300 – 0,399 Good Items		Between 0,410 – 0,499 Very good items		Above 0,500 Very good items	
Gr 1 Materials		X	Z	X	Z	X	Z	X	Z	X	Z	X	Z
Sub-set 1	10	2	1	-	-	6	3	2	3	-	1	-	2
Sub-set 2	10	-	-	-	-	4	-	2	3	3	4	1	3
Sub-set 3	10	2	-	-	2	7	4	1	3	-	1	-	-
Sub-set 4	10	-	3	-	-	2	3	2	4	3	-	3	-
Sub-set 5	10	-	1	-	-	-	3	4	3	4	1	2	2
Sub-set 6	10	1	-	-	2	5	5	4	2	-	1	-	-
Sub-set 7	9	3	-	1	-	5	3	-	2	-	4	-	-
Sub-set 8	5	-	-	-	-	3	3	2	1	-	1	-	-
Sub-set 9	7	1	-	-	-	3	3	2	3	1	1	-	-
Sub-set 10	6	1	-	-	-	2	2	3	4	-	-	-	-
Sub-set 11	4	2	1	-	-	1	2	1	1	-	-	-	-
Sub-sets 1–11	91	12	6	1	4	38	31	23	29	11	14	6	7
(%)		13,19	6,59	1,09	4,4	41,8	34,1	25,3	31,9	12,1	15,4	6,6	7,7
Gr 1													
Ben & Ken	8	-	-	-	-	3	-	1	-	2	-	2	-
Tub & Tod	8	-	-	-	-	-	3	-	2	-	3	-	-
Beyond Gr 1													
Lu & Jo	7	-	-	-	-	1	-	2	-	2	-	2	-
Jim	7	-	-	-	-	-	1	-	3	-	1	-	2
Gr 2													
Pam	12	1	-	1	-	1	-	5	-	4	-	-	-
Birds	12	-	-	-	1	-	3	-	5	-	3	-	-
Gr 3													
Bob	10	-	-	-	-	4	-	5	-	1	-	-	-
Matt	10	-	1	-	1	-	-	-	2	-	4	-	2

Form X contains 44% of items which qualify as good, 41,8% as satisfactory and 14,2% which require revision. On Form Z 55% of the items are good, 34,1% are satisfactory and 10,9% require revision. In the stories for the Grade 1 level, 62,5% of the items are good and 37,5% are satisfactory. In the stories beyond the Grade 1 level, 85,7% of the items are good and 14,3% are satisfactory. In the Grade 2 stories 70,8% items are good, 16,7% are satisfactory and 12,5% require revision. In the Grade 3 stories 70,0% items are good, 20,0% are

and 12,5% require revision. In the Grade 3 stories 70,0% items are good, 20,0% are satisfactory and 10,0% require revision.

It could therefore be concluded that the diagnostic reading materials discriminated well. The small percentage of items below 0,200 were reconsidered and adapted as necessary, or rejected.

(i) *Distribution of errors per error type*

Let us Read would not truly be suitable for diagnostic use if interpretation is based on the scores alone. Contemplating the frequency distribution of the various possible errors represented by the distracters could significantly enhance the value of the materials.

The frequency distribution per error type, discussed in **Tables 3.9 – 3.28,** could support an interpretation distinguishing between what could be regarded as a "normal" amount of error for learners in the Foundation Phase and what might raise concern as an indication of a possible reading difficulty.

Figure 3.2 contains the error types and number of possible errors per type for Forms X and Z.

FIGURE 3.2: Number of errors per error type

Error type	X Possible errors	X Maximum errors made	Z Possible errors	Z Maximum errors made
(1) Letter reversals b x d x p x q	22	5	25	9
(2) Letter reversals (t x f; w x m; n x u)	3	1	7	3
(3) Word reversals (on x no)	23	4	19	5
(4) Sequence errors pets x pest	33	10	33	9
(5) Visual discrimination (n x m)	9	3	7	2
(6) Auditory difficulties	76	23	73	22
(7) Digraphs th x wh x ch x sh	14	4	16	6
(8) Schemata	29	7	30	7
(9) Lexicon (meaning vocabulary)	21	6	18	7
(10) Comprehension errors	93	18	93	17
Total possible errors (1-10)	323		321	

It should be remembered that the learners who were assessed were in February or even March

of the grade subsequent to that targeted by the materials. The differences in the maximum possible number of errors per error type would seem to indicate that Forms X and Z are not totally parallel for all error types. The high level of comparability between the maximum errors actually made on those error types which do approximate each other closely in number (i.e. No's 4,6,8 and 10) would suggest it a worthwhile exercise to equalise the possible error numbers per error type in the final version.

