

basic education

Department: Basic Education REPUBLIC OF SOUTH AFRICA



BENCHMARKING EARLY GRADE READING SKILLS IN SOUTH AFRICA:

TECHNICAL REPORT

TSHIVENDA HOME LANGUAGE

October 2023

This publication was produced at the request of the United States Agency for International Development. It was prepared independently by Khulisa Management Services, (Pty) Ltd in collaboration with the South African Department of Basic Education.





Photo: Reading Assessment Limpopo Province, South Africa.

Photo credit: Khulisa Management Services

AUTHORS

Dr Heleen Hofmeyer, Firdale Consulting

Ms Megan Borole, Firdale Consulting

Ms Margaret Roper, Khulisa Management Services

Ms Benita Williams, Benita Williams Evaluation

Prof Elizabeth Pretorius, Emerita Professor and Research Fellow In The Department Of Linguistics And Modern Languages, Unisa

Ms Lesang Sebaeng, Department of Basic Education

Ms Thivhulawi Nethengwe, Independent Language Expert

Ms Tshandapiwe Tshuma, Khulisa Management Services

Ms Zamo Thwala, Fieldwork Manager/Evaluation Coordinator, Khulisa Management Services

Ms Sithabile Ntaka, Data Manager, Khulisa Management Services

ACKNOWLEDGEMENTS

Thank you to Dr Nompumelelo Nyathi-Mohohlwane, Ms Lesang Sebaeng and Ms Zwane Zamangwe from the Department of Basic Education for their valuable contributions to the development of the Learner Assessment passages and tools, training of fieldworkers and quality assurance of the data. In addition, we would like to thank the Limpopo Province officials, school principals, teachers and learners for participating in this study. This study would not have been possible without the commitment of our partners and the Khulisa team, including the fieldworkers and supervisors who spent many hours collecting the data.

Khulisa Management Services would like to thank the Ulwazi Lwethu project team and partners for their help in identifying possible candidate passages for inclusion in the project. Resources from the South African Institute for Distance Education (SAIDE) were adapted and tested for Grade 7 assessments. Ulwazi Lwethu resources were adapted and tested for Grades 3 and 4 assessments.

The reading passages used in the Tshivenda learner assessments were based on reading resources funded by the Department of Basic Education, USAID, and Zenex Foundation.

CONTACT DETAILS

Margaret Roper Khulisa Management Services 26 7th Avenue Parktown North Johannesburg, 2196 Telephone: 011-447-6464 Email: <u>mroper@khulisa.com</u> Web Address: <u>www.khulisa.com</u>

DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Table of Contents

E	XECUT		I
	Introdu	ction	I
	Reading	g development	I
	Tshiven	ıda linguistic features	I
	Benchm	narking methodology	I
	Learner	⁻ performance	2
	Reading	g benchmarks	2
	Teachin	ng Early Grade Reading in Tshivenda	3
	Key ins	ights	4
	Recom	mendations	4
I	INT	RODUCTION	6
	1.1	Background	7
	1.1.1	Aims	8
	1.1.2	Purpose of the report	9
2	THE	EORETICAL FRAMEWORK FOR EARLY READING DEVELOPMENT	11
	2.1	Reading theory: Three relevant models	12
	2.1.1	Simple view of reading	12
	2.1.2	The decoding benchmark hypothesis	12
	2.1.3	Orthographic depth hypotheses	12
	2.2	A developmental view of multiple proficiencies	13
3	BEN	ICHMARKING METHODOLOGY	15
	3.1	Approach	15
	3.2	Statistical method and skills	16
	3.2.1	Exploratory non-parametric techniques	16
	3.2.2	Advantages of non-parametric methods over other benchmarking approaches	16
	3.2.3	Establishing ORF benchmarks	17
	3.2.4	Establishing letter-sound benchmarks	17
	3.3	Instrument development process: Instruments that support benchmarking	18
4	REA	DING IN TSHIVENDA	20
	4.1	Linguistic and orthographic features of Tshivenda	20
	4.2	Review of studies in early grade reading development in Tshivenda	25
5	TEA	CHING EARLY GRADE READING IN TSHIVENDA	28
	5.1	Respondent Profile	28
	5.2	School Profile	29
	5.3	Respondent Biographic	29
	5.4	Highest Teacher Qualifications	
	5.5	Resources in the Classroom	32
	5.6	Resource Constraints at School Level	

	5.7	Language practices in class				
	5.8	Impressions on Learners' reading ability				
6	TS⊢	HIVENDA READING DATA				
	6.I	Background				
	6.2	Sample characteristics				
	6.3	Assessments				
	6.3.I	Letter Sound Knowledge Assessments	40			
	6.3.2	ORF and Oral Reading Comprehension Assessments	41			
	6.3.3	Reading comprehension (written) assessments	41			
	6.3.4	Other reading assessment tasks administered	42			
	6.4	Performance on letter-sound knowledge, complex consonants and fluency	43			
	6.4.I	Letter-sounds and complex consonants and diacritics	43			
	6.4.2	ORF	45			
	6.4.3	Oral Reading Comprehension	45			
	6.4.4	Overall performance across the five key sub-tasks	46			
	6.5	Data sub-sample	48			
7	BEN	ICHMARKING RESULTS: TSHIVENDA	50			
	7.1	Letter Sounds	50			
	7.2	Establishing a Fluency benchmark: An analysis of reading speed and accuracy	52			
	7.3	Relationship between fluency and comprehension for Grade 2 and 3 benchmarks	54			
	7.4	Fluency benchmarks: attainability and learner profiles	62			
	7.5	Concurrent validity of the Tshivenda fluency benchmarks	63			
8	SUN	1MARY OF TSHIVENDA READING BENCHMARKS	68			
9	REC	OMMENDATIONS	70			
1) BIB	LIOGRAPHY	72			

List of Tables

TABLE I PILOT SAMPLE SIZES	19
TABLE 2: WORDS PER SENTENCE IN DISJUNCTIVE OR CONJUNCTIVE ORTHOGRAPHIES	22
TABLE 3: EARLY GRADE LITERACY OF GRADE 3 SHONA LEARNERS	25
TABLE 4 TEACHER SURVEY RESPONSES	28
TABLE 5 TEACHER SURVEY RESPONDENT BIOGRAPHIC DETAILS	29
TABLE 6 TEACHER SURVEY RESPONDENT BIOGRAPHIC DETAILS	30
TABLE 7 ILLUSTRATIVE SCHOOL CONSTRAINT SCORES	34
TABLE 8: LEARNER CHARACTERISTICS	39
TABLE 9: ORF PASSAGES AND WRITTEN READING COMPREHENSION PASSAGES	40
TABLE 10 FINAL GRADE 2 LEARNER LANGUAGE ASSESSMENT (FOR GRADE 3 LEARNERS IN 2023)	42
TABLE I I FINAL GRADE 3 LEARNER LANGUAGE ASSESSMENT (FOR GRADE 4 LEARNERS IN 2023)	43
TABLE 12 FINAL GRADE 6 LEARNER LANGUAGE ASSESSMENT (FOR GRADE 7 LEARNERS IN 2023)	43
TABLE 13: MEAN LETTER-SOUND FLUENCY, WORD READING, ORF, ORAL READING COMPREHENSION	N, AND
WRITTEN COMPREHENSION	48
TABLE 14: DETAILS OF THE TWO POTENTIAL SUBSAMPLES USED IN THE BENCHMARKING ANALYSIS	49
TABLE 15: PERCENTAGE OF LEARNERS IN EACH GRADE ACHIEVING THE ORF BENCHMARKS	62
TABLE 16: PERFORMANCE OF DIFFERENT CATEGORIES OF READERS ON OTHER READING ASSESSMENT	TASKS
	65
TABLE 17 USE OF BENCHMARKS TO IMPROVE EARLY GRADE READING IN SOUTH AFRICA	70

List of Figures

FIGURE I: DEVELOPMENTAL CLINE IN EARLY READING	.13
Figure 2: Process of assessment development over the three pilot phases	.19
Figure 3: South African Official Languages, Mohohlwane, 2023	.20
Figure 4: Diacritics in Tshivenda	.23
Figure 5: Survey respondents' training	.31
Figure 6: Availability of resources in class	.32
Figure 7: Availability of resources in class	.33
Figure 6: Use of graded readers in class	.33
Figure 9 School level constraints	.35
Figure 10 Comparison of mean constraint scores across different school size categories	.35
Figure 11 Language practices in the class	.36
Figure 12 Language practices in the class	.37
Figure 13: Distribution of performance on letter-sound knowledge	.44
Figure 14: Percentage of learners scoring zero on letter-sounds versus complex	
CONSONANTS AND DIACRITICS	.44
FIGURE 15: PERCENTAGE OF LEARNERS SCORING ZERO ON ORF (UNABLE TO READ A WORD CORRECTL	Y
IN A MINUTE)	.45
Figure 16: Proportion of learners with each comprehension question correct for learne	RS
ATTEMPTING ALL QUESTIONS	.46
Figure 17: Letter-sound knowledge speed and accuracy	.51
Figure 18: Percentage of learners reaching the letter-sound benchmark	.52
Figure 19: Reading speed and accuracy, Grades 3 and 4	.53
FIGURE 20: GRADE 3 AND 4 DATA: RELATIONSHIP BETWEEN ORF AND COMPREHENSION FOR LEARNERS	S
ATTEMPTING AT LEAST 70% OF COMPREHENSION QUESTIONS	.55
Figure 21: Relationship between fluency and written comprehension, Grade 7	.56
Figure 22: ORF and individual comprehension questions - Grade 3 Passage 1: Phuluso ndi	
muthu wa vhudele (Phuluso is a neat person)	.57
Figure 23: ORF and individual comprehension questions - Grade 3 Passage 2: Nunu na Bov	Ά
(Nunu and Bova)	.58
Figure 24: ORF and individual comprehension questions - Grade 4 Passage 1: Lusunzi na	
LIIVHA	.58
Figure 25: ORF and individual comprehension questions - Grade 4 Passage 2: Mathomo	
MASWA	.59
Figure 26: ORF and individual comprehension questions - Grade 7 Passage 1: Duvha la	
PFANELO DZA VHATHU	.60
Figure 27: ORF and individual comprehension questions - Grade 7 Passage 2: Vhuhali ha	
Nangani (Nangani's bravery)	.61
Figure 28: ORF benchmark profiles for each passage by grade	.63
Figure 29: ORF by written comprehension score - Grade 4	.67
Figure 30: ORF by written comprehension score - Grade 7	.67

Abbreviations and Acronyms

CAPS	Curriculum and Assessment Policy Statement
CLSPM	Correct letter-sounds per minute
CCV	Consonant Consonant Vowel Configuration
CV	Consonant Vowel Configuration
CLSPM	Correct letter sounds per minute
CWPM	Correct words per minute
DBE	Department of Basic Education
EFAL	English First Additional Language
EGRA	Early Grade Reading Assessment
EGR	Early Grade Reading
GoSA	Government of South Africa
HL	Home language
KZN	KwaZulu-Natal
LOLT	Language of learning and teaching
LP	Limpopo Province
LSK	letter sound knowledge
NGO	Non-government Organisation
ODH	Orthographic depth hypothesis
ORF	Oral reading fluency
PED	Provincial Education Department
PGST	Psycholinguistic grain size theory
PIRLS	Progress in International Reading and Literacy Study
SAIDE	South African Institute for Distance Education
SMT	School Management Team
SVR	Simple view of reading
V	Vowel
WCPM	Words correct per minute

DG FOREWORD

In early 2019 South African President Cyril Ramaphosa articulated a new and clear expectation for basic education: every child should be able to read for meaning by age 10 (Government, 2019). While reading for meaning is the goal of reading, reading is a complex and hierarchical process. A range of foundational reading subskills needs to be mastered before one can comprehend or understand what is in a text.

In response to this, the Department of Basic Education (DBE) in collaboration with various stakeholders has been leading the establishment of early-grade reading benchmarking for the eleven spoken South African Languages of Learning, Teaching, and Assessment (LoLTAs). It is my great honour to share the newly developed Tshivenga early-grade reading benchmarks. This is the eleventh language the Department of Basic Education has benchmarked since 2020. I believe these benchmarks will contribute to improvements in the teaching of early grade reading in several ways, including being a tool to support teachers with specific Tshivenga language nuances.

The collaboration between the government, universities, funders, and data analysts is commendable. I specifically want to thank United States Agency for International Development (USAID) which funded the work.

As a department, we continue to be committed to improving learning and teaching throughout the education system. The Foundation Phase is a fundamental period to establish basic competencies and over time we have been working to strengthen the inputs and support for teachers for this phase. The Framework for Teaching Reading in African Languages was the first phase of this, and we have continued to build on this work through several efforts including the reading benchmarks. We are committed to continue making every effort to support reading with a special and necessary emphasis on African languages.

