A QUANTITATIVE STUDY INVESTIGATING THE COMPREHENSION SKILLS OF GRADE 4 LEARNERS IN PUBLIC SCHOOLS IN MAKHANDA.

in collaboration with GADRA Education and Rhodes University

Department of Primary and Early Childhood Education

Research Report

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Background

This report presents the comprehension skills assessment data generated in a literacy research project run by GADRA Education in partnership with the Rhodes University Department of Primary and Early Childhood Education in Makhanda. The study utilises as sample set of 1017 grade 4 learners from 20 primary schools. Thirteen quintile 1-3 schools, one quintile 4 school, 4 quintile 5 schools and 2 low-fee private primary schools participated.

The purpose of the research is to guide local, contextualised attempts to address the well documented literacy crisis. Specifically, the research attempts to: i) provide local standardised testing information for comparison with national and international norms; ii) provide formative information to schools and teachers; iii) inform proposed 'learning to read' interventions; iv) inform future research needs.

This report is anonymized to protect the schools involved in the project.

Summary

The study utilises a 62.5% benchmark level for comprehension, thus a mark of 15 or higher out of 24 falls into the category considered Able to Read for Meaning. Data shows that 40% of Grade 4 learners in Makhanda are Able to Read for Meaning.

The study clearly highlights stark differences in performance across school category and Language of Learning and Teaching (LoLT). 32% of learners attending quintile 1-4 schools were Able to Read for Meaning, while 83% of learners attending quintile 5 and low-fee private schools were Able to Read for Meaning. In relation to LoLT, of learners for whom English was the LoLT of their Foundation Phase, 62% of the total were Able to Read for Meaning. When excluding fee-paying schools from this data set, of learners attending no-fee English LoLT schools 46% are Able to Read for Meaning. Comparatively, 24% of learners attending schools where the LoLT of the Foundation Phase is isiXhosa and 19% of those attending Afrikaans LoLT schools are Able to Read for Meaning.

Introduction

There is much research to support the statement that "literacy, built upon a firm foundation of basic reading, is used as one of the primary measures of school efficacy" (Pretorius et al, 2016; p.4). Weak reading has been linked to lack of scholastic achievement, low self-esteem, discipline issues as well as high levels of school dropout (Connor et al, 2014). According to the Programme for International Student Assessment (PISA) the primary aims of reading are "to achieve one's goals, develop one's knowledge and potential and to participate in society" (2000). Learning to read can thus be described as a fundamental skill which enables not only active participation in curriculum but also forms the basis for lifelong success and opportunity (Hulme & Snowling, 2011).

Evidence suggests that if learners have not reached expected levels of proficiency in 'learning to read' strategies in the early years of schooling, there will be little to no improvement in reading ability without intervention or remediation (Lonigan & Anthony, 2000; Bigozzi et al, 2017; Pretorius et al, 2016; Friedman & Kern, 2009). It is important to note that in the South African context the national Curriculum and Assessment Policy statement (CAPs) assumes learners have successfully learnt to read by the end of Grade 3 and thus does not include any explicit teaching of how to read from Grade 4 onwards, where the focus switches to developing comprehension and semantic skills.

This research project has been approached with the express purpose of developing understandings which can be used to meaningfully guide attempts to address local literacy challenges and to enhance positive outcomes. For this reason, the research has been strategically situated at a Grade 4 level. This allows for insight into the support and intervention that may be required to ensure that learners who are still unable to read receive effective extra-curricular support before they reach the end of their Primary School years. Research at this level also allows for insight into gaps which may exist in the Foundation Phase of schooling where the focus is on learning to read.

Data collection

A quantitative research strategy provides the methodology for this study.

The method of data generation was citywide comprehension assessments (whole class activity) and Oral Reading Fluency (one-on-one) from a subset of the sample.

Measures

Two measures were utilised, one being comprehension and the other Oral Reading Fluency (ORF). Comprehension measures assess a learner's ability to extract meaning from text. ORF measures a learner's level of reading fluency and is widely accepted in early grade literacy research to be a key element of early reading, creating a bridge to comprehension.

Comprehension research instruments were designed utilising grade-appropriate texts sourced from graded readers. Assessments were designed in English and translated into the further two dominant languages spoken in Makhanda, isiXhosa and Afrikaans. Learners were assessed in the language of the LoLT of their Foundation Phase.