The frequency distribution analysis of the various error types in the paragraphs for Grade 1 and beyond Grade 1 level accidentally failed to include all learners in the sample. Information on these stories will therefore not be used.

(i)   *Grade 1 level materials: Perceptual errors per error type*

TABLE 3.9a: b x d x p x q reversals – Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	66	35,1	66	35,1
1	51	27,1	117	62,2
2	36	19,1	153	81,4
3	14	7,4	167	88,8
4	10	5,3	177	94,1
5	11	5,9	188	100,00

TABLE 3.9b: b x d x p x q reversals - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	1	0,6	1	0,6
1	56	35,2	57	35,8
2	43	27,0	100	62,9
3	29	18,2	129	81,1
4	12	7,5	141	88,7
5	11	6,9	152	95,6
6	4	2,5	156	98,1
7	1	0,6	157	98,7
8	1	0,6	158	99,4
9	1	0,6	159	100,00

Not surprisingly, b x d x p x q letter reversals still occurred rather frequently among these Grade 2 learners, with 5,9% learners making 5 such reversals each on Form X, and 4,3% learners between

six and nine errors on Form Z. Whereas 35,1% learners had no b̲ x d̲ x p x q̲ reversals on Form X, only a very small number (0,6%) on Form Z succeeded in steering safely through these pitfalls. The reason for the large discrepancy in the performance of the learners on the two forms is not clear.

Judging by the large number of learners (81,4% and 81,1%) who succeeded in committing only two (Form X) or three (Form Z) errors and the clear change in the pattern of the frequency distribution at these points, it would seem safe to say that learners in early Grade 2 who make four or more b̲ x d̲ x p x q̲ errors on sub-sets 1 – 6 might require preventative learning support.

TABLE 3.10a: f̲ x t̲; n̲ x u̲; w̲ x m̲ reversals - Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	177	94,1	177	94,1
1	11	5,9	188	100,00

TABLE 3.10b: f̲ x t̲; n̲ x u̲; w̲ x m̲ reversals - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	113	71,5	113	71,5
1	39	24,7	152	96,2
2	5	3,2	157	99,4
3	1	0,6	158	100,00

TABLE 3.10c: f̲ x t reversals - *Ben and Tub*

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	174	92,1	174	92,1
1	15	7,9	189	100,00

The occurrence of f̲ x t̲; w̲ x m̲ and n̲ x u̲ letter reversals was less common and was almost exclusively observed in consonant blends such as t̲lat for f̲lat (**Table 3.3**). It would therefore seem that even a single reversal of this nature at the Grade 2 level should be taken to indicate a need for learning support.

TABLE 3.11a: Word reversals – Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	108	57,4	108	57,4
1	52	27,7	160	85,1
2	20	10,6	180	95,7
3	6	3,2	186	98,9
4	2	1,1	188	100,00

TABLE 3.11b: Word reversals - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	101	63,5	101	63,5
1	35	22,0	136	85,5
2	17	10,7	153	96,2
3	5	3,1	158	99,4
5	1	0,6	159	100,00

Word reversals (saw/was) on the other hand, occurred more frequently, with the bottom 4,3% of learners making between three and four errors on Form X and the bottom 3,7% making between three and five errors on Form Z, and a further 10,6 (X) and 10,7 (Z) learners making two word reversals. The fact that 27,7% (Form X) and 22,0% (Form Z) of learners had one word reversal might suggest that isolated word reversals could still be expected early in Grade 2.