He

MR HM MWELI DDIRECTOR-GENERAL DATE: 27 SEPTEMBER 2023

PREAMBLE

This report, produced by Khulisa Management Services (Pty) Ltd. (Khulisa), is submitted under the Data Collection and Analysis for the Early Grade Reading Study (EGRS), the Reading Support Project (RSP) and Language Benchmarking to the United States Agency for International Development (USAID) under PERFORMANCE Indefinite Delivery Indefinite Quantity (IDIQ) Contract Number: 72067418D00001, Order Number: 72067419F00007.

This report derives from the 2023 data collection conducted in the Limpopo Province, South Africa, to establish Tshivenda Early Grade Reading Benchmarks.

A number of reports have been published under this IDIQ and Task Order and are useful as background.

- The methodology for Setting Reading Benchmarks In South Africa is outlined in this report <u>https://pdf.usaid.gov/pdf_docs/PA00XINZ.pdf</u>.
- Methodology Plan and Study Protocol: Data Collection and Analysis for setting Tshivenda Benchmarks: <u>https://pdf.usaid.gov/pdf_docs/PA0218H7.pdf</u>
- For the full instrument development process, refer to the "Report on the Development of Learner Assessment Tools and Contextual Tools" <u>https://pdf.usaid.gov/pdf_docs/PA021BGB.pdf</u>
- The Quality Assurance Surveillance Protocol (QASP) documents the quality assurance elements of both data collection and analysis. <u>https://pdf.usaid.gov/pdf_docs/PA00Z8SX.pdf</u>

Previously, data were analysed to recommend Setswana Home Language (HL) reading benchmarks and English First Additional Language (EFAL) reading benchmarks. The Summary Reports and Learning Briefs for Setswana HL and EFAL are available on the USAID Development Experience Clearinghouse <u>https://dec.usaid.gov/dec/home/Default.aspx</u> and the Department of Basic Education Research Repository <u>https://www.education.gov.za/Research,MonitoringEvaluationReports.aspx</u>.

EXECUTIVE SUMMARY

This report, produced by Khulisa Management Services (Pty) Ltd. (Khulisa), is submitted under Design Report F: Tshivenda Benchmarking under United States Agency for International Development (USAID) PERFORMANCE Indefinite Delivery Indefinite Quantity (IDIQ) Contract Number: 72067418D00001, Order Number: 7206741900007.

INTRODUCTION

This Tshivenda Home Language (HL) reading benchmarks for South Africa's Department of Basic Education (DBE) are presented in this report. Tshivenda Home Language is spoken by 2.5% of South Africans (2022). Drawn from research conducted in 60 no-fee Limpopo schools in 2023, the benchmarks aim to enhance early-grade reading in Tshivenda Home Language, spoken by 2.5% of South Africans. Despite quality education efforts, significant reading comprehension gaps persist, as indicated by the 2016 and 2021 Progress in International Reading and Literacy Study (PIRLS) studies. Collaboratively, experts and the DBE, supported by USAID Southern Africa, used early grade reading (EGR) assessment data to determine benchmarks in Tshivenda for letter-sound knowledge and oral reading fluency. The report recommends grade-specific benchmarks for Grades 1, 2, 3, and 6.

READING DEVELOPMENT

Understanding reading development is vital. Reading involves linguistic, textual, and code-based skills, affected by socio-economic factors. Traditional reading theories have been Eurocentric, but newer models encompass diverse linguistic systems. Key models include the Simple View of Reading, Decoding Benchmark Hypothesis, and theories focusing on orthography. Transparent languages like Tshivenga enable faster reading development due to consistent letter-sound relationships.

TSHIVENDA LINGUISTIC FEATURES

Tshivenda's linguistic features differentiate it from many South African languages. It shares similarities with Zimbabwean and Mozambican languages and employs a transparent orthography with complex consonant sequences and diacritics. Unique phonology, fewer vowels, complex consonant systems, and significant tonal differences highlight the distinctiveness of Tshivenda in the reading landscape.

BENCHMARKING METHODOLOGY

The research questions aimed to establish benchmarks for foundational decoding skills, fluency thresholds for reading accuracy, and Oral Reading Fluency (ORF) necessary for comprehension. New Tshivenda assessments were developed and underwent three refinement phases led by a multidisciplinary team of experts.

This research focuses on determining decoding benchmarks for Tshivenda reading. Studies reveal that reading comprehension is achieved when decoding meets a fluency benchmark. Beyond a certain point, decoding improvements do not enhance comprehension.

The research uses data-driven methodologies and consultations with Tshivenda linguistic experts. The study utilises non-parametric techniques to examine the relationship between reading accuracyspeed and fluency-comprehension. Unlike traditional methods, this approach evaluates the entire reading performance spectrum, considering linguistic and pedagogical nuances.

Grades 1, 3, and 6 benchmarks were set based on data collected from learners already in the first term of Grades 2, 4, and 7 in 2023, to compensate for learning losses attributable to the COVID-19 disruptions. The data were collected from Vhembe East and West districts.

LEARNER PERFORMANCE

Findings showed that half of the learners could sound 40 correct letter sounds per minute (clspm). Grade 2s had a mean of 41.6 clpsm, and Grade 4s averaged 39.7 clspm. Reading single letter-sounds was simpler for learners than reading complex consonants and diacritics. Notably, over a quarter of both grades scored zero on reading complex consonants, a critical skill for grade-level passages. Compared to Setswana learners in 2021, Tshivenda learners struggled more with these complex readings.

Regarding Oral Reading Fluency (ORF), 11-12% of Tshivenda learners in Grades 2 and 3 could not read a word, but this was better than other South African languages pre-COVID. By Grade 7, only 2.2-2.7% faced this issue. In Oral Reading Comprehension, performance varied, with learners typically doing better on simpler questions. However, the challenge varied even within question types, stressing the need for consistent benchmarking that is not dependent on question difficulty or nature.

READING BENCHMARKS

The early-grade reading benchmarks for Tshivenda are as follows.



- **Grade I:** Learners should achieve 40 correct letter-sounds per minute (clspm). This standard is as relevant for Tshivenda Home Language (HL) learners as for other African language readers.
- **Grade 2:** Learners must read a minimum of 35 correct words per minute (cwpm) from a passage. Falling below this mark indicates poor accuracy and comprehension difficulties. Such learners need instruction focusing on fluency and frequent reading practice. This benchmark ensures a transition from mere decoding to engaging in advanced reading skills. Post-pandemic, 44% to 56% of Grade 3 learners attained this benchmark by Term 2.
- **Grade 3:** The benchmark is set at 55 cwpm. Achieving this fluency means the learner's working memory is not bogged down by decoding, allowing them to grasp the text's meaning better. After the pandemic, only 22% to 23% of Grade 4 learners achieved this fluency in Term 2. It is crucial for learners in Grade 3 to engage with both narrative and informational texts to improve their fluency. The Ulwazi Lwethu project has introduced a book series (Ulwazi Lwethu) aiming to help in this regard.
- Grade 6: The benchmark rises to 90 cwpm. By this grade, learners need to tackle lengthier and more intricate texts, requiring an unburdened working memory. Those reading below 90 cwpm will find retaining information from extended texts challenging. In a post-pandemic Grade 7 sample from Term 2, only 29% met this benchmark for narrative texts, and just 8% did for informational texts. This emphasises the importance of introducing learners to diverse text types in African languages, extending beyond narratives during primary education.

While children should ideally achieve these benchmarks, many older learners in the research sample did not, suggesting teacher instructional deficiencies in classrooms rather than unattainable benchmarks.

TEACHING EARLY GRADE READING IN TSHIVENDA

To understand the context of the assessed learners better, a teacher survey was administered. The survey explored qualifications, resource availability, and Tshivenda Home Language (HL) and English First Additional Language (EFAL) teaching practices. From 62 schools, 226 teachers participated. The average age was 47, with 14.7 years of teaching experience. Notably, 40% held managerial roles, with Grade 7 teachers possessing more experience than their Grade 4 counterparts. Roughly half were teaching grades aligning with their training, while 45% had postgraduate credentials. However, 46% lacked specific literacy training in Tshivenda, and 47% reported that they had also not attended recent literacy training. Concerning resources, workbooks were generally accessible, but 30% of Tshivenda HL and 24% of EFAL teachers still reported they were unavailable. Over 70% identified a severe shortage of readers or library resources. A composite resource score classified 58% of

schools as considerably resource-constrained, and especially medium sized schools were at a disadvantage.

Regarding teaching practices, reading aloud dominated classrooms. About 90% of teachers employed diverse reading strategies weekly, yet creative writing and written comprehension were less frequent. Most teachers found creative writing challenging.

When asked to rate the learners' reading ability in their classes, teachers expressed higher confidence in learners' Tshivenda HL reading skills over EFAL. In Tshivenda, 71% in grade 4 and 77% of teachers in Grade 7 mentioned that most of their learners in class can read adequately. Forty-eight per cent (48%) of Grade 4 EFAL teachers mentioned that half of their learners in class could read adequately, and 44% of the Grade 7 EFAL mentioned that most of the learners in their classes could read adequately. Interestingly, teachers with advanced degrees were more critical of learners' reading proficiency.

KEY INSIGHTS

Besides providing the data to propose the grade specific reading benchmarks, three key insights are gleaned from the research.

Learner Performance: Tshivenda learners face difficulties in reading complex consonants and diacritics, with a significant percentage unable to read them. Despite improvements in reading fluency as they progress through grades, many learners do not achieve the set benchmarks. This indicates a need for targeted interventions to help learners overcome these challenges and reach their grade-level benchmarks.

Perception of Student Proficiency: While teachers generally felt confident about their learners' reading abilities in Tshivenda, they expressed lower confidence in learners' EFAL skills. Notably, teachers with advanced educational qualifications tended to have a more critical view of learners' reading proficiency, suggesting a possible disparity between teacher perceptions and actual learner capabilities.

Teacher Training and Resources: A considerable number of teachers lacked specific literacy training in Tshivenda. Furthermore, there is a significant shortage of educational resources, with a majority of schools being resource-constrained, particularly in terms of reading and library materials.

RECOMMENDATIONS

Tshivenda HL benchmarks should be integral to a national system for monitoring early-grade reading skills. Every early grade reading initiative must prioritise rigorous data collection from the outset to enrich datasets on Tshivenda reading. As datasets grow, existing standards should be revisited. EGRA-type evaluations need to be pivotal in formative assessments across primary school phases.

Equipping educators with knowledge and tools for these assessments and interpreting results is vital, necessitating incorporation into preservice training and continuous professional growth. Best practices based on evidence should underpin new assessment methods. There is an immediate need to supply reading materials, especially to medium-sized schools, for both Tshivenda and EFAL. Tshivenda reading resources should consistently be a policy and budgetary focus, considering a collaborative, multi-sectoral approach. A swift resource allocation for expansive reading initiatives in Tshivenda schools is crucial. Assessing the efficacy of existing programs will guide early-grade reading (EGR) strategies. In-depth research on Tshivenda linguistics and optimal teaching methods is essential. Teachers must be proficiently trained, especially in EGR, encompassing techniques for enhancing oral language, rectifying decoding errors, fostering reading fluency, and ensuring comprehension.

I INTRODUCTION

This Comprehensive Technical Report proposes Tshivenda Home Language (HL) reading benchmarks by the South African Department of Basic Education (DBE). The report presents a summary of the literature that informed the benchmarking study. It describes the benchmarking methodology and details an analysis of data collected from 60 no-fee schools in Limpopo, between May 29 and June 15, 2023.

Since 2011, reading for meaning has become an important education improvement focus area. In the early 2000s, South African results on comparative studies like Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ) 2000, the 2001 Systemic Evaluations, and the Trends in International Mathematics and Science Study (TIMSS) 2003 indicated that South African learners were not achieving the curriculum goals during the Foundation Phase (which comprises Grades R to 3). The Progress in International Reading and Literacy Study (PIRLS) 2006 confirmed inadequacies in reading outcomes.

The South African Government and local non-governmental organisations (NGOs) embarked on various interventions targeting initial teacher education, in-service teacher training, and making appropriate reading resources available in all African Languages. Whilst the results were from a very low base, the PIRLS assessments in 2011 and 2016, demonstrated improvements in reading outcomes over time, with larger improvements in African languages – equivalent to more than two years of schooling. However, 2021 PIRLS results showed a decline; one (1) out of five (5) Grade 4 learners could read for meaning in their home language (Van Staden & Gustafsson, 2022).

Large-scale empirical studies based on reading datasets collected in various South African Quintile¹ I to 3 schools since 2017, provide evidence that a minimum threshold of reading fluency enables reading for meaning. The evidence further points to early decoding failures and poor language proficiency as root causes of fluency difficulties (Spaull, N., Pretorius, E. & Mohohlwane, N., 2020; Mohohlwane, Wills, G., & Ardington, 2022; Wills, Ardington, & Sebaeng, 2022a; Pretorius & Spaull, 2022). For this reason, the DBE embarked on developing reading benchmarks in all South African languages, including in Tshivenda, presented in this report.