Each comprehension assessment consists of one fiction and one non-fiction text. There are a number of questions for each text totalling 12 marks. The first four marks are designed to assess literal comprehension skills. The second set of four marks is made up of questions designed to assess inferential comprehension and the final set of four marks test evaluative comprehension skills. Each text includes grade-level vocabulary and is limited to the number of words the average Grade 4 learner should be able to read in one minute according to ORF benchmarks. Learners were given a maximum

of 30 minutes to complete the assessment. Learners were given basic instructions but no further assistance.

ORF assessments took place one-on-one with individual learners. Each learner read two different texts (one fiction and one non-fiction). Different sets of texts are used for each LoLT and are texts considered appropriate for the grade level. Learners were given one minute to read each text aloud. A word correct per minute (WCPM) score is calculated for each text by subtracting the errors made from the total number of words attempted. The final ORF count used in this study is based on the mean WCPM score across the two texts.

Procedures

All Grade 4 learners at each participating school were assessed at the same time on the same day. All assessments were completed within a 4-day period from the 18th to the 21st of September 2023. All public primary schools and two low-fee private schools in Makhanda participated with total learner participation of 1062.

Assessments were independently administered and marked by BEd 4th-Year students supported by experienced team leaders. Students participated in a three-hour training session two weeks prior to the start of the project. Students were assigned to schools in teams of 2 - 6 with no less than 2 students assigned to each Grade 4 class. The student teams were supported by a team leader throughout the onsite testing. All six team leaders were members of GADRA Education staff with no less than 4 years of experience administering the same testing instruments and protocols in GADRA partner schools.

Administration and marking were overseen and moderated by team leaders to ensure consistency and reliability. Student researchers were provided with a suggested 'script' to ensure that all learners across all research sites were given the same instructions and information further safeguarding reliability and validity.

The research teams completed the comprehension assessments by 9am at each school. The teams then moved to a marking space where all comprehension assessments were marked. Memos were provided. The team leaders assisted and moderated throughout the marking process. Once all marking was completed, a subset of 33% of the sample was selected to participate in one-on-one Oral Reading Fluency assessments. The subset was selected using performance at interquartile ranges (25th, 50th and 75th percentile).

Data was captured by the lead researcher and one research assistant. During this process marking was again moderated. Once capture was completed data was audited by an external party. 5% (51) of scripts and 5% (16) ORF capture sheets were randomly selected, moderated, and captured results assessed for accuracy. Three inconsistencies were found in the randomly selected sample. These were corrected. Following this, the full set of captured data was double checked against hard copies. A total of 4 further inconsistencies were found and corrected.

The data have been analysed quantitatively using the raw comprehension scores (out of 24). All data is anonymized and is not linkable to the individual learners.

Participants

1062 Grade 4 learners from 20 schools participated. Thirteen quintile 1-3 schools, one quintile 4 school, four quintile 5 schools and 2 low-fee private schools. Data from 1017 learners is included in the full study sample (see Exclusion Procedures below).

Comprehension assessment data is included from 990 learners and 19 schools (see Exclusion Procedures below).

ORF data from 330 learners and 20 schools is included. ORF data will be presented in a separate report.

Study Sample:

By School Type

- 191 learners attending quintile 5 and low-fee private schools.
- 826 learners attending quintile 1-4 schools.

By LoLT

- 454 isiXhosa comprehension assessments
- 450 English comprehension assessments
- 86 Afrikaans comprehension assessments

Exclusion Procedures

Thorough training, onsite support and moderation, moderation at capture point and auditing all contribute to reliability of data. No exclusions were necessary from 19 participating schools.

Comprehension data from School Q is excluded. Only 72 of the 104 Grade 4 learners registered at the school were present in the classroom at the time of the comprehension assessment. An absentee rate of 30% has a significant effect on reliability thus comprehension data from this school is excluded. The subset of 27 learners sampled for ORF testing at School Q was accurately selected by interquartile ranges, testing protocols were followed, capture sheets moderated, and audit confirmed reliability of this subset of data thus this will be included in analysis of ORF data.

Data Presentation

The study utilises a 62.5% benchmark level for comprehension. Thus, a mark of 15 or higher out of 24 falls into the category considered Able to Read for Meaning. According to the SA DBE document on setting benchmarks in South Africa, "although a score of 60 per cent for comprehension in standardised reading comprehension tests signals that a child requires additional support, for many teachers in South Africa, a score of 60 per cent would probably be regarded as a good achievement" (SA DBE 2020: 27).