TABLE 3.12a: Letter sequence - Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	30	16,0	30	16,0
1	40	21,3	70	37,2
2	35	18,6	105	55,9
3	32	17,0	137	72,9
4	18	9,6	155	82,4
5	16	8,5	171	91,0
6	5	2,7	176	93,6
7	6	3,2	182	96,8
8	1	0,5	183	97,8
9	1	0,5	184	97,9
10	4	2,1	188	100,0

TABLE 3.12b: Letter sequence - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	1	0,6	1	0,6
1	20	12,7	21	13,4
2	45	28,7	66	42,0
3	32	20,4	98	62,4
4	28	17,8	126	80,3
5	16	10,2	142	90,4
6	9	5,7	151	94,2
7	3	1,9	154	98,1
8	1	0,6	155	98,7
9	2	1,3	157	100,00

TABLE 3.12c: Letter Sequence – *Lu and Jo* and *Jim*

Errors/learner Sub-set 7 – 11	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	137	81,1	137	81,1
1	27	16,0	164	97,0
2	4	2,4	168	99,4
3	1	0,6	169	100,00

Letter sequence errors (post x pots x stop x tops) often occurred, with respectively the bottom 6,3% and 3,8% learners on Forms X and Z making more than seven such errors. A similar discrepancy as with the b x d x p x q letter reversals was noted, since only 0,6% learners made no sequence error on Form Z, compared with 16,0% on Form X. A further 77,7% learners made between one and six letter sequence errors on Form X, and 95,5% learners made between one and six letter sequence errors on Form Z.

The frequency distribution was also analysed for the stories *Lu and Jo*, and *Jim*.

Looking at the performance on the stories, context would seem to support the learners to avoid making letter sequence errors. No errors were made by 81,1% learners, and only one error was made by a further 16,0%. A clear cut-off point in terms of frequency of error again puts two to three errors in the 3% specific learning disability category.

More than one letter sequence error in context thus seems to be an indication of a need for learning support, and in Forms X and Z more than four such errors would be an indication of a need for preventative learning support.

TABLE 3.13a: Visual discrimination - Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	152	80,9	152	80,9
1	32	17,0	184	97,9
2	3	1,6	187	99,5
3	1	0,5	188	100,0

TABLE 3.13b: Visual discrimination - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	141	88,7	141	88,7
1	15	9,4	156	98,1
2	3	1,9	159	100,0

Learners from the sample did not seem to have **visual discrimination** difficulties. On Form X, the bottom 2,1% of the learners made two and three errors and 17,0% had one error; 80,9% made no mistake at all. Form Z showed comparable results: The bottom 1,9% had three errors and 9,4% had one error; a high 88,7% learners had no visual discrimination error at all. It should thus be regarded as a significant indication of a possible difficulty if even one visual discrimination error occurs in Grade 2.

TABLE 3.14a: Recognition of digraphs th x wh x sh x ch - Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	122	64,9	122	64,9
1	30	16,0	152	80,9
2	20	10,6	172	91,5
3	9	4,8	181	96,3
4	7	3,7	188	100,00

TABLE 3.14b: Recognition of digraphs th x wh x sh x ch - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	16	10,1	16	10,1
1	85	53,5	101	63,5
2	25	15,7	126	79,2
3	19	11,9	145	91,2
4	9	5,7	154	96,9
5	3	1,9	157	98,7
6	2	1,3	159	100,00

Only the top 10% learners on Form Z recognised all digraphs correctly, whereas 64,9% learners were successful with all items on Form X. The reason for the discrepancy is not clear. A more comparable statistic is the top 80,9% of learners on Form X who had only one error and the top 79,2% of learners who had 0-2 errors on Form Z. The bottom 3,7% learners with four digraph errors on Form X and 3,2% on Form Z with five or six might again represent the international figure for specific learning disability.