While teachers have always assessed reading in accordance with curriculum requirements and in line with guidance from relevant education officials, their guidance was not necessarily based on rigorously researched findings. Scientifically established early grade reading benchmarks provide guidance to

¹ The quintile system in South African public schools classifies schools into five groups, from the poorest (Quintile 1) to the least poor (Quintile 5) .

teachers to determine if learners are on track towards reading, long before they reach the Foundation Phase exit point, which is Grade 3. Reading benchmarks inform a shared vision of successful reading and serve as a form of quality control within an education system (Jukes et al., 2020).

I.I BACKGROUND

Despite the Government of South Africa's (GoSA) significant investment in basic education, the country continues to face challenges in providing quality education in most schools. South Africa's education indicators continue to lag behind those of its peers. The PIRLS indicated that 78% of South African 10-year-olds could not read for meaning in their home language or any other language. PIRLS 2021 results showed no improvement in the average reading level amongst South African Grade 4 learners. According to PIRLS 2021, 81% of South Africa's Grade 4 learners could not read for meaning when assessed in 2021. The impact of the 2020 and 2021 COVID-19 school disruptions is clearly demonstrated in South African reading outcome data and elsewhere. Of the 32 countries with PIRLS trend data available, reading outcomes declined in 21 countries.

The GoSA considers education one of its highest domestic priorities and one of the country's most significant long-term challenges, as is evident in the National Development Plan 2030 (GoSA, 2013). There is recognition that at the current rate of pre-pandemic reading improvement, South Africa may only achieve the target of "all children reading for meaning" in the year 2098 and not in 2030 (Spaull, 2023).

To support the GoSA, USAID Southern Africa awarded the PERFORMANCE Indefinite Delivery Indefinite Quantity (IDIQ) contract to Khulisa Management Services (Khulisa) to provide technical, analytical, advisory, monitoring, evaluation, and related support services to assist USAID Southern Africa in effectively diagnosing needs, and planning, designing, monitoring, evaluating and learning from interventions. PERFORMANCE helps to fill a critical research gap by providing rigorous analysis in target areas related to improving the quality of language and literacy skills of primary-grade learners in South Africa and the region.

PERFORMANCE has enabled the DBE to collaborate with linguists, data analysts and education experts to develop key benchmarks of early reading outcomes in all South African languages. Establishing reading benchmarks for Early Grade Reading (EGR) can create greater awareness of early milestones in reading development and help teachers and schools ensure that learners are reading at the required level and achieving benchmarks.

This report provides information on the newly established EGR benchmarks in Tshivenda. Tshivenda is a Southern Bantu language, and it is mainly spoken by the Venda people in the northern part of

South Africa's Limpopo province and by some Lemba people in other parts of Southern Africa. According to the 2022 census, 2.5% of South Africa's population speak Tshivenda as their first language.

The study findings will directly apply to the DBE, the Provincial Department of Education (PED), and the implementers and funders. The information generated through this study will add to the evidence base for policy decisions about ways to support the teaching of Tshivenda Home Language in the Foundation Phase in South Africa.

I.I.I Aims

This report uses early grade reading assessment (EGRA) data collected from May to June 2023 to establish letter-sound and oral reading fluency (ORF) benchmarks for the early grades in the Tshivenda home language. This research complements the body of work on the development of early-grade benchmarks in all official languages in South Africa (see Jukes et al., 2020; Ardington et al., 2020, 2021a; Mohohlwane, Wills & Ardington, 2022).

For this benchmarking exercise, we define fluency as the ability to read with speed and accuracy. Although prosody is a component of fluency, it is not easy to measure consistently and reliably in field studies and thus is not considered for the benchmarking process. While prosody is excluded from the research, teachers are required to apply their professional judgement and understanding of contextual influences to assess this criterion as per the curriculum guidance.

The purpose of the proposed letter-sound and fluency benchmarks are:

- Grade I Letter-sound benchmark identifies whether learners are developing sufficient alphabetic knowledge that underpins foundational decoding skills necessary for accuracy in reading. It is a predictor of future reading ability.
- Grade 2 Fluency benchmark identifies learners who are entering an emergent level of fluency, which supports reading accuracy but is not yet sufficient to read for meaning. It, too, is a predictor of later reading comprehension.
- Grade 3 Fluency benchmark identifies a lower bound fluency level necessary for learners to comprehend what they are reading and articulates to teachers a point at which they should concentrate on further developing comprehension skills.
- Grade 6 Fluency benchmark identifies the level of fluency that Grade 6 learners should achieve by year end for them to have adequate comprehension.

The benchmarks establish the minimum standard or level that *every* learner should attain at gradespecific points to progress through a successful language and reading trajectory journey in the primary school years.

With reading benchmarks, reading teachers in each language can more accurately and easily monitor their learners' reading ability. When teachers are able to accurately identify learners who struggle with reading, they can provide appropriate remedial support. It may also strengthen the ability of relevant district officials to support language teachers.

The benchmarks are deliberately set at a realistic level without being so aspirational that no one can reach them.

The reading benchmarks are not determined arbitrarily. Drawing on empirical data, current literature about reading across languages, expert advice and approaches developed in previous benchmarking activities conducted for the Nguni languages and the Sesotho-Setswana languages, these benchmarks are scientifically established and appropriate to the context of learning in South African schools (Ardington et al. 2020; Wills et al. 2022b; Jukes et al. 2020).

Following Ardington et al. (2020) and Jukes et al. (2020), our approach to setting benchmarks integrates theoretical understandings of reading development with a non-parametric analysis of cross-sectional and longitudinal EGRA-type data.

I.I.2 Purpose of the report

This report offers an in-depth analysis of early reading development with a focus on reading in Tshivenda, a South African language. The introduction (Chapter 1) outlines the research background, aims, and structure. In the subsequent section, the report presents theoretical frameworks related to reading development (Chapter 2), emphasising three key models: the Simple view of reading, the Decoding Benchmark Hypothesis, and the Orthographic Depth Hypotheses.

Chapter 3 introduces the benchmarking methodology used in the research. The approach relies on exploratory non-parametric techniques, detailing their advantages over other benchmarking methodologies. The establishment of ORF (Oral Reading Fluency) and letter-sound benchmarks is discussed, along with the instruments that support this benchmarking.

The research's primary focus is on Tshivenda, covered in Chapters 4 and 6. This involves an exploration of Tshivenda's linguistic and orthographic characteristics and a review of studies concerning early-grade reading development in the language. Chapter 5 provides specific Tshivenda data, including sample characteristics, assessments, and performance metrics.

Benchmarking results for Tshivenda are presented in Chapter 7, covering areas such as letter sounds, oral reading fluency, the process of establishing a fluency benchmark, and the relationship between fluency and comprehension for Grade 2 and 3 benchmarks. Notably, the report analyses the attainability of fluency benchmarks and the associated learner profiles, with a section dedicated to the concurrent validity of the Tshivenda fluency benchmarks.

2 THEORETICAL FRAMEWORK FOR EARLY READING DEVELOPMENT

The goal of reading is to understand or comprehend what we read. However, children in South Africa struggle to develop this key skill in both their home language and English – a skill necessary for learners to access the curriculum. To understand why our children are struggling to become readers, we need to know how children become successful readers and what kinds of knowledge and competencies they require to develop on the journey of being able to read with meaning.

Reading itself is a complex process. It requires developing various skills and knowledge factors, including knowledge of linguistic factors², text factors³, code-based factors⁴ and the development of a range of lower to higher-level cognitive processes. The components are needed to become a skilled reader and do not necessarily develop simultaneously. Some aspects of the phenomenon may develop first, laying a foundation on which subsequent competencies are built and thrive (Stanovich, 2000). It is estimated to take several hundred hours of practice over the years, through regular exposure to written language, to become a skilled reader. Additionally, the extent to which reading development occurs is likely to be supported or impeded by external factors such as socio-economic factors, the home environment, the schooling context, instructional practice, access to books, nutrition, health, affection, and emotional security.

In the past 70 years, scientific theories of reading have been strongly influenced by reading research centred on English and other Western European languages.⁵ Yet, in the past thirty years, a broader body of evidence available from different linguistic and writing systems is starting to inform current theories of reading. In particular, findings from studies on reading and particularly early reading in *transparent* orthographies and in other *agglutinating languages* (e.g., Finnish, Turkish, Basque) may be of relevance to early reading in African languages since they share common orthographic and other linguistic features.

² Knowledge of the language of the text at a sub lexical (phonological and morphological), lexical (vocabulary), sentence (morphology and syntax) and discourse-level.

³ Knowledge of text conventions; the functions that different genres of text serve; the way information is structured in different genres within and across paragraphs; the role of headings; visuals, etc. Text or topic complexity, topic familiarity and word frequency levels can also affect reading comprehension.

⁴ The technical features of a specific writing system and the linguistic features of the language onto which the written symbols are mapped.

⁵ Including German, Dutch (Germanic language family), French, Spanish, Italian (Romance language family)

2.1 READING THEORY: THREE RELEVANT MODELS

Three models of reading acquisition influenced the benchmarking process. These have been described extensively in Wills et al. (2022). The following summary highlights some key features of these models.

2.1.1 Simple view of reading

The simple view of reading (SVR) suggests that to understand a text, children must develop two key skills: decoding (knowledge of the written code) and oral language proficiency (knowledge of the language they are reading) (Gough & Tunmer, 1986; Hoover & Gough, 1990). Both skills are necessary for comprehension, but neither alone is sufficient. Decoding is crucial in the early reading stages, enabling children to read independently. Later, language proficiency, including vocabulary, becomes more influential in comprehension.

The SVR predicts that early skilled readers will excel in decoding and language proficiency, while struggling readers may lack one or both skills. By Grade 3, the influence of decoding differences on comprehension may level off, but language proficiency variations and cognitive processes like inference-making will affect reading comprehension.

2.1.2 The decoding benchmark hypothesis

The decoding benchmark hypothesis refines the SVR, suggesting that the relationship between decoding and comprehension is not a simple linear relationship. Wang, Sabatini, O'Reilly and Weeks (2019) posit that a specific decoding level is necessary for comprehension. Wang et al. (2019) propose that learners below this minimum reading benchmark struggle unless their decoding skills improve. The authors also speculate that there may be an upper benchmark after which an improvement in decoding does not lead to any comprehension gains. The findings from Ardington et al. (2021a) and Wills et al. (2022a) confirmed this pattern in Nguni languages and the Sesotho-Setswana languages - learners reading below a decoding benchmark were in a non-comprehension zone. They also find that beyond a certain point, increases in fluency do not translate into better comprehension.

2.1.3 Orthographic depth hypotheses

The orthographic depth hypothesis (ODH) suggests that reading development varies based on a language's orthography (Katz & Frost, 1992). Transparent languages have regular sound-letter mappings (i.e., the same letter symbol always represents the same sound), facilitating faster reading acquisition. Languages with more opaque writing systems have more irregular letter-sound mappings. African languages like Tshivenda have a more transparent (or shallow) orthography, whereas English has a more opaque (or deep) orthography. Research supports faster reading development in transparent languages (Alcock et al. 2010; Melby-Lervåg, Lyster & Hulme, 2012).

Another extension of the ODH theory, called the Psycholinguistic Grain Size Theory (PGST), predicts that reading in transparent orthographies will be easier if the typical 'grain size' is smaller. 'Grain size' refers to units readers use to decode words, varying from whole word, syllable, morpheme or phoneme-to-grapheme mappings. The PGST proposes that readers of transparent orthographies rely on the small grain size of letter-sounds to read words. At the same time, readers of opaque orthographies rely on larger grain sizes such as rimes (e.g., *-at* as in *cat, mat, sat*), syllables or even whole words to read words because of irregularities in the phoneme-grapheme mapping system.

2.2 A DEVELOPMENTAL VIEW OF MULTIPLE PROFICIENCIES

Reading development evolves over time, resulting in distinct profiles for proficient Grade I and Grade 4 readers (Adams 1990; Stanovich 2000; Castles et al. 2018; Kim 2020; Caravolas et al. 2021). A skilled Grade I reader is somewhat different from a skilled Grade 4 reader; what manifests as reading competence in the early years of schooling changes from what manifests as reading competence a few years later. Initially, decoding accuracy (e.g., in letter-sound recognition, syllable and word reading), takes precedence. This paves the way for faster processing, eventually leading to automaticity in processing. Decoding and processing without effort or conscious attention frees up cognitive resources for comprehension. Figure I illustrates this developmental path. However, the specific points or benchmarks where accuracy and alphabetic knowledge translate into automatic word reading, facilitating comprehension, may vary across languages due to linguistic and orthographic differences.