Comprehension Performance

Table 1 below shows the number of learners assessed, the total number who achieved the benchmark as 'Able to Read for Meaning' and those who fell below the benchmark.

40% of Grade 4 learners in Makhanda are **Able to Read for Meaning,** more than double the national rate of just 19% (PIRLS 2021).

That is to say, 2 out of 5 Grade 4 children in Makhanda are reading for meaning, whereas less than 1 out of 5 South African children demonstrate this ability. In simpler terms, the city achieves significantly higher than the national average, to the extent that it almost seems as if Makhanda is situated in a different, more literate country.

While this is a noteworthy positive result for the town in relation to national performance, there is still much work to be done to achieve the goal of equitable access to quality education for all.

Total number of Schools	Total number of Learners	Total Number Able to Read for Meaning	Total Number UnAble to Read for Meaning
19	990	403	587

Table 1

Summary by LOLT

Figure 1 below shows that 62% of learners attending English LoLT schools in Makhanda are Able to Read for Meaning. This compared to just 19% of learners attending Afrikaans LoLT schools who are Able to Read for Meaning and 24% of those attending isiXhosa LoLT schools. That is, where isiXhosa is the LoLT of the Foundation Phase and learners switch to English LoLT in Grade 4 as per South African Language in Education policy.

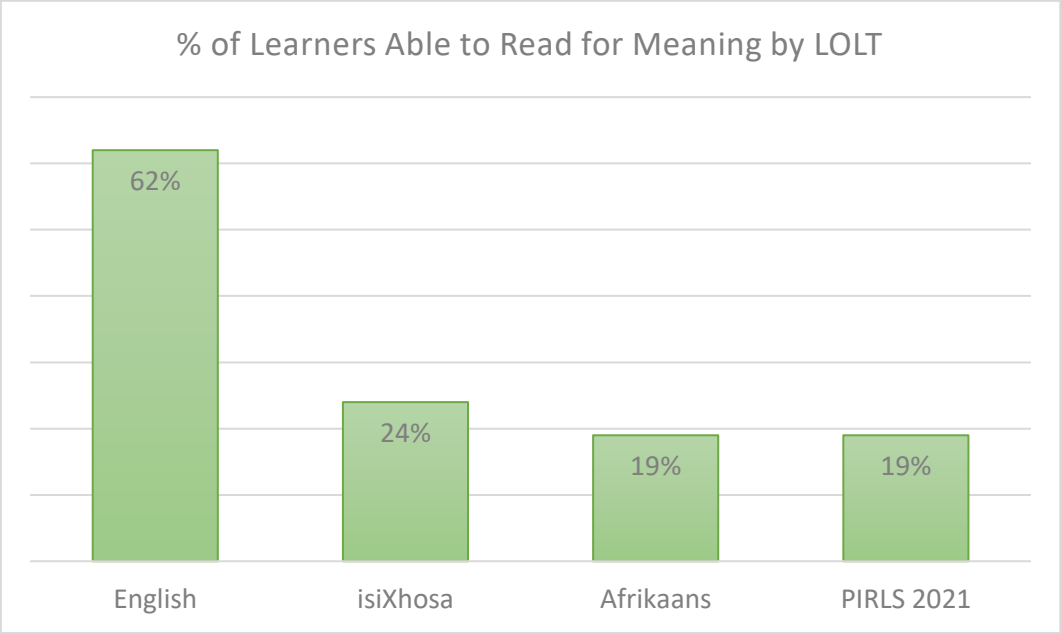

Figure 1

Figure 2 below demonstrates the distribution of Makhanda results across schools by LoLT. All the English LoLT schools (with the notable exception of School S) fall between 98% and 45% Able to Read for Meaning. There are no Afrikaans or isiXhosa LoLT schools that perform above 50%. isiXhosa LoLT schools perform between 35% and 10% (with the exception of school D) and the Afrikaans schools perform between 50% and 0%.