TABLE 3.15a: Auditory analysis and synthesis - Form X

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	23	12,2	23	12,2
1	23	12,2	46	24,5
2	28	14,9	74	39,4
3	27	14,4	101	53,7
4	28	14,9	129	68,6
5	16	8,5	145	77,1
6	8	4,3	153	81,4
7	13	6,9	166	88,3
8	4	2,1	170	90,4
9	6	3,2	176	93,6
10	2	1,1	178	94,7
11	1	0,5	179	95,2
12	2	1,1	181	96,3
13	2	1,1	183	97,3
15	2	1,1	185	98,4
17	1	0,5	186	98,9
21	1	0,5	187	99,5
23	1	0,5	188	100,0

TABLE 3.15b: Auditory analysis and synthesis - Form Z

Errors/learner Sub-set 1 – 6	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	1	0.6	1	0.6
1	23	14.6	24	15.2
2	33	20.9	57	36.1
3	25	15.8	82	51.9
4	20	12.7	102	64.6
5	9	5.7	111	70.3
6	15	9.5	126	79.7
7	6	3.8	132	83.5
8	4	2.5	136	86.1
9	8	5.1	144	91.1
10	4	2.5	148	93.7
11	5	3.2	153	96.8
12	3	1.9	156	98.7
13	1	0.6	157	99.4
22	1	0.6	158	100.00

Auditory analysis and synthesis difficulties would appear to be common, with respectively only 12,2% (Form X) and 0,6% (Form Z) making no error. The top 39,4% of learners on Form X and 36,1% on Form Z made two or less errors. The bottom 9,6% of learners on Form X had between nine and twenty-three errors, and the bottom 8,9% on Form Z had ten to twenty-two. The data would seem to suggest that learners found it especially difficult to omit or add a sound to a word and to blend consonants.

(ii)   Grade 1 level materials: Higher-order cognitive skills

TABLE 3.16a: Schemata - Form X

Errors/learner Sub-set 7 – 11	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	42	22,1	42	22,1
1	50	26,3	92	48,4
2	39	20,5	131	68,9
3	24	12,6	155	81,6
4	17	8,9	172	90,5
5	11	5,8	183	96,3
6	5	2,6	188	98,9
7	2	1,1	190	100,00

TABLE 3.16b: Schemata – _Lu and Jo_ and _Jim_

Errors/learner Sub-set 7 – 11	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	130	76,9	130	76,9
2	35	20,7	165	97,6
4	4	2,4	169	100,0

Utilisation of schemata can only be discussed for Form X since the results seem to have been accidentally duplicated for Form Z. The bottom 3,7% learners had six to seven errors on discrete items because they were unable to utilise their schemata effectively. The next 5,8% (cumulative percentage 9,4%) had five errors and a further 8,9% (cumulative percentage 18,3%) had four errors related to schemata. Only 48,4% had 0 - 1 error. Looking at the performance on the stories, context would, however, seem to support the utilisation of schemata: No errors were made by 76,9% learners, and one error was made by 20,7%. The bottom 2,4% of learners made four errors.

TABLE 3.17a: Vocabulary - Form X

Errors/learner Sub-set 7 – 9	Frequency	Percentage	Cumulative frequency	Cumulative percentage
1	2	1,1	2	1,1
2	83	43,9	85	45,0
3	68	36,0	153	81,0
4	28	14,8	181	95,8
5	7	3,7	188	99,5
6	1	0,5	189	100,00

TABLE 3.17b: Vocabulary - Form Z

Errors/learner Sub-set 7 – 9	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	63	39,6	63	39,6
1	42	26,4	105	66,0
2	28	17,6	133	83,6
3	16	10,1	149	93,7
4	7	4,4	156	98,1
5	1	0,6	157	98,7
7	2	1,3	159	100,00

In the frequency distribution analysis of errors regarding meaning vocabulary or lexicon, the

bottom 4,2% learners experienced difficulties with 5 – 6 questions on Form X, and 1,9% with 5 – 7 questions on Form Z.

No separate analysis could be made for L1 and L2 speakers on account of sampling deficiencies, which is a serious shortcoming in this research.