Figure 1: Developmental cline in early reading

accuracy increased processing speed automaticity working memory free for meaning

Drawing on the work of Stern et al. (2018), different levels of readers are distinguished (see Box 1). The national Curriculum Assessment Policy Statements (CAPS) requires that when learners exit the Foundation Phase, most of them should be competent readers. Tshivenda reading benchmarks provide a tool for determining which learners have achieved this skill level and which ones require support to keep them on track towards competent reading.

Box 1: Developmental continuum of reading adapted from Ardington et al. (2020)

Different types of readers can be distinguished on a continuum.

Non-readers show poor print awareness, poor phonological awareness and have very little letter-sound knowledge (and alphabetic awareness) and immature handwriting. Their ability to read words correctly (accuracy) is minimal. Performing below a minimal letter-sound benchmark impedes their ability to decode text.

Emerging readers have developed phonological awareness and acquired some basic knowledge of letter-sounds to enable them to blend letters to form syllables or words. Accuracy is increasing, and with it, increased processing speed to read words in or out of context. However, reading is still halting and effortful, and chunking of words into meaningful phrases is not yet regular. Reading comprehension is limited when they read a text on their own.

Readers in the next phase are **developing proficiency.** They have more accurate and fluent knowledge of the alphabetic code, which enables them to decode syllables and words in or out of context with greater accuracy (approximating 95% accuracy in home languages which refers to correctly reading 95 of 100 words attempted from a passage). Their processing rate increases to a point where some words are read automatically, and they move beyond the level of sounding out words to articulating meaningful phrases. While their decoding skills are not yet fully automatised, they have freed up enough working memory to construct basic meaning from what they read to support comprehension.

Competent readers have reached a stage where decoding is accurate (at least 95% accuracy) and largely effortless. Their reading rate is quite advanced for their grade level and they read sentences with natural intonation or prosody. They can read texts containing more complex language and less familiar words; they engage more actively with the text and understand much of what they read. They can respond to questions requiring both integrating information from a specific place in the text (local) with a wider (global) view of the text. Reading becomes a tool for learning – they start learning new things when reading on their own, without mediation from a teacher/adult. They will reread a section of text if comprehension breaks down.

Skilled readers read words in and out of context accurately, effortlessly and quickly, seldom making decoding mistakes. Their reading is automatised, they chunk words into meaningful phrases and construct and integrate meaning. They are equally good at making local and global inferences across the text. The ability to 'read to learn' comes naturally and they will often voluntarily read for information or pleasure. They readily pick up inconsistencies in a text or discrepancies in perspective.

The figure below loosely maps the reading skill cline against grade progression in the early school years.

	FOUNDA	INTERMEDIATE PHASE			
Grade R Grade 1		Grade 2	Grade 3	Grade 4	Grade 5
Non-reader	Emerging reader	Developing proficiency	reader Compete	nt reader Skille	ed reader

Developmental continuum in early reading in relation to formal grades

By the time learners exit Foundation Phase, most of them should be competent readers or at least transitioning from *developing proficiency* to *competent reading*. This developmental sequence shows a general trend; but there will always be exceptions. For example, there may be *emerging readers* in Grade R and *competent readers* in Grade 2, or a few *non-readers* at the end of grade 1. However, there should not be any *non-readers* or *emerging readers* at the end of Grade 3. Such a developmental lag would point to challenges in pedagogy and the teaching/learning context.

3 BENCHMARKING METHODOLOGY

3.1 APPROACH

As explained in the theoretical overview, while reading for meaning is the goal of reading, many foundational skills need to be mastered before children can read and understand a text on their own. The importance of some earlier processes diminishes as proficiency increases and qualitatively different processes replace them. However, across all the components, accuracy develops first, followed by increased processing speed, which then leads to automaticity (processing without effort or conscious attention), as discussed in Section 2.2. This automaticity free-ups cognitive resources (e.g., working memory and attention) to be allocated to constructing meaning from text (LaBerge & Samuels, 1974; Samuels & Flor, 1997, Fuchs *et al.*, 2001; Spear-Swerling, 2006). Following this developmental cline, our empirical work will first examine the relationship between accuracy and speed and then the relationship between fluency and comprehension.

Our approach⁶ draws on the idea of non-linearities in the relationship between decoding and reading comprehension, where comprehension only occurs above a certain level of decoding proficiency (Wang et al. 2019, Kim 2017, Kim & Wagner 2014). In other words, if decoding skills are below a minimum benchmark, reading comprehension remains stagnant. As mentioned above, Wang et al. (2019) speculate that there may also be an upper benchmark, beyond which there are no additional gains to comprehension from increased decoding skills. Our empirical work will focus on identifying these critical benchmark points in learners' reading development.

A significant body of evidence demonstrates that reading processes differ by language, with variations in the core skills employed by children learning to read (Katz & Frost, 1992; Torppa et al., 2016; Dowd & Bartlett, 2019). This calls for language-specific benchmarks. It also implies that we should be cautious not to impose assumptions about the specific nature of the speed-accuracy or fluency-comprehension relationships in Tshivenda in our empirical approach.

Our benchmarking approach is also mindful of how benchmarks need to be contextually valid. They should not be set so high as to be out of reach for the majority of early grade learners. At the same time, they need to be ambitious enough to establish expectations that are sufficient to support meaningful improvements in early grade reading. They also need to be appropriate for the curriculum context and aligned to the priorities of teaching across school system phases. Our approach to setting benchmarks is anchored to the context through data, with statistical methods that also support

⁶ The approach draws on the documented methodology in the previous studies, including the report Setting Reading Benchmarks for African Languages (2019) and the Setswana HL and EFAL Benchmark Reports (2022).

contextually relevant benchmarks as explained in the next section. Additionally, we have also assessed whether identified benchmarks are contextually relevant through consultation with linguistic and curricula experts, including home language Tshivenda, speaking literacy experts.

3.2 STATISTICAL METHOD AND SKILLS

3.2.1 Exploratory non-parametric techniques

Following Wills et al. (2022); Ardington et al. (2020, 2021a) and Jukes et al. (2020), we engage in exploratory data analysis, guided by reading development theory and expert linguistic knowledge. To avoid imposing a priori assumptions about the nature of understudied reading development in Tshivenda, we use non-parametric techniques to explore the accuracy-speed and fluency-comprehension relationships with the purpose of identifying critical points in learners' reading trajectories.

Once potential benchmarks are identified, we test them to establish whether these critical points provide meaningful distinctions between learners and whether they align with the stages of reading development. We use concurrent data (data from the same grade-point) on related reading skills. We also investigate whether the proposed benchmarks are set at levels that learners can achieve; sensitive to incremental changes in reading performance in this context and, at the same time, ambitious enough to support meaningful improvements in reading proficiency. In other words, both backwards and forwards data analysis are used in a system of checks and balances to verify the results.

3.2.2 Advantages of non-parametric methods over other benchmarking approaches

Widely used approaches to benchmarking rely on identifying a fixed comprehension benchmark (e.g., at least 80% of questions correct) and then applying statistical techniques to determine the fluency levels associated with meeting that comprehension benchmark (Room to Read, 2018; Abadzi, 2012; RTI, 2010). Our approach to benchmarking has some advantages over these previously used methodologies (see Ardington et al., 2021a; Jukes et al., 2020).

First, non-parametric methods make no assumptions about the speed-accuracy or fluencycomprehension relationships, which can be affected by the linguistic differences between languages and pedagogy. A pedagogy that focuses little on teaching comprehension skills can also result in lower comprehension scores in that context, independent of students' reading skills.

Second, our benchmarks are invariant to the serious challenges of establishing the appropriate level of comprehension questions. Traditional benchmarking methods assume that a fixed level of comprehension is a comparable construct across passages and languages. Our established benchmarks are invariant to the challenges of cross-text comparability of comprehension questions or the impact

of the placement of the comprehension questions in relation to the text. We illustrate the challenge of establishing comprehension difficulty using the Tshivenda data in the analysis that follows.

Third, our approach does not depend on having large samples of learners with advanced comprehension skills (Abadzi, 2012). Research on Nguni and Sesotho-Setswana languages shows that the relationship between fluency and comprehension flattens out at fairly low levels of comprehension. This suggests that beyond a certain fluency point, poor comprehension skills become the limiting factor, and we may find insufficient numbers of learners achieving proficient (e.g., 80%) comprehension levels to support the identification of benchmarks. Our approach is not dependent on a fixed level of comprehension, so low comprehension skills are not a limitation. Our identification of critical benchmarks in the accuracy-speed and fluency-comprehension gradients relies on examining the full distribution of these relationships, whereas traditional methods only focus on these relationships around the specific comprehension cut-off.

3.2.3 Establishing ORF benchmarks

3.2.3.1 Examining the relationship between speed and accuracy

Existing research on Nguni and the Sesotho-Setswana reading in the early grades is indicative of a nonlinear relationship between reading accuracy and reading speed. Accuracy and speed initially increase together steeply, but eventually, accuracy does not improve as much with additional increments in speed – the relationship flattens out. The point at which this relationship tapers off can inform a reading benchmark. Then, examining the reading speed at which sufficient accuracy is achieved can inform what benchmark should be established.

3.2.3.2 Examining the relationship between fluency and comprehension

In the same way that we examine the relationship between speed and accuracy, we then explore nonparametrically the relationship between fluency (a measure of both speed and accuracy) and comprehension. We seek to establish if there are regular patterns that exist in this relationship and whether critical benchmarks can be identified. For this analysis, we use samples that allow 3-minutes to read a passage and complete a subset of the ORF comprehension questions. Although we examine a fluency-comprehension relationship, our approach avoids benchmarking fluency to a fixed comprehension level.

3.2.4 Establishing letter-sound benchmarks

In accordance with the letter-sound benchmarks established in Nguni languages and in Sesotho-Setswana, this study investigates if Tshivenda speaking Grade I learners should also be reading 40 correct letter-sounds per minute (*clspm*) or more. We repeat the analysis in the Nguni-language and Sesotho-Setswana benchmarking report using Tshivenda data to find empirical support for this hypothesis.

3.3 INSTRUMENT DEVELOPMENT PROCESS: INSTRUMENTS THAT SUPPORT BENCHMARKING

New Tshivenda language assessments were developed to answer the three pertinent benchmarking questions:

- 1. What are the letter-sound benchmarks for Tshivenda that identify whether learners are developing sufficient foundational decoding skills necessary for accuracy in reading?
- 2. What is the Fluency threshold that identifies learners who are entering an emergent level of fluency which supports reading accuracy, but which is not yet sufficient to read for meaning?
- 3. What is the Oral Reading Fluency (ORF) benchmark that identifies a lower bound level of fluency necessary for learners to comprehend what they are reading and articulates to teachers a point at which they should concentrate on further developing comprehension skills?

To develop the Tshivenda instruments, assessments were supplemented and refined during a threephase pilot process. A team of multi-disciplinary specialists (linguists, statisticians, evaluators, and researchers) were involved in developing the assessments, with DBE researchers playing a pivotal role in the design of the tools and ensuring that the tools align with benchmarking tools used in other languages. Passages and comprehension questions in existing benchmarking instruments had to be comparable in difficulty to those developed for Tshivenda and were further adapted: The team shortened some texts, changed the layout and illustrations, removed the titles of stories in learner charts, and devised new comprehension questions or revised existing comprehension questions based on the results from the pilots.

New passages were developed by selecting and testing reading passages from open-source resources and crafting appropriate oral and written comprehension assessment tasks. With the permission of the Ulwazi Lwethu Project team⁷ and project partners, the language team evaluated a range of texts

⁷ Ulwazi Lwethu: African Language Reading Materials Project is a resource development initiative intended to develop African language reading books and teacher reading support resources targeted at teaching learners in the Foundation Phase to read in their home language. It involves Molteno, SAIDE, Room to Read and Electric Book Works, and is funded by the Zenex Foundation.

developed by Molteno and the South African Institute for Distance Education (SAIDE). Four potential new passages were selected, shortened, and edited to meet the needs of the benchmarking study. These passages were tested, and ultimately, two of these texts were retained in the final assessments. Other passages used were passages adapted from previous Setswana and Xitsonga assessments, which were also originally adapted from SAIDE and Ulwazi Lwethu materials.



Figure 2: Process of assessment development over the three pilot phases

The three-phased piloting approach (see Figure 2) aimed to ensure that 1) the instruments are set at the right level with no floor or ceiling effects, 2) the language is appropriate for the context with comprehension questions asked that are unambiguous, and 3) that the length of the assessment (and specific reading passages) are appropriate for the learners and the study context.

The table below depicts the purpose of each pilot, the sample size, as well as the location of the pilot.

Table 1 Pilot sample sizes

	Pilot 1 Test 3 ORF passages per grade	Pilot 2 Retest two refined ORF passages per grade. Test other reading subskills	Pilot 3 Test final tools with timing
Grade 3 Learners	29	91	92
Grade 4 Learners	26	94	96
Grade 7 Learners	24	100	96
Schools	2 Gauteng schools	6 Limpopo schools	6 Limpopo schools

Note: The learner data collected from the pilot schools was not included in the final dataset on which the benchmarks were set.