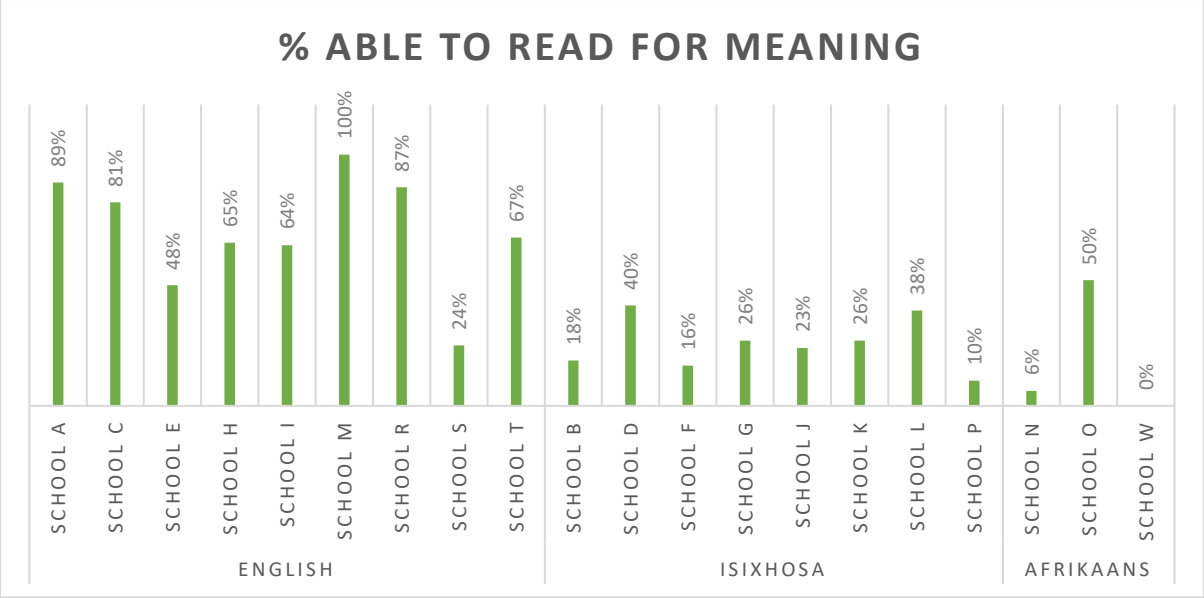

Figure 2

A possible underlying reason for Makhanda dramatically outperforming the country is that, when compared with the country, we have a much higher proportion of learners in English LoLT schools. English is the LoLT for 22% of FP learners in SA (DBE, 2010) while English is the LoLT for 46% of FP learners in the study.

In Makhanda, the vast majority of learners attending English LoLT schools do not speak English in their homes. This reflects a comparable statistical pattern on a national scale, as corroborated by the Pirls 2016 highlights report which reveals that, "of the Grade 4 learners who wrote the test in English, only 21% speak the language habitually at home" while, in the case of other languages "most of the learners (75% to 91%) spoke the language of the test (Pirls) at home" (Howie et al, p. 4).

The higher achievement of learners attending schools where English is the LoLT from Grade R, even for those who do not speak English in their homes, is a trend that was highlighted in the Pirls 2016 data and mirrored in Pirls 2021 data. Similar results were found in a study undertaken by Pretorius from 2012 to 2015 which explored the reading literacy skills of a cohort of Grade 4 of learners after three years of schooling in either isiZulu or English (Pretorius, 2015). All the learners who had been schooled in isiZulu spoke this language at home. The practice of teaching learners in their home language is called primary language education (PLE) and it is widely upheld as educationally sound. In the study, only 40% of the learners who were schooled in English spoke this language at home.

The study found that the literacy skills of the learners assessed in English were significantly higher than those of the learners assessed in isiZulu. The results of the study are out of alignment with PLE theory in that even the learners who did not speak English at home outperformed the learners who benefited from PLE. The same is the case in this study.

Pretorius' offers a possible explanation for the disappointing literacy performance in PLE in the 2012 – 2015 study arguing that the quality of schooling and reading instruction in classrooms are stronger determinants of reading performance in developing countries than the language of learning and teaching. More specifically, she singles out a traditional oral orientation to teaching practices as the overarching reason for poor results in many schools that teach in an African language in the Foundation Phase. Pretorius (2015) notes that:

> [t]hough related, spoken and written languages are different, they serve different purposes and they have different developmental pathways. This distinction can be equated with Cummins' (1991, 2000) distinction between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP) (p. 52).