TABLE 3.18a: Comprehension - Form X

Errors/learner Sub-set 7 – 11	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	8	4,2	8	4,2
1	20	10,6	28	14,8
2	33	17,5	61	32,3
3	24	12,7	85	45,0
4	22	11,6	107	56,6
5	19	10,1	126	66,7
6	17	9,0	143	75,7
7	18	9,5	161	85,2
8	6	3,2	167	88,4
9	2	1,1	169	89,4
10	6	3,2	175	92,6
11	3	1,6	178	94,2
12	3	1,6	181	95,8
13	2	1,1	183	96,8
15	1	0,5	184	97,4
17	4	2,1	188	99,5
18	1	0,5	189	100,00

TABLE 3.18b: Comprehension - Form Z

Errors/learner Sub-set 7 – 11	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	5	3,2	5	3,2
1	18	11,3	23	14,5
2	21	13,2	44	27,7
3	23	14,4	67	42,1
4	19	12,0	86	54,1
5	15	9,4	101	63,5
6	17	10,7	118	74,2
7	14	8,8	132	83,0
8	8	5,0	140	88,0
9	3	1,9	143	89,9
10	3	1,9	146	91,8
11	3	1,9	149	93,7
12	2	1,3	151	95,0
13	2	1,3	153	96,3
15	1	0,6	154	96,9
16	4	2,5	158	99,4
17	1	0,6	159	100,0

Forms X and Z appear to compare very well for comprehension difficulties on discrete items. The bottom 2,6% and 3,1% learners on respectively Form X and Z made more than seventeen (X) or sixteen (Z) errors and would seem to experience severe reading comprehension difficulties. A further 4,8% (cumulative frequency 7,4%) on Form X and 5,1% (cumulative frequency 8,2%) on Form Z made 11 - 15 errors. The top 14,8% (Form X) and 14,5% (Form Z) made 0 – 1 errors.

(iii)   Grade 2 materials (Stories): Perceptual skills

TABLE 3.19a: b x d x p x q reversals – Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	177	94,1	177	94,1
1	11	5,9	188	100,0

TABLE 3.19b: f x t, n x u, w x m reversals – Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	175	93,1	175	93,1
1	13	6,9	188	100,0

The learners in the sample were all in February of their Grade 3 school year. It appears significant that respectively 5,9% and 6,9% learners still made a single b x d x p x q and/or t x f; w x m; n x u letter reversal, whilst the rest made no reversal of any kind. Learners who make even one letter reversal at this stage should be watched carefully, since this error type was so uncommon on these diagnostic reading materials.

Table 3.20: Sequential errors - Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	136	72,3	136	72,3
1	41	21,8	177	94,1
2	10	5,3	187	99,5
3	1	0,5	188	100,0

Regarding sequential errors (e.g. <u>lots</u> x <u>lost</u>), 0,5% learners made as many as three and 5,3% made two. Only 72,3% learners made none at all. It could be deduced that this is a skill still requiring attention in reading instruction at this level. An occasional letter sequence error should apparently not be regarded as a significant indicator of reading difficulty early in Grade 3.

TABLE 3.21: Visual discrimination - Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	82	43,6	82	43,6
1	71	37,8	153	81,4
2	26	13,8	179	95,2
3	8	4,3	187	99,5
4	1	0,5	188	100,0

Visual discrimination errors (slight differences in words or letters, e.g. <u>feathers</u> x <u>fathers</u>; <u>west</u> x <u>vest</u>) would also seem still to be relatively common at this grade level. Only 43,6% learners made no visual discrimination error and 4,8% made as many as 3 – 4. The data suggest that the occasional visual discrimination error should be accepted as normal.

(iv)   Grade 2 level materials: Higher-order cognitive skills

TABLE 3.22: Making inferences - Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	4	2,1	4	2,1
1	48	25,5	52	27,7
2	44	23,4	96	51,1
3	42	22,3	138	73,4
4	24	12,8	162	86,2
5	18	9,6	180	95,7
6	6	3,2	186	98,9
7	1	0,5	187	99,5
8	1	0,5	188	100,0

Making inferences would presently seem a too advanced skill for most learners early in this grade level, since only 27,7% succeeded in making 0 – 1 error and 71,2% made 1 – 3 errors (respectively

25,5%, 23,4% and 22,3% of the learners). The bottom 4,2% learners made 6 – 8 errors. It could perhaps be concluded that the development of inferential skill receives limited attention in learning facilitation at this stage. This is certainly a cognitive skill which should be emphasised. Teachers should be guided in how to teach their learners to read strategically and make inferences.