4 READING IN TSHIVENDA

4.1 LINGUISTIC AND ORTHOGRAPHIC FEATURES OF TSHIVENDA8

South Africa has 12 official languages that vary in structure and complexity. The nine official African languages all belong to the Southern Bantu language family. These, in turn, form two main subgroups, the Nguni (isiZulu, isiXhosa, isiNdebele and Siswati) and the Sesotho-Setswana language families (Setswana, Sesotho and Sepedi/Northern Sesotho). Xitsonga and Tshivenda are less closely related to the Nguni or Sesotho language groups, but share features common with languages in Mozambique and Zimbabwe, respectively. isiNdebele is also spoken in Zimbabwe and Tshivenda to a lesser extent.



Figure 3: South African Official Languages, Mohohlwane, 2023

Tshivenda is a Southern Bantu language, and it is mainly spoken by the Venda people in the northern part of South Africa's Limpopo province and by some Lemba people in other parts of Southern Africa, such as some parts of Zimbabwe. It shares features with other Southern Bantu languages in South Africa. However, it is more closely related to Shona, spoken in Zimbabwe, than to its Sesotho and Nguni language peers in South Africa. According to the 2022 census, 2.5% of South Africa's population speak Tshivenda as their first language, based primarily in the Limpopo and Gauteng provinces (respectively, 17.4% and 2.4% of South Africa's households) (Statistics SA, 2023).

All Southern African Bantu languages are agglutinating languages, meaning that words have complex morphological structures (internal structure of words) comprising roots to which several prefixes and

⁸ Adapted from Khulisa Setting Benchmarks in South Africa for EGR Report, 2020

suffixes are added to convey semantic and syntactic information. In contrast, English and Afrikaans do not have complex morphology and are classified as mildly inflectional or analytic languages.

Orthographic features of Tshivenda

Letter-sound transparency

The orthography (writing system of a language) occurs on a continuum of transparency-opacity, depending on the regularity whereby sounds are represented by letters of the alphabet. The Southern Bantu Languages all use the Roman alphabet and are regarded as having **transparent** orthographies where the letter-sound relationship is regular. For example, in Tshivenda, the sound /f/ is always represented by the letter f, as in 'funza' and 'funa'.

Word length

The Sesotho languages have a *disjunctive* orthography, where verbal elements with suffixes are written together with the word stem as a single word, while the prefixes are written as stand-alone morphemes. It is best to consider the concepts of conjunctivism (verb and noun forms usually written next to the root word without spaces in between) and disjunctivism (verb prefixes and suffixes are usually separated from root word), which apply to agglutinating languages on a continuum. The Sesotho-Setswana languages (such as Setswana) can be considered to be on the more disjunctive side, while the Nguni languages (such as isiXhosa) occur more on the conjunctive side of the continuum. Tshivenda and Xitsonga fit somewhere in the middle of the continuum as they have both conjunctive and disjunctive writing features. However, Tshivenda has more of a disjunctive orthography than Xitsonga. This has implications for word length in written texts: Nguni texts comprise many long words resulting in 'dense' text, whereas Sesotho texts contain long words interspersed with many short single morpheme words comprising one or two syllables.

Five vowel letters are used to write seven vowels. The letters 'c', 'j' and 'q' are used only for foreign words and names. Table 2 illustrates these orthographic differences in the first paragraph of the same story in four languages.⁹ These are compared with English and Afrikaans – both considered analytic languages where the concepts of conjunctivism and disjunctivism do not apply.

⁹ Taken from the story *Stone Soup* in the Vula Bula series of graded readers produced by The Molteno Institute. These versioned stories are intended for Grades 1/2 level. They are open-source texts and can be downloaded at: <u>https://vulabula.molteno.co.za/readers_by_type/</u>

Language	Text						
Sepedi (Agglutinating)	Go be go na le mosepedi yo a bego a na le tlala. O fihlile motseng wo mongwe a kgopela dijo. Go be go se na yo a bego a na le dijo						
Xitsonga (Agglutinating)	A ku ri ni mufambi loyi a ri na ndlala. U fikile emugangeni a kombela swakudya. A ku nga ri na loyi a ri na swakudya.						
isiZulu (Agglutinating)	Kwakunesihambi esasilambile kakhulu. Safika emizini omunye acela ukudla. Abantu babengenakho ukudla.						
English (Analytic)	There was a traveller who was very hungry. He came to a village and asked for food. Nobody had any food.						
	Words in sentence I	Words in sentence 2	Words in sentence 3	Total words	Words per sentence	Letters per word	Total single syllable words: V/ CV
Sepedi (Agglutinating)	13	8	12	33	11	2.9	23
Xitsonga (Agglutinating)	10	6	10	26	8.7	3.4	17
isiZulu (Agglutinating)	3	5	3	11	3.7	8.8	0
English (Analytic)	8	9	4	21	7	3.9	П

Table 2: Words per Sentence in Disjunctive or Conjunctive Orthographies

Source: Mohohlwane, Wills & Ardington (2022)

In addition, Table 2 illustrates the average word length (letters per word) based on only three sentences.

The average word length for the Nguni languages ranged from 5.88 (isiXhosa) to 7.18 (isiZulu) letters per word (Prinsloo & de Schryver, 2002). Prinsloo and de Schryver (2002) found that the Sesotho languages had similar average word lengths at 3.88 for Sesotho and Sepedi and 3.89 for Setswana. Tshivenda and Xitsonga were closely aligned to the Sesotho languages, with words being on average 4.07 and 4.29 letters long, respectively. Collectively, corpus data highlights differences in the length of words across languages.

Word length will affect reading speed measured in words per minute per language. This means that we can expect reading fluency benchmarks to differ per language and grade, depending on how long/short words are on average in a specific language. For example, by the end of Grade 2 a child can be expected to read at least 20 words correct per minute (wcpm) in a Nguni language but 40 wcpm in Setswana. This does not mean that a Grade 2 isiXhosa child is reading more slowly, but that conjunctive words in isiXhosa typically contain more letters. The timing remains constant (I minute), but differences are reflected in the average length of words characteristic of a specific language.

Complex Consonant letter-sounds

The African languages have a simple vowel system, with five to seven vowels, but complex consonant sounds represented by single letters, digraphs (2-letter combinations that represent a single sound), trigraphs (3-letter combinations that represent a single sound), and also some complex sequences of 3-4 consonants ('ntsh') and sometimes even five ('ntshw') (collectively referred to as complex consonant sequences or blends). These long consonant sequences need to be processed visually as well as phonologically, and it requires many practice opportunities of encountering them in single words and words in extended text to map them orthographically so that they are easily and quickly accessed during reading.

Complex consonant sequences in Tshivenda include, for example, 'ng', 'dz', 'vh', 'kh', 'th', 'tsh'. In Table 2 above, there are 11 (Sesotho), ten (Tshivenda), nine (Xitsonga) and 13 (isiXhosa) digraphs or consonant sequences that occur in the short paragraph in a graded reader intended for Grade 1 and Grade 2 readers. Very little research exists on how these complex letter-sound configurations affect early reading development. Inadequate phonics instruction in these letter-sounds will hamper reading development. If children have difficulty recognising digraphs, they will struggle to read texts at a fairly basic level.

Diacritics

Afrikaans, Sepedi, and Tshivenda are the only languages in South Africa that use diacritics. Afrikaans has diacritics on different vowels such as 'ê' and 'oë' to distinguish them from 'e' and 'oe', while Sepedi distinguishes between 's' and 'š'. Tshivenda uses the most diacritics. It uses the Roman alphabet but adds the circumflex diacritic below four consonants to signal dental consonants, for example, 'd' 'l' 'n' 't', as opposed to their plain alveolar counterparts d, l, n, t. The velar nasal also has a dot diacritic above it, as shown in Figure 4 below.

Figure 4: Diacritics in Tshivenda

ŅĎĻŇŤņďļňť

As in other African languages, five vowel letters are used to write seven vowels.

Tshivenda uses mostly labials and labiodentals as in 'f', 'fh', 'v', 'vh', 'bv', 'pf', 'pfh', 'zw', 'm'; diacritics as in 'd', 'l', 'n', 't'; aspirated sounds as in 'kh', 'ph', 'th', 't', 'h'; ejectives as in 'k', 'p', 't', 't'; nasals as in 'm', 'n', 'n'; and other sounds like 'x', 's', 'sh', 'sw', 'z', 'zh', 'dzh', 'h', 'l', 'r', 'tsh'.

Whether using diacritics affects the learning of letter-sound relations and word reading among early Tshivenda readers awaits research.¹⁰ In Afrikaans and Tshivenda, letters with diacritics act as additional symbols to learn in the language (that is, additional phonics) but are transparent. Children will need to learn the sound-letter correspondence for 'd' as well as 'd', for example. Therefore, it is fair to argue that diacritics might slow reading acquisition because children have more phonics to learn. Additionally, finer-grained visual perception is required to notice the diacritics, which may also take children longer to master initially. Although digraphs and trigraphs are visually more complicated to recognise than single letters for young readers and would, therefore, typically be introduced later in phonics programs. The consonants 'ng', 'kh', 'th', 'nd', 'nw', 'ny', 'tsh' are among the 18 most common consonants in Tshivenda¹¹ so it would be difficult to delay their instruction.

Phonology

The phonology (sound system) of the Southern African Bantu languages differs from English and Afrikaans. English and Afrikaans have many vowels (20 and 15, respectively) (Wissing, 2018). These vowels (V) include both short and long vowels, as well as diphthongs. There are slightly more consonants than vowels in English (24) and Afrikaans (18), but most are plain consonants. On the other hand, the Southern African Bantu languages in South Africa have relatively small and symmetrical vowel inventories ranging from five to nine. However, as in Tshivenda, they have complex consonant systems, as pointed out above, with consonants with various manners of articulation, including plain, click, implosive, and ejectives.

Additionally, tone (pitch variation on the nucleus of a syllable) is used phonemically (that is, it changes the word meaning) in the Southern African Bantu languages. Tone is not used phonemically in English or Afrikaans. Tshivenda, like all African languages, is a syllabic language, with syllables comprised mainly of V and CV syllables or variations of complex consonants preceding the vowel (CCV), e.g., the first syllable in *swika* is CCV.

¹⁰ There is currently no direct research on the use of diacritics in Tshivenda and Afrikaans

¹¹ Personal communication from Siân Rees at the Molteno Institute for Language and Literacy is researching frequencies of graphemes (letters) in the different African languages.

Early grade reading

Learning how to read does not come naturally to children like acquiring language does. Learning how to read depends on the instruction of learning how elements of one's spoken language are represented in written language. Thus, reading development is influenced by factors related to the linguistic structure of a language (such as sound and word formation systems), the way the language is written (orthographic features), pedagogic factors related to how reading is taught and how many opportunities children are provided to practice mastering the code. Establishing reliable and valid benchmarks that consider each language's linguistic and orthographic features is essential. In this way, reading teachers in each language can more easily monitor their learners' reading development to ensure they are on track and identify and remediate learners who struggle.

4.2 REVIEW OF STUDIES IN EARLY GRADE READING DEVELOPMENT IN TSHIVENDA

To date, few studies on early reading in Tshivenda have been published. Because Tshivenda is related to Shona, a small study in Zimbabwe with 143 Grade 3 Shona learners is briefly described to provide some perspective on early reading in a similar language. In 2013, Save the Children implemented the Literacy Boost (LB) program to improve reading skills for early-grade learners. The project collected pre- and post-test early grade literacy data from Grade 3 learners at the beginning and end of the 2013 school year in six intervention and four control schools. Twenty (20) Grade 3s were sampled and assessed at baseline and endline. The table below reports the performance on early-grade literacy tasks relevant to the Tshivenda Benchmark project (Brown, 2014):

		Pre-test Feb 2013	Post-test Nov 2013
Letter-sounds			
	Intervention	39	43 *
	Control	37	37
Fluency (cwpm)			
	Intervention	15	22 **
	Control	13.9	14.5
Accuracy			
	Intervention	67	69
	Control	54	54
Reading Comprehension (5)			
	Intervention	2.4	3.1
	Control	2.2	2.8

Table 3: Early grade literacy of Grade 3 Shona learners

While the learners in intervention schools made gains during the year, the improvements were only significant for letter-sounds and fluency. Brown (2014) cautions that this impact should be understood in the context of control schools making little or zero progress in almost every skill area. Thus, even

though Grade 3 Shona learners in the intervention schools performed better, performance was generally low and was relative to making practically no gain over the school year when it is 'business as usual'. The study also reported that a third of all Grade 3 learners across the intervention and control schools could not read a single word when tested at baseline.

Interestingly, the Shona research results and the Tshivenda results (presented in Section 7 of this report) are similar (not identical) in many respects, especially regarding letter-sounds, word reading fluency and accuracy. This lends credence to the reliability and validity of the early-grade tools – when the same task taps into the same construct, similar outcomes can be expected across similar languages and grades in similar pedagogic contexts.