Many researchers have offered a variety of explanations for continued underperformance, Spaull (2016, p. 2) provides a useful summary of these presented in **Table 3** below:

Factors related to LOLT and student performance on assessments	Teachers/Learning	Learners/learning and households/parents	Assessment
Language factors	(1) Teacher proficiency in LOLT (Cazabon, Nicoladis & Lambert 1998; Heugh 2012; Macdonald & Burroughs 1991), (2) teacher training in LOLT, (3) teacher confidence in LOLT, (4) lack of teacher support material in the LOLT (Welch 2011), (5) length of instruction in African language (Taylor & Von Fintel 2016)	(1) Density of unfamiliar words and the inability to 'move' to a new language (Heugh 2012; Macdonald & Burroughs 1991), (2) Emotions of learning in a second language (Probyn 2001), (3) Lack of exposure to English language infrastructure in the school, community and the home (especially for rural students) (Setati et al. 2002; Welch 2011)	(1) Lack of exposure to the test language (English) at home (Howie et al. 2007; Reddy 2006), (2) understanding of the language-content of the test, (3) the quality of the translation/versioning (Stubbe 2011)
Non-language factors	(1) Teacher content knowledge (N. Taylor & S. Taylor 2013; Venkat & Spaull 2015), (2) Pedagogical content knowledge (Ball, Hill & Bass 2005; Carnoy, Chisholm & Chilisa 2012), (3) curriculum coverage (Reeves, Carnoy & Addy 2013) (4) teacher absenteeism (Prinsloo & Reddy 2012), (5) teacher professionalism (NPC 2012; N. Taylor 2011), (6) school functionality (NEEDU 2013).	(1) Parental education and household socio-economic status (Timæus, Simelane & Letsoalo 2013), (2) exposure to quality preschool education (Heckman 2000), (3) nutrition, socio-emotional stimulation and child health (Shonkoff et al. 2012)—	(1) Psychometric validity of the test, (2) difficulty level of the test, (3) length of the test (for overviews, see Greaney & Kellaghan 2008; Postlethwaite & Kellaghan 2008)
Interaction between language and non-language factors	(1) Teachers restrict classroom interactions to low-level cognitive tasks due to children's insufficient language proficiency (Heugh 2005a, 2005b; Macdonald 1990; Macdonald & Burroughs 1991), (2) teaching using code-switching and language translation takes additional time that the curriculum may not accommodate (Setati & Adler 2000).	(1) Students who cannot read (properly) in the LOLT cannot learn (properly) in the LOLT (Macdonald 1990; Mullis et al. 2011)	—

Table 3

Further qualitative research is required to develop an understanding of the particular factors contributing to underperformance in Makhanda specifically and of factors which have contributed to higher achievement at top performing isiXhosa LoLT schools in our town.

Where Makhanda data is significantly out of alignment with Pirls is when considering performance in Afrikaans. Pirls (2021) found Afrikaans (387) and English (382) to be the highest performing test languages in Grade 4 and that learners writing in English and Afrikaans achieved significantly higher scores than learners writing in the African languages (DBE, 2023, p. 4).

The percentage of learners attending Afrikaans LoLT schools in Makhanda who actually speak Afrikaans in their own homes could be a significant contributing factor in the evident underperformance of this sector. Nationally a large percentage of learners who attend Afrikaans LoLT schools speak Afrikaans in their homes and 89% of those who wrote the Pirls (2016) assessments in Afrikaans speak the language in their homes (Howie et al, 2016). In Makhanda just 35% of learners attending Afrikaans LoLT schools speak the language at home, the vast majority of the remaining 65% speak isiXhosa in their homes. Added to this, Afrikaans is not used extensively in Makhanda. Incidental exposure to Afrikaans is limited for Makhanda children. In this respect, Afrikaans can be described most accurately as the third language of the majority of learners attending Afrikaans LoLT schools in the town.

Summary by School Type

Table 2 below presents data disaggregated by school type. In this table, data are disaggregated by the categories of Quintile 1-4 schools and Quintile 5 and private schools. 799 learners at 14 Quintile 1-4 schools participated. 254 were Able to Read for Meaning. 32% of Grade 4 learners attending Quintile 1-4 schools in Makhanda are Able to Read for Meaning. 191 learners attending 4 Quintile 5 and 2 low-fee private schools participated. 159 were Able to Read for Meaning. 83% of Grade 4 learners attending fee-paying public and low-fee private schools in Makhanda are Able to Read for Meaning.