TABLE 3.23: Utilising schemata - Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	8	4,3	8	4,3
1	75	39,9	83	44,1
2	43	22,9	126	67,0
3	37	19,7	163	86,7
4	18	9,6	181	96,3
5	6	3,2	187	99,5
6	1	0,5	188	100,0

The utilisation of schemata likewise would seem to present some difficulty for the majority of learners in early Grade 3. Only 44,1% learners made 0 – 1 error. On the reading difficulty side of the scale, 3,7% made 5 – 6 errors. Facilitation in the skill of utilising pre-knowledge would seem recommended.

TABLE 3.24: Language - Grade 2 stories : *Pam* and *Birds*

Grade 2 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	52	27,7	52	27,7
1	50	26,6	102	54,3
2	44	23,4	146	77,7
3	26	13,8	172	91,5
4	9	4,8	181	96,3
5	6	3,2	187	99,5
6	1	0,5	188	100,0

Language errors noted in the Grade 2 stories pertain to the understanding of idioms (e.g. a blue eyed boy) or lexicon (e.g. helpless, stalks etc). The possibility of a somewhat slight reflection of the L1 : L2 proportion in the sample of this group (61,2% : 38,8% - **Table 3.1**) still merits some consideration on the grounds of the cut between the frequencies for two and three errors (0 errors - 27,7%; 1 error - 26,6%; 2 errors - 23,4% ↔ 3 errors; 13,8%).

L2 difficulties as well as language disability might be contained in the lower 3,7% indicated by 5 – 6 errors.

(v)   Grade 3 materials (Stories): Perceptual skills

TABLE 3.25: Visual discrimination - Grade 3 stories : *Bob* and *Matt*

Grade 3 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	135	79,4	135	79,4
1	32	18,8	167	98,2
2	3	1,8	170	100,0

It should be noted that the learners who constituted this sample were all in February - March of their fourth school year.

The frequency distribution pattern leaves little doubt that the 1,8% Grade 4 learners who made two visual discrimination errors are contending with a learning and reading problem, but the teacher would be wise also to pay special attention to the 18,8% learners who made one error.

(vi)   Grade 3 level materials : Higher-order cognitive skills

TABLE 3.26: Making inferences - Grade 3 stories : *Bob* and *Matt*

Grade 3 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	32	19,9	32	19,9
1	35	21,7	67	41,6
2	34	21,1	101	62,7
3	25	15,5	126	78,3
4	17	10,6	143	88,8
5	6	3,7	149	92,5
6	5	3,1	154	95,7
7	3	1,9	157	97,5
8	3	1,9	160	99,4
9	1	0,6	161	100,0

The learners in this age group also seemed to find it difficult to answer inferential questions. Only

41,6% learners had 0 – 1 error. A rather considerable proportion (11,2%) had five or more errors and 2,5% had as many as 8 – 9.

TABLE 3.27: Utilising schemata - Grade 3 stories : *Bob* and *Matt*

Grade 3 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	76	47,2	76	47,2
1	60	37,3	136	84,5
2	21	13,0	157	97,5
3	4	2,5	161	100,0

As with the learners assessed on the Grade 2 stories, a considerable number of these learners (15,5%) apparently failed to use their pre-knowledge, or indeed demonstrated some lack of pre-knowledge. These statistics confirm the need to pursue possibly context-related factors in higher-order reading incompetence of South African learners, using the *Let us Read* materials in comparative research.

TABLE 3.28: Language - Grade 3 stories : *Bob* and *Matt*

Grade 3 level stories Errors/learner	Frequency	Percentage	Cumulative frequency	Cumulative percentage
0	28	17,5	28	17,5
1	41	25,6	69	43,1
2	47	29,4	116	72,5
3	18	11,3	134	83,8
4	16	10,0	150	93,8
5	9	5,6	159	99,4
6	1	0,6	160	100,0

These data on discrete items of language knowledge (**Table 3.28**) would seem to reflect the L1 : L2 proportion of the Grade 4 sample (68,8% : 31,2% - **Table 3.1**) more closely in the cut between two errors (72,5%) and three or more errors (27,5%) and the frequency pattern of 0 errors - 17,5%; 1 error - 25,6%; 2 errors - 29,4% ↔ 3 errors - 11,3% than with Grade 3 sample on Grade 2 stories (**Table 3.24**) .