Although not much research has been done on early reading in Tshivenda or Shona on which this report can draw, there is plenty of evidence worldwide about how the brain learns, how early reading develops across alphabetic writing systems and how reading trajectories change as various skill areas develop that can inform this benchmarking project. For example, converging evidence from the brain sciences shows that when we learn new things and practice new skills, we build procedural memory (neural connections in the brain) that helps us access information and do things automatically, without consciously thinking about them (Dehaene, 2009; Seidenberg, 2017). Repeated signals are passed along neural networks through practice, strengthening synapses to 'run the routine' and build up dedicated circuitry. The stronger the neural pathway, the more able it is to form other connections and enhance learning. As the neural pathways for a skill area become automatised, they sink below the level of consciousness. This makes processing rapid and energy-efficient; we can run on autopilot and attend to other things (Eagleman, 2015). In reading, fluency is key to automaticity. Fluency subtasks where speed and accuracy are measured (as in letter-sounds, word and passage reading) give us an indirect window into the extent to which these skill areas are being automatised. The slower, more errorprone and inaccurate a learner performs on these tasks, the less likely they are to get out of the reading blocks and become independent readers who understand what they read. Decoding on autopilot (recognising letter-sounds quickly, blending them into words) enables readers to pay attention to meaning. Fluency at the letter-sound and word level is as important as fluency at the sentence and text level. Although the sociocultural, economic and linguistic contexts in which children learn to read differ, their brains remain the same in learning an alphabetic code within their specific contexts (Dehaene, 2009; Siedenberg, 2017).

Converging evidence from across transparent and opaque orthographies has consistently shown that mastery (i.e., fluency) of alphabetic knowledge is crucial to word reading in the early stages of reading (Treiman, 2006), which helps readers decode on autopilot, which in turn increases fluency in passage reading, thereby freeing them up to pay attention to meaning, in all its different layers (Adams, 1990;
de Jong & van der Leij, 1999; Cossu, 1999; Aro, 2004; Holopainen et al., 2001; Castles et al., 2018; Wang et al., 2019). Accuracy seems to develop first, with learners speeding up as accuracy improves (Fuchs et al., 2001; Ardington et al., 2021). Comparative research across transparent and opaque orthographies by Seymour et al. (2003) found that in the transparent orthographies (e.g., Norwegian, Dutch, Icelandic, Swedish, Spanish, Italian, Turkish, and German), most children achieved 90 to 98% accuracy in reading by the end of Grade 1. In the most transparent languages (Finnish and Greek), most children could read with 98% accuracy by the end of Grade 1. In contrast, children learning to read in opaque orthographies such as English showed the slowest development, with Grade I English readers reading with only 34% accuracy. Even at the end of Grade 2, most English readers still only accuracy in Grade 3 learners from the control schools, yet even in the intervention schools, a mean of 69% accuracy indicates how far behind these Grade 3 readers are in automatising their foundational reading skills. Given that Shona and Tshivenda have transparent orthographies, accuracy should not be too difficult to achieve. Yet, it seems that this aspect of early reading is being stretched out in African primary schools, with detrimental consequences to reading comprehension.

5 TEACHING EARLY GRADE READING IN TSHIVENDA

A teacher survey was administered during fieldwork to investigate issues such as teacher qualifications, resource provisioning, perceived levels of learners' language ability and self-reported classroom reading practices. The additional contextual data related not only to Tshivenda HL teaching in the intermediate and senior phases but also to English First Additional Language (EFAL). The availability of results regarding both languages provides the opportunity for some in-school comparisons.

5.1 **RESPONDENT PROFILE**

The same teacher survey was administered to teachers who taught Tshivenda HL and EFAL in Grades 4 and 7. The dataset includes 226 responses from a total of 184 unique teachers, from 62 schools: 60 schools in the research sample, as well as the two schools which formed part of the instrument piloting phase.

For 54 schools, we received responses from teachers who teach only EFAL – a total of 87 responses fall in this category. For 58 schools, we received responses from teachers who teach only Tshivenda – this is 84 teachers in total. For 12 schools, we received responses from teachers who teach both EFAL and Tshivenda – 12 of the responses fall in this category. The table below summarises the number of individual responses, and schools represented in the teacher survey sample.

Language	Grade 4	Grade 7	Both grades	Total No of Teachers	No. of Schools
EFAL	38	39	10	87	54
Tshivenda HL	34	34	16	84	58
Both languages	7	2	4	13	12
Total Number of					62
Teachers	79	75	30	184	
Number of schools	51	48	24	62	

Table 4 Teacher survey responses

Data notes: A few teachers opted out of completing the survey or were not available on the day of fieldwork to complete the survey. A number of teachers completed the survey more than once, as they are both the EFAL and HL teachers, or if they were teaching both Grade 4 and Grade 7.

5.2 SCHOOL PROFILE

The schools represented in the dataset included 31 micro and small schools, 23 medium schools, and 8 large and mega schools¹². The dataset included responses from teachers in 7 Quintile¹³ I schools, 42 Quintile 2 schools and 11 Quintile 3 schools. A total of 14 teachers, from 11 schools, indicated they teach multi-grade classrooms.

5.3 **RESPONDENT BIOGRAPHIC**

The results from the teacher survey should be interpreted against information about the teachers' qualifications, experience, age and training.

The average age of teachers is 47, and on average they have 14.7 years of experience. Approximately 15% of the teachers have three years or less of experience teaching. Forty per cent (40%) of the respondents are also members of the school management team (SMT). Tshivenda teachers in the sample were slightly older and more experienced than the EFAL teachers, with a roughly equal proportion (36% to 40%) holding SMT posts.

Languages taught	No Unique respondent s	Mea n Age	Mean years teaching	Mean years teaching in current phase	% Respondent s who also hold SMT position	% Respondent s who have ≤3 years' experience
EFAL	88	45,4	18,0	13,6	40%	15%
Tshivenḍa HL	85	47,6	19,8	15,7	36%	15%
Tshivenda and EFAL	11	56, I	24,5	20,0	64%	8%
Grand Total	184	47,0	19,2	14,9	40%	15%

Table 5 Teacher survey respondent biographic details

The Grade 7 teachers tended to be slightly older than grade 4 teachers, with more experience and more holding SMT positions.

¹² The South African Schools Act 84 of 1996 categorises schools as follow:

⁽i) micro primary schools, with a capacity of less than 135 learners;

⁽ii) small primary schools, with a minimum capacity of 135 learners;

⁽iii) medium primary schools, with a minimum capacity of 311 learners;

⁽iv) large primary schools, with a minimum capacity of 621 learners; and

⁽v) mega primary schools with a capacity in excess of 931 learners

¹³ The South African Department of Basic Education has divided schools into 5 quintiles: Quintile 1 schools are those servicing the poorest communities, and quintile 5 serve the least poor communities.

|--|

Languages taught	No Unique respondent s	Mea n Age	Mean years teaching	Mean years teaching in current phase	% Respondent s who also hold SMT position	% Respondent s who have ≤3 years' experience
Grade 4	88	44,5	17,7	13,1	31%	19%
Grade 7	11	47,7	19,6	15,6	42%	13%
Grade 4 and 7	85	50,9	21,7	17,3	54%	7%
Grand Total	184	47,0	19,2	14,9	31%	15%

These findings indicate that the teachers are relatively experienced, and because there is a high representation of SMT members, one may expect better familiarity with the requirements of the curriculum. The majority of teachers would have had experience teaching learners prior to, during and after the COVID-19 disruptions, meaning that they may have observed some changes regarding learners' reading ability. Only 15% of the sample can be considered novice teachers, which means that only a small sample of the teachers would have had the opportunity to be trained in more recent developments with regard to learners' ability to read.

5.4 HIGHEST TEACHER QUALIFICATIONS

The surveyed sample of teachers were well-qualified. Almost half (45% of 184) of the surveyed teachers reported holding a postgraduate degree or postgraduate certificate as the highest qualification. A further 32% held a bachelor's degree, and 17% held a diploma. Only three respondents reported a Senior Certificate or Higher Certificate as their highest qualification.

A high portion (46% of 97) of the Tshivenda HL teachers were not trained in teaching literacy, and a large portion of teachers were not teaching in the phase in which they were trained. About half (51% of 184) of the respondents reported a match between the grade they were teaching and the phase in which they were trained. A total of 72% of the 184 respondents were trained as intermediate or senior phase teachers, 22% were trained as Early Childhood Development (ECD) or Foundation phase teachers, and 8% were not trained for any specific phase. Given the profile of the teachers, it is unlikely that their pre-service training would have included a significant focus on literacy issues. Additionally, just under half of the Tshivenda HL teachers (47% of 97) had not been trained in literacy in the past two years.



When last did Tshivenda HL teachers receive training on teaching literacy? (n=97)





Figure 5: Survey respondents' training

5.5 RESOURCES IN THE CLASSROOM

The survey probed the availability of specific classroom resources – learner workbooks, learner readers, graded readers, a classroom library and a school library. Teachers were asked if they considered the availability of resources to be a very big problem, a big problem, a small problem, or not a problem. If learners are still struggling with reading in Grade 7, for example, and a teacher does not have readers to assist learners to catch up, they may consider this a very big problem.

Individual teacher survey responses indicate that the availability of workbooks is less of a concern than other resources; however, 30% of Tshivenda HL teachers and 24% of EFAL teachers indicated that the availability of workbooks is a significant problem. The availability of readers is a problem in more than three-quarters of all classes, and only slightly more than half of the teachers mentioned they have access to graded readers in Tshivenda HL and EFAL.

Fewer than 25% of the schools reported having a library, and classroom libraries are unavailable in more than 20% of classes. EFAL classes are slightly better resourced than Tshivenda classes, and there is no consistent difference in the resourcing of Grade 4 and Grade 7 classes. With such significant resource constraints, the teaching of language is likely to be hampered.



Workbooks and Readers

Figure 6: Availability of resources in class.

Thirty per cent (30%) of the Tshivenda HL teachers and 24% of EFAL teachers indicate they have a big problem with the availability of learner language workbooks in their classes. However, workbooks seem to

be the most available resource for teaching. Seventy-two (72%) of the Tshivenda teachers and 62% of EFAL teachers have a big or very big problem with the availability of readers or library books for all learners in class. Such a basic resource constrains the ability of learners to become competent readers.





Those teachers who have graded readers in their class use them frequently. Almost all teachers with access to Tshivenda graded readers use them daily (53%) or once a week (45%). EFAL readers are used daily in 44% of classes and weekly in 37% of classes.





5.6 RESOURCE CONSTRAINTS AT SCHOOL LEVEL

To get a sense of the level of resource constraints at the school level, a composite resource constraint score was calculated at the school level. If one teacher reports being challenged because they perceive having a big problem with the available resources, but another reports that resources are only a small

problem, a composite school score provides a better sense of school-level constraints. The intention was to determine how many schools experience resource constraints that hamper the teaching of reading.

The composite score considered the availability of resources across the five indicators - availability of learner workbooks, learner readers, learner graded readers, a classroom library and a school library. When a respondent selected the response "big problem" or a "very big problem", a constraint score of I was awarded. If a respondent indicated that a resource was not available, a constraint score of I was awarded. Those who indicated that they had fewer than 20 readers in their class received a constraint score of I. Those who did not have a classroom or school library received a constraint score of I for each item. We calculated a resource constraint score for each of the respondents (out of 5). The higher the score, the more constrained the resources in the school. An average was then calculated across all teacher responses in the same school.

To disaggregate findings per language and grade, average scores were also calculated across the responses of all Grade 7 teachers in the same school, all Grade 4 teachers in the same school, all Tshivenda HL teachers in a school, and all EFAL teachers in the school. In those schools where only one teacher of a specific grade completed the survey, the school constraint score would be the same as the constraint score calculated for an individual teacher. The table below provides an illustrative breakdown of how the shortages in resources would translate to an average constraint score at the school level.

Workbooks are available Readers are available Enough readers in all classes No class library No school library	Workbooks are available Readers are available in most classes Enough readers in almost all classes No class library No school library	Workbooks are available Readers are available in some classes Not Enough readers in most classes No class library No school library	Workbooks Available Readers not available Not enough readers No class library No school library
Mean school constraint score would be 1.0 to 1.8	Mean school constraint score is between 2.0 and 2.9	Mean school constraint score is between 3.0 and 3.9	Mean school constraint score is between 4.0 and 5.0
Least Constrained	Somewhat Constrained	Significantly Constrained	Most Constrained

Table 7 Illustrative school constraint scores

Almost 58% of schools could be considered significantly or most constrained (Figure 9). Slight differences were observed between the percentage of schools that were significantly constrained in terms of Grade 4 and Grade 7 resources (63% vs 66%). The percentage of schools that were significantly constrained in terms of EFAL and Tshivenga HL resources also differed somewhat (65% and 61%).



Figure 9 School level constraints.