School Type	Number of Schools	Number of Learners	Able to Read for Meaning	Unable to Read for Meaning
Quintile 1-4	14	799	254	545
Quintile 5 & Low-fee Private	6	191	159	32

Table 2

Summary by Performance

Figure 3 presents a summary of results disaggregated by performance. As evidenced in the introduction section of this report, if learners are not Able to Read for Meaning by the end of Grade 3, there will be little to no improvement without structured support. Keeping this in mind, nuanced levels of performance across the town have been disaggregated as follows:

- High Achievement (80% and Above): Schools achieving in this category are at negligible risk. Learners have solid foundational knowledge and have made the necessary transition from 'learning to read' to 'reading to learn'.
- Core support (60% - 79%): Schools achieving in this category are at negligible risk. The majority of learners have made the necessary transition from 'learning to read' to 'reading to learn' though some learners require support.
- Strategic Support (40% - 59%): While many learners have made the successful transition, strategic support is necessary for a large number of learners.
- Intensive Support (Below 40%): These schools can be considered at risk. There is urgent need for intensive support.

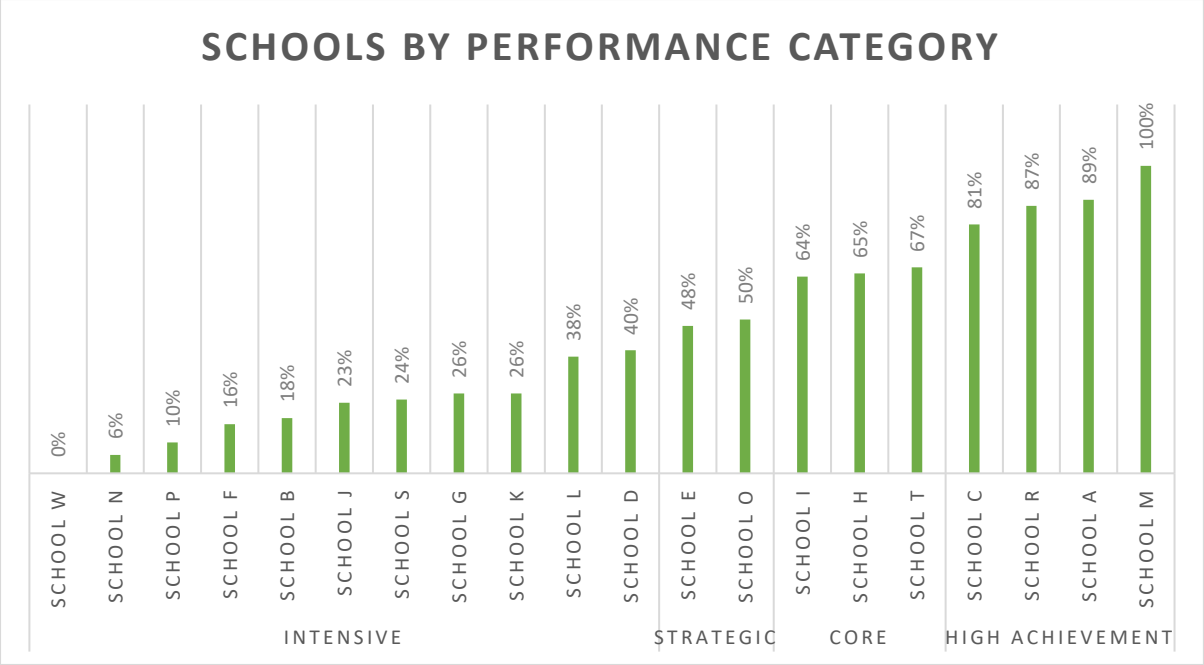

Figure 3

Data which provides some insight into the type and level of support required for learners who are Unable to Read is related to distribution of marks. **Figure 4** below demonstrates distribution of overall results presented in the following categories: 0-9/24; 10-14/24; 15-24/24.