3.3 CONCLUSION

In Chapter Three the statistical properties of the experimental application of the diagnostic reading materials, *Let us Read*, Forms X and Z, and the various stories on each grade level, were examined.

The performance of a limited sample of learners in early Grade 2 – 4 was analysed in order to make an item selection and to observe the characteristics regarding reliability and validity of the diagnostic tool. The means, standard deviations, errors of measurement and the item correlations and item discrimination values were discussed, and the frequency distribution of errors per specific error type was discussed.

CHAPTER FOUR

SUMMARY, LIMITATIONS OF THE RESEARCH, FINAL CONCLUSIONS AND RECOMMENDATIONS

4.1 SUMMARY AND CONCLUSIONS OF INVESTIGATION

4.1.1 Orientation

The research was undertaken because a need exists for diagnostic English reading materials for South African learners in the Foundation Phase.

The ultimate aim of the research was to develop a valid, reliable and practical diagnostic reading tool with appropriate sub-sets at the appropriate levels for our heterogenous population of South African learners in Grades 1 - 3. This tool has specifically been designed to be used by the regular class teacher to direct the planning of further facilitation of language development and learning support where reading difficulties become apparent.

4.1.2 Summary

In Chapter One the place of reading and the importance of the early identification of learners with a reading difficulty were discussed; the statement of the problem emphasised the need for the design and development of diagnostic English reading materials on the one hand, but also gave some vision of the complexity of the task of designing a reading tool that would fulfill the aim of the research. An integrative approach to theory, praxis and practice was envisaged.

The theoretical issues concerning various models and theories of beginning reading and the principles of conventional and authentic reading assessment, existing instruments of reading assessment and test development were examined by means of a review of the recent, relevant literature in Chapter Two. Green print indicated the integration of praxis and practice with theory and red print indicated the requirements or criteria to consider in the test design.

The outcome of the above-mentioned integration was a set of diagnostic English reading materials and a manual for its experimental application (*Let us Read* : Experimental

Regarding the practicability of the materials, the original set and also the selected items for the proposed adaptation were found to be practical and cost-effective, and to assist the regular class teacher in the timeous identification of learners with possible reading difficulties and a better understanding of the reading performance of learners. The participating teachers were all experienced teachers, yet commented freely that after observing their learners' test behaviour and performance and the diagnostic analysis of their incorrect responses, they understood the learners and their reading behaviour better, and they expressed the wish to have the materials at their schools. *Let us Read* supports the process of authentic, formative, continuous and dynamic assessment, helping teachers to verify their identification of learners with possible reading difficulties. Teachers should be encouraged to apply the diagnostic assessment model of the materials in analysing and interpreting their learners' performance in class generally.

However, while the materials were experimentally administered, the researcher observed the behaviour of those learners, and noted that a small group seemed to find the reading tasks very difficult. The researcher would have preferred to assess these learners individually, not only to do an oral reading exercise, but also to obtain information regarding the written performance. Teachers admittedly do listen to the reading of each learner individually from time to time, but the text could have been memorised. It is expected that some learners would still need to be assessed by reading experts. Since no South African based diagnostic English reading assessment tool suitable for all learners exists, development of a further tool for individual application should be recognised as a necessary culmination of the present research.

A tool containing a written exercise and a text with questions for oral reading was indeed designed, but not experimentally administered. It has been included in the manual of the set of materials submitted to the examiners under separate cover. It is recommended that these tests be used in a future study.

4.2.2 The experimental application

(1)   The sample selection

Since it was not possible to draw a scientifically stratified and randomly selected national sample, the administration of *Let us Read* to four schools only must be viewed as no more than an experimental application.

Although the experimental application and the statistical analysis of the data provided useful information and it was possible to perform an item selection, the reliability of the data was obviously compromised, and trends could only be discussed for the particular sample. The frequency distribution analysis of errors could therefore not be accepted as indicating firm cut-off points with regard to reading difficulties of various degrees.