We found that there was no statistically significant difference in the average school constraint score between quintiles 1, 2 and 3 schools, but there was a statistically significant difference between the constraint scores of schools in different size categories (Figure 10). Medium-sized schools seem to be poorer resourced than small and micro schools on the one hand and large and macro schools on the other hand. This suggests that medium-sized schools' resource provisioning should particularly be prioritised.





5.7 LANGUAGE PRACTICES IN CLASS

For both Grade 4 and Grade 7 Tshivenda HL teachers, read-aloud is the most frequently implemented language practice in class. 39% of Grade 4 teachers and 34% of Grade 7 teachers report that they do this daily (Figure 11 and Figure 12). Almost 90% of the Tshivenda teachers implement other reading practices such as group-guided reading, shared reading, and individual read-aloud at least once a week. However, creative writing and written comprehension tasks are completed less frequently.

Interesting to note is that most teachers report that creative writing is the hardest activity to teach – those with lower qualifications were more likely to indicate that they are not experiencing difficulty in this area. This is most likely a result of the Dunning Kruger effect (Kruger & Dunning, 1999), where those with less knowledge are likely to evaluate their own performance better because "They don't know what they don't know".



Figure 11 Language practices in the class

About a quarter of Grades 4 teachers report working on phonics on a daily basis. More than three-quarters of Grade 4 teachers conduct spelling tests, do phonics work and give creative writing tasks at least once a week. Only around 66% to 68% of Grade 7 teachers do phonics work and spelling tests on a weekly basis.



Figure 12 Language practices in the class

Seventy-six per cent (76%) of Grade 4 teachers report assigning creative writing tasks at least once a week; for Grade 7 teachers, the percentage is 80%. Written comprehension assignments seem to be practised least frequently - 72% of Grade 4 teachers and 68% of Grade 7 teachers report these to be done at least once a week.

Read aloud is the practice most frequently practiced by teachers, followed by shared reading and individual reading aloud.

Tshivenda teachers report spending little time using English language in their Tshivenda classes. Most of the teachers who spend little time in using Tshivenda in their English classes are the teachers who have a Bachelor's degree and Post-graduate degree in Grade 4 and a Post-graduate degree in Grade 7.

5.8 IMPRESSIONS ON LEARNERS' READING ABILITY

Overall, the surveyed teachers had more confidence in learners' ability to read Tshivenda than in EFAL. In Tshivenda, 71% in grade 4 and 77% of teachers in Grade 7 mentioned that most of their learners in class can read adequately. 48% of Grade 4 EFAL teachers mentioned that half of their learners in class can read adequately, and 30% of the teachers mentioned that there are still many learners in their classes that are struggling to read. Forty-four per cent (44%) of the Grade 7 EFAL mentioned that most of the learners in their classes can read adequately, while 29% of the teachers mentioned that many learners are still struggling to read. Those teachers with higher qualifications were more likely to be critical of their learners' reading ability.

6 TSHIVENDA READING DATA

6.1 BACKGROUND

Data for establishing reading benchmarks in Tshivenda was collected in Term 2 of 2023 (between May 29 and June 15, 2023). Typically, data used for benchmark analysis is collected close to the end of the academic year as benchmarks are set at the minimum standard learners should achieve by the end of their academic year. However, South African research showed that due to COVID-19 and the associated school disruptions, learners in no-fee schools lost between 46% and 118% of a year in reading gains on average over the two years of the pandemic (Wills et al., 2022a). To compensate for COVID-19-related learning losses biasing the benchmarking process, we, therefore, decided to test Grade 3 learners in Term 2 (roughly 2 to 3 terms ahead of where Grade 2s would normally be assessed for benchmarking purposes) and use these results to develop the benchmark that Grade 2s should be meeting by the end of their academic year. For the same reason, Grade 4 learners were assessed in Term 2 to establish a Grade 3 reading benchmark and Grade 7 learners were assessed in Term 2 to establish a Grade 6 reading benchmark.

6.2 SAMPLE CHARACTERISTICS

Schools were drawn from the Vhembe East and Vhembe West districts, which together contain 970 of the 3,898 schools in Limpopo. The DBE selected 60 schools from the 682 Quintile I to 3 primary schools with Tshivenda as their language of learning and teaching (LOLT) in these two districts. A total of 1,049 Grade 3 learners, 1,060 Grade 4 learners and 1,094 Grade 7 learners across the 60 schools in Limpopo were assessed. However, some learners did not complete the written assessments, and therefore, the benchmark analysis is only based on the matched assessments. Therefore, 1,039 Grade 2, 1,044 Grade 4 and 1,074 Grade 7 learner data was analysed. The sample was not designed to be representative of all Tshivenda home language learners. Instead, sampling aimed to provide an accurate picture of reading skills in typical no-fee (Quintile I-3) schools in Limpopo.

Table 8 shows the learner characteristics of the sample by grade. Almost all learners spoke Tshivenda as their home language. The gender split was roughly equal, with slightly more boys being assessed in Grades 4 and 7. While the mean ages of learners were as expected, the maximum ages in each grade were very high, pointing to the impact of grade repetition.

	Grade 3	Grade 4	Grade 7	
Language spoken at home	e			
Tshivenda	99.1%	98.4%	98.3%	
Other	0.95%	1.6%	1.7%	
Gender				
Female	49.5%	47.3%	47.4%	
Male	50.5%	52.7%	52.6%	
Age				
Mean age	8 years 5 months	9 years 5 months	12 years 7 months	
Minimum age	7 years	8 years	11 years	
Maximum age	13 years	14 years	16 years	

Table 8: Learner characteristics

6.3 ASSESSMENTS

The reading assessments were designed to assess a range of reading skills. The assessments for the early grades (with Grade 3 and 4 learners tested on Grade 2 and 3 assessments, respectively) focused on the assessment of letter-sound knowledge, knowledge of both single letter sounds and complex consonants and diacritics, word reading, ORF and oral reading comprehension. The Grade 3 assessment also included a written comprehension test. The Grade 6 assessment (tested on the Grade 7 learners) did not test these foundational skills, focusing only on ORF, oral reading comprehension and written comprehension. The Grade 6 assessment also included a vocabulary task.

There were two components to the letter-sound knowledge task: the first part included upper- and lowercase single consonant and vowel letters, while the second part included digraphs, trigraphs, complex consonant sounds (sequences of consonants) as well as letters with diacritics. This matches the Tshivenda early grade reading curriculum.

The ORF assessment included the reading of two passages per grade. Table 9 summarises the text length, the time allowed and the number of comprehension questions for the various ORF tasks. All the passages were narrative passages except the first text administered to Grade 7s, which was an informational text about a national holiday in South Africa. All selected learners in a grade were assessed on both passages for that grade.

Grade	Passage description	Max possible words	Time allowed	Number of comprehension questions
3	Phuluso ndi muthu wa vhudele (Phuluso is a neat person)	104	3 minutes	6 (Q 7,8 & 9 omitted)
3	Nunu na Bova (Nunu and Bova)	103	3 minutes	7
4	Lusunzi na Liivha (Ant and Dove)	104	Three minutes	6 (Q 7 omitted)
4	Mathomo maswa (A new beginning)	110	3 minutes	8
4	Ndi ngani Mvuvhu i si na Vhukuse (Why the hippo doesn't have fur)	191	Written comprehension	7
7	Duvha la pfanelo dza vhathu (Human Rights day)	168	3 minutes	9
7	Vhuhali ha Nangani (Nangani's bravery)	234	3 minutes	11
7	Nungu (Pearl)	477	Written comprehension	10

Table 9: ORF passages and written reading comprehension passages

Unfortunately, the last three questions on the first Grade 3 passage (questions 7, 8 and 9) and the last question on the first Grade 4 passage (question 7) were not asked due to technical issues on Tangerine. The three Grade 3 questions skipped were literal, straightforward inference, and evaluate and examine questions, respectively. The Grade 4 question that was skipped was an evaluate and examine question. Since learners were only asked questions based on where they read up to on the passages, this affected 55% of the Grade 3 sample and 62% of the Grade 4 sample. We consulted with a language expert who confirmed that even though these questions were skipped, the remaining questions had enough variation in question type to ensure that the comprehension scores on these passages represent the range of comprehension skills that learners are expected to have at these grade levels. The language expert also confirmed that asking six comprehension questions based on passages of this length is common practice.

Before we summarise performance levels in these two comprehension tests, we briefly explain the five key sub-tasks, which include letter-sound knowledge, word reading, ORF, oral reading comprehension and written assessments.

6.3.1 Letter Sound Knowledge Assessments

The letter-sounds assessment task tests learners' ability to recognise letters and speak their corresponding sounds. The assessments administered to Grade 3 and Grade 4 learners included a letter-sound recognition task.

In this task, learners are shown a card with 60 separate letters on it. Learners are then given 60 seconds to identify and articulate as many letter-sounds as possible correctly. All the letters have representation in both upper and lower case in the chart, and several diacritics are also included. All letters of the alphabet appear at least once in the first 35 letters. Note: In Tshivenda, the letters 'q', 'j' and 'c' do not exist, and therefore, these do not appear in this task. All the vowels appear at least once in the first 20 letters.

In a second task, learners are shown a card with 45 complex consonants on it. Once again, learners must articulate the letter-sounds for as many items as possible in a 60-second period.

6.3.2 ORF and Oral Reading Comprehension Assessments

The ORF competency measures how quickly and accurately a learner can read. It is a core component of EGRA because it combines lower-level reading skills (such as decoding and familiar word recognition) with how quickly and easily the learner can read a given word (called automaticity).

Learners are required to read a passage from a card while the enumerator notes the reading errors. After 60 seconds, the enumerator notes down the last item attempted but then allows up to 120 seconds for the learner to complete the passage reading.

After the 3 minutes, the reading passage is left in front of the learner, and the enumerator asks a set of comprehension questions to which the learner must respond orally. Four types of comprehension questions based on the PIRLS taxonomy are posed i) retrieving explicitly stated information (literal); ii) making straightforward inferences; iii) interpreting and integrating ideas and information, and iv) evaluating and examining content, language and textual elements. Approximately 10 seconds are allowed for answering each question. Two such ORF passages were assessed for each grade with linked comprehension questions.

6.3.3 Reading comprehension (written) assessments

The same PIRLS comprehension processes focus on i) retrieving explicitly stated information; ii) making straightforward inferences; iii) interpreting and integrating ideas and information; and iv) evaluating and examining content, language and textual elements were used for the written assessments. They are operationalised through four types of questions: literal questions; inferential questions; integrative questions; and evaluative questions. Although there is variation in the type of comprehension questions asked, questions most commonly test lower levels of reading comprehension (for example, literal or straightforward inferences).

The Tshivenda HL written comprehension data is used to further explore the relationship between fluency and comprehension skills at higher grades. Narrative and informational text passages were developed for the reading comprehension written assessment.

6.3.4 Other reading assessment tasks administered

While the benchmarking exercise mainly relied on the letter-sound assessments, the oral reading fluency assessments, the oral comprehension questions, and the written comprehension assessment, a range of other reading skills were also assessed. These include:

Rapid Object Naming - This task helps learners ease into the full assessment and assesses whether learners can rapidly name pictured objects with automaticity.

Syllable Awareness - This task assesses whether learners can notice, think about, and work with the individual syllables in spoken words.

Phonemic Awareness - This task assesses whether learners can notice, think about, and work with the individual sounds (phonemes) in spoken words.

Syllable Reading - This task assesses whether learners can recognise and fluently read syllables.

Word Reading - This task assesses whether learners can fluently read isolated words correctly. The ability to automatically read words is a precursor to fluent reading needed for successful comprehension to take place.

The three tables below indicate the full list of assessment tasks included in Grades 2, 3, and 6 assessments.

GRADE 2 ASSESSMENT				
	Introduction to the Learner			
	Learner Information & Learner Asset Chart			
Task 1:	Rapid Object Naming			
Task 2:	Syllable Awareness			
Task 3:	Phonemic Awareness			
Task 4:	Letter Sound Recognition / Knowledge			
Task 5:	Syllable reading			
Task 6:	Complex Consonants and Diacritics Knowledge			
Task 7:	Word Reading			
Task 8.1	Oral Reading Fluency (ORF 1): Phuluso ndi muthu wa vhudele			
Task 8.2:	ORF Text Comprehension 1			
Task 9.1:	Oral Reading Fluency (ORF 2): Nunu na Bova			
Task 9.2:	ORF Text Comprehension 2			
Task 10:	Listening Comprehension: U tambela mvulani			

Table 10 Final Grade 2 Learner Language Assessment (For Grade 3 learners in 2023)

Tahle	11	Final	Grade	3 Learner	l anguage .	Assessment	(For	Grade	<u> </u>	rners	in	2023)
able	11	riiai	Graue	S Leanier	Lanyuaye i	Assessment	(F0)	Graue	4 184	IIIEIS I		2023)

GRADE 3 ASSESSMENT			
	Introduction to the Learner		
	Learner Information & Learner Asset Chart		
Task 1:	Rapid Object Naming		
Task 2:	Letter Sound Recognition / Knowledge		
Task 3:	Syllable reading		
Task 4:	Complex consonants and diacritics knowledge		
Task 5:	Word Reading		
Task 6.1:	Oral Reading Fluency (ORF 1): Lusunzi na Liivha		
Task 6.2:	ORF Text Comprehension 1		
Task 7.1:	Oral Reading Fluency (ORF 2): Mathoma maswa		
Task 7.2:	HL ORF Text Comprehension 2		
	Introduction to Written Assessment		
Task 8:	HL Written Assessment: Ndi ngani Mvuvhu i si na vhukuse		

The table below indicates the tasks that were developed for the Grade 6 learner assessments.