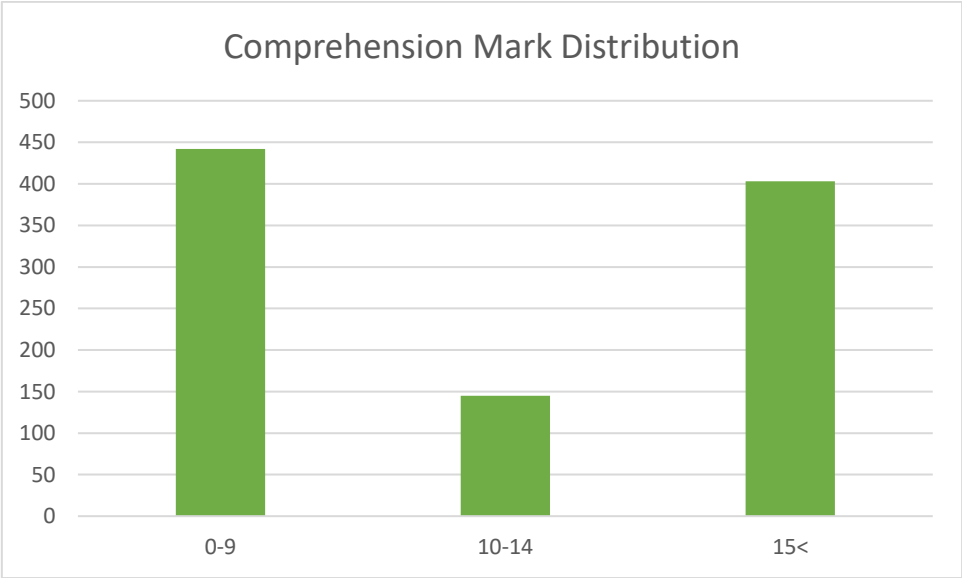

Figure 4

Broadly speaking, performance in the lowest category of between 0 and 9 out of 24 indicates that learners do not have foundational reading skills in place. Support required for these learners would need to focus on addressing foundational decoding gaps and building enabling levels of reading fluency. Performance in the 10-14 out of 24 range indicates that while foundational reading skills are in place, learners may not yet have achieved the level of reading fluency required for effective comprehension and would benefit from explicit instruction in comprehension strategies.

It is widely acknowledged that there are a number of factors that contribute to a child's reading development and a variety of different approaches to teaching key foundational reading skills (Pokharel 2018; Rastle 2020; Tunmer, & Hoover 2019). While there is much debate around which components ought to be taught in what order and with what weighting, there are a number of components commonly agreed to be key factors in learning how to read (Pretorius, 2020; Rastle, 2020; Tunmer & Hoover 2019). These key factors are described by the SA DBE as "five components of teaching reading: Phonemic awareness; Word recognition (sight words and phonics); Comprehension; Vocabulary; and Fluency". Each component literacy skill contributes towards enabling learners' first to make the connections between spoken word and written text and then to extract meaning from text.

As Pretorius et al, summaries; "accuracy in decoding supports comprehension. The ability to identify letter-sounds accurately and use this knowledge to read words accurately reduces comprehension complications" (2020, p. 2). Decoding skills are developed through phonemic awareness, phonics (understanding the relationships between sounds and their written representations) and vocabulary development. Pretorius et al provide the following useful explanation of the relationship between decoding and comprehension, "as children become more accurate in their decoding, they process words more quickly as their eyes move across the text. The more the effort expended on processing the alphabetic code and words, the less is the attentional capacity for comprehension" (2020, p .3).

The next vital building block in reading development is that of reading fluency, which is the ability to read text quickly, accurately, and with meaningful expression (Valencia, et al. 2001; Rasinski & Hoffman 2003). Reading fluency has been recognised as an indicator of reading comprehension (Fuchs, et al. 2001). As learners master the reading of single units of sound, they need to be explicitly taught the skills of blending (bringing single units of sound together to form words) and segmenting (breaking words down into their smallest units). Once these basic phonetic components of learning to read are in place, teaching and learning can be structured around utilising a variety of pedagogical approaches broadly agreed to develop reading fluency including, but not exclusive to; group guided reading, paired reading, shared reading and writing, independent reading and creative writing. Only once enabling levels of fluency have been reached, focus can be placed on the explicit teaching of comprehension strategies.

The research team, GADRA Education and the Rhodes University Department of Primary and Early Childhood Education are committed to working closely with schools, teachers and learners to respond appropriately and urgently to the support needs identified in this study.

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