The sample "selection" is therefore recognised as a serious limitation in the research. It is imperative that a national, stratified sample from representative educational, linguistic, cultural, socio-economic situations and balanced for gender, age and ability be drawn in accordance with scientifically valid sample selection criteria and that *Let us Read* be re-administered for a full data analysis.

(2)   Practicability

Because of the difficulties to gain access to schools over a long time, the Grade 1 materials had to be administered over a period of three days only at each school and the learners were exhausted. If the sub-sets could have been administered per one book (e.g. Form X 1-6) or even per smaller groupings of sub-sets (e.g. sub-sets 1-3, 4-6) the learners would have perceived the test as more user-friendly. This aspect would not be a practical problem when the regular class teachers administer the materials in accordance with the principle of authentic assessment.

The proposed final set of diagnostic materials furthermore contains fewer items, which should contribute to a more user-friendly, less time-consuming and more practical tool. In the data collection on a nationally stratified sample it is recommended that all Grade 1 learners complete all the sub-sets, so that their performance could be compared across them all.

(3) <u>Statistical data and information about the learners (school, age, gender performance, home language, socio-economic status</u>)

The statistical computations of the performance of the learners in the sample on *Let us Read* yielded significant and useful information regarding the item correlation and discrimination values, difficulty levels of each sub-set, the reliability coefficient of each sub-set, errors of measurement and standard deviations.

However, some basic information was not computated, which could have added to the diagnostic value of the materials. A differentiation between the performance of L1 and L2, and boys and girls, as well as a comparison between the learners' performance in class (as judged by the class teacher) and their performance on *Let us Read* would have been profitable.

A detailed frequency distribution analysis of error in a national, representative and properly stratified sample of learners, would increase the diagnostic value of the materials significantly.

4.3 RECOMMENDATIONS

4.3.1 Administration and use of the materials

To assist less experienced teachers to understand the reading of each learner in their class and to make a qualitative diagnostic interpretation and a qualitative error analysis of the reading performance, it is recommended that, after the final application of *Let us Read*, scoring stencils be developed, especially for the grouping of related errors, e.g. to determine the number of word reversals a learner still made per sub-set and across the whole set, but also for higher-order cognitive errors, such as making inferences. The emphasis should be on making a diagnostic error analysis, and not on the comparison of learners with each other. The set of stencils could be valuable to enable comparison of an individual's performance on the various sub-sets per error type. It would help the teacher to identify the learners with reading difficulties related to, *inter alia,* deficiencies in perceptual skills, language difficulties pertaining to vocabulary, difficulties in higher-order comprehension skills and specific learning disabilities.

Teachers would benefit and be sensitised to the importance of teaching a strategic approach to reading if they understood the diagnostic English reading materials. It is strongly recommended that teachers who administer the test study the manual with care and ensure that they understand the materials well before applying the tool. All example items should be explained as in the manual, to ensure that all learners have practised for the various question types.

It might prove helpful if examples of ways to render learning support to learners with regard to specific difficulties that the learners are experiencing in reading could be supplied with each scoring stencil.

4.3.2   Further research

Data collection from a nationally structured sample is imperative. The learners should deal with the appropriate diagnostic reading materials applicable to their actual grade. A further, more detailed and in-depth diagnostic analysis of the reasons why particular errors occurred and in which types of words or context, could lead to a better understanding of reading difficulties which South African learners might be experiencing as well as internationally. A better understanding of the distribution and nature of specific reading needs of learners locally could be used to direct future development of learning support programmes.

It is recommended that each item and distracter of both Forms X and Z be compared with care and changes be considered in order to equalise the possible number of errors per error types in the final version, thus ensuring a more comparable Form X and Z.

The context-related factors in higher-order reading incompetence of South African learners should be examined, using *Let us Read* in comparative research.

An experimental application on a smaller scale of the oral reading paragraphs for individual learners, including an investigation of those responses on the individual tool which contain an incorrect word, incorrect concept, or a grammar error, would contribute to the better

understanding of the difficulties which individual learners might be experiencing in learning to read English.

4.4 CONCLUSION

The diagnostic English reading materials developed in this research distinctly hold the promise of being a valid, reliable, practical instrument for the diagnostic assessment of all South African learners in the Foundation Phase who attend schools that use English as the language of learning.