Table 12 Final Grade 6 Learner Language Assessment (For Grade 7 learners in 2023)

GRADE 6 ASSESSMENT				
	Introduction to the Learner			
	Learner Information & Learner Asset Chart			
Task 1.1:	HL Oral Reading Fluency (ORF 1): Duvha la Pfanelo dza Vhathu			
Task 1.2:	HL ORF Text Comprehension 1			
Task 2.1:	HL Oral Reading Fluency (ORF 2) Bopelokgale jwa ga Bonolo			
Task 2.2:	HL ORF Text Comprehension 2			
	Introduction to Written Assessment			
Task 3:	Text Comprehension: Nungu			
Task 5:	Vocabulary			

6.4 PERFORMANCE ON LETTER-SOUND KNOWLEDGE, COMPLEX CONSONANTS AND FLUENCY

6.4.1 Letter-sounds and complex consonants and diacritics

Figure 13 shows the distribution of performance on letter-sound knowledge (LSK) for Grade 3s and Grade 4s. Half of the learners in both grades could sound 40 *clspm*, while the mean for Grade 3s was 41.6 clpsm and 39.7 *clspm* for Grade 4. As expected, learners found reading single letter-sounds much easier than complex consonants and diacritics (such as 'tshw', 'nny', 'tha', 'nwa') across the grades. Grade 3s could sound only 16.7 complex consonants and diacritics correctly on average, and Grade 4s only 16.0. The same pattern was seen in other languages, such as the Nguni languages (Ardington et al., 2020) and in Setswana (Wills et al., 2022b). Figure 14 compares the proportion of Tshivenda learners scoring zero on single letter

sounds (2.2% of Grade 3 learners and 4% of Grade 4 learners) with those scoring zero on the complex consonants and diacritics (just over a quarter of learners in both grades). Reading a complex consonant sequence is required when reading a grade-level passage. It is thus concerning that such high proportions of Tshivenda learners scored zero on this task in both Grade 3 and Grade 4. By comparison, in term 2 of 2021, 19% of Setswana Grade 3s and 15% of Grade 4s (likely performing at Grade 2 and 3 pre-pandemic levels, respectively) scored zero on complex consonants and diacritics (Wills et al., 2022b).







6.4.2 ORF

Between 11% and 12% of the Tshivenda Grade 3s and Grade 4s could not correctly read a single word in a passage (Figure 15). By comparison, by the end of Grade 2, 20% of isiXhosa learners, 43% of isiZulu learners, 37% of Siswati learners, and 35% of Setswana learners could not read a single word (Ardington et al., 2020; Wills, Ardington & Sebaeng, 2022). There were fewer very weak learners in Tshivenda than in other South African languages, even though the Tshivenda learners were assessed after the COVID-19 pandemic, and the Nguni language results were from before COVID-19. As expected, the percentage of Grade 7 learners who were unable to read a word is much lower than for Grades 3 and 4, at between 2.2% and 2.7%.



Figure 15: Percentage of learners scoring zero on ORF (unable to read a word correctly in a minute)

Observations: 1039 Grade 3, 1044 Grade 4, 1074 Grade 7

6.4.3 Oral Reading Comprehension

As seen in Table 13, comprehension of passages read vacillated but was generally on the low side. Learners in all grades generally performed better on the more straightforward comprehension questions than those questions that required integrating ideas or evaluating content. However, there was considerable variation within question types (Figure 16). Each colour in the graphs represents a different comprehension process, which is taken from the PIRLS conceptual framework: i) retrieving explicitly stated information (literal), ii) making straightforward inferences; iii) interpreting and integrating ideas and information, and iv) evaluating

and examining content, language, and textual elements. To facilitate comparisons between questions, the sample for each question is kept constant by restricting the analysis to learners attempting all questions. There is considerable variation in question difficulty within each comprehension process. While learners performed well on literal questions on average, there were some that they struggled with, such as Question 4 in the first Grade 7 passage and Question 2 in the second Grade 7 passage. This variation is evident for the three question types, too. This suggests, as found by Ardington et al. (2020), that the difficulty of the question types does not map to their expected position in a hierarchy of processing complexity. This confirms the importance of developing benchmarks that are invariant to the difficulty and nature of comprehension questions presented.



Figure 16: Proportion of learners with each comprehension question correct for learners attempting all questions

6.4.4 Overall performance across the five key sub-tasks

Average performance on the five key sub-tasks is summarised in Table 13. Grade 3s and Grade 4s averaged 41.6 and 39.7 correct single letter sounds per minute, whilst Grade 7s were not tested on letter sounds. The Foundation Phase curriculum focuses on letter-sound knowledge while the focus of reading instruction shifts away from letter-sounds in Grade 4. This may explain why Grade 4s had a slightly lower average than Grade 3s (a pattern found in other South African languages (Ardington et al., 2020).) The average *clspm* for Grade 3s (42 *clspm*) is similar to that observed for Grade 3 Sepedi learners who were tested with an EGRA in 2021 (38 *clspm*) (Ardington et al., 2022).

Grade 3 learners read 24.9 *cwpm* on the word reading task on average, while Grade 4 learners read slightly more words at 27.7 *cwpm*. Learners read much fewer words correctly in a minute in the word reading tasks than in the ORF tasks. One reason for this discrepancy may be that the passages contained many single-syllable short words (either a single vowel or one vowel and one consonant), which were not present in the word reading task. These are easier and quicker to read than longer words, increasing the reading rate. The slow reading rates for words in isolation also indicate poor mastery of the alphabetic code; the absence of contextual cues suggests that the rapid recognition of letters and orthographic patterns within words has not yet been automatised.

Grade 3 learners struggled more with the first passage than the second. This was true for ORF scores (where the first passage's average ORF score was 33.5 and the second passage was 41.2) and for comprehension (where the first passage's average comprehension score was 32% and the second passage was 42%). This could be because the second passage felt more familiar as it was about playing with a doll, whilst the first was about a child who was fastidious about cleanliness.

The two passages read by Grade 4 yielded very similar ORF scores (42.3 and 41.1, respectively on average). These ORF scores were very similar to those achieved by the Grade 3 learners in their second passage, suggesting convergence in ORF between the two grades in at least some texts.

Despite the Grade 4 learners scoring similarly in ORF across the two passages, they found the second passage more difficult in their comprehension questions. On average, Grade 4 learners scored 56% in the comprehension questions related to the first passage and 42% for those associated with the second passage. Again, we see similar comprehension performance between Grade 3 and 4 on one of the passages (Grade 3 scored 42% on their second passage, and Grade 4 scored 42% on their second passage). However, Grade 4 scored much higher in comprehension on passage one (56%) than Grade 3 did on passage one (32%).

Grade 7 learners did better in ORF and comprehension in their second passage compared with the first passage. Again, this could be because of the content of the passages. The first Grade 7 passage was an informational text, while the second was a narrative text. This difference in results between informational and narrative text was also seen in some other South African languages (Ardington et al., 2022). Grade 7 learners perform similarly to Grade 4s in oral reading comprehension but outperform the Grade 4s in their written comprehension scores (Grade 3s were not tested on written comprehension).

It is possible that some of the weaker-than-expected performance of Tshivenda Grade 4 learners relative to Grade 3 learners could be attributed to the uneven impact of COVID-19 and associated school closures on the two grades. The Grade 4 learners were in Grade 1 in 2020 (the year with the most lost learning time) and Grade 2 in 2021 (which also had significant lost learning time). Conversely, the Grade 3s were in

Grade R in 2020 and Grade I in 2021. However, we cannot attribute any causal impact of COVID-19 without further exploration.

Grade	Observations	Letter sounds (clspm)	Word reading (cwpm)	ORF (cwpm)	Oral reading- comprehension (% correct) ¹⁴	Reading comprehension (written) (% correct)
3	1039	41.6	24.9	Passage 1: 33.5 Passage 2: 41.2	Passage 1: 32% Passage 2: 41%	Not assessed
4	1044	39.7	27.7	Passage 1: 42.3 Passage 2: 41.1	Passage 1: 56% Passage 2: 42%	43%
7	1074			Passage 1: 58.5 Passage 2: 74.0	Passage 1: 45% Passage 2: 54%	63%

Table 13: Mean letter-sound fluency, word reading, ORF, oral reading comprehension, and written comprehension

6.5 DATA SUB-SAMPLE

Part of the benchmarking process requires selecting which sample to focus on. In the case of the speedaccuracy relationship, we included all learners in our sample, given that all learners attempted to read all passages. However, for the fluency-comprehension relationship, learners were asked only comprehension questions related to the parts of the passage they read within the three-minute time limit. Learners who cannot read at all and those who read very slowly will only attempt some of the questions. As Ardington et al. (2020) explain, average comprehension scores for samples with high proportions of non-readers are not very informative. In deciding which subsample to focus on, we considered two options: (1) those who read the entire passage and attempted all the questions and (2) those who attempted at least 70% of the comprehension questions on each passage.

Table 14 summarises the performance of these two potential subsamples of learners. The performance of the subsample of learners who attempted all questions for each passage is highlighted in blue, and that of the subsample of learners who attempted at least 70% of the questions for each passage is highlighted in red.

¹⁴ Comprehension scores calculated as a percentage of the number of questions asked.

					Learners atte	mpting all quest	ions.	Learners attempting at least 70% of comprehension questions			
Grade	Passag e	Total N	ORF>0	% of ORF>0 sample	Mean comprehension score (%)	% scoring 80%+ for comprehension	% scoring 60%+ for comprehension	% of ORF>0 sample	Mean comprehension score (%)	% scoring 80%+ for comprehension	% scoring 60%+ for comprehension
3	I	1039	913	54%	45%	9%	25%	85%	39%	6%	18%
3	2	1039	910	67%	61%	20%	47%	74%	59%	18%	43%
4	I	1044	916	70%	74%	48%	72%	86%	69%	42%	64%
4	2	1044	934	63%	58%	20%	51%	85%	53%	15%	43%
7	I	1074	1045	57%	56%	15%	46%	82%	50%	11%	35%
7	2	1074	1050	53%	69%	35%	72%	83%	63%	26%	61%

Table 14: Details of the two potential subsamples used in the benchmarking analysis

Of those who could read more than one word, between 53%-70% attempted all comprehension questions. Of those who could read more than one word, 74% to 85% attempted at least 70% of the questions. For the benchmarking analysis, a larger sub-sample yields a more accurate representation of learner performance - as we do not want to exclude low ORF achievers and want to ensure reasonable sample sizes. For this reason, we limit our analysis of the fluency-comprehension relationship to the subsample of learners who attempted at least 70% of the comprehension questions – that is, the sample highlighted in red in Table 14. Following Ardington et al. (2020), we also trimmed the number of questions in each passage to focus on only 70% of the questions that were asked. For example, the Grade 3 comprehension questions on the second passage are trimmed to include only the first five questions, as these represent 71% of the seven questions that were asked.

7 BENCHMARKING RESULTS: TSHIVENDA

In keeping with previous research and the DBE's guidance on developing reading benchmarks for South African languages, we have selected two reading subskills for the Tshivenda language benchmarking: letter-sounds and ORF. The benchmarking results presented in this section provide a more in-depth analysis of letter-sound knowledge, ORF and comprehension skills, and their interrelationships. In the following analysis, letter-sound knowledge is expressed as the number of correct letters sounded per minute and ORF as the number of correct words read per minute from a reading passage.

7.1 LETTER SOUNDS

Letter-sound knowledge is needed for word reading. Mastery of letter-sound knowledge underpins subsequent word-reading ability. It is thus an important building block of reading development and, therefore, an early predictor of whether learners are on track. Using learner-level longitudinal data, the Setswana (Wills et al., 2022b), Sepedi (Ardington et al., 2022) and Nguni (Ardington et al., 2021a) benchmarking reports identified 40 correct single letter-sounds per minute as an appropriate minimum benchmark for the end of Grade I. The longitudinal data showed that reaching this benchmark is highly predictive of later ORF achievement. In addition, the authors show that there were diminishing improvements in letter-sound knowledge once learners had reached 40 correct letter-sounds per minute.

Since Tshivenda is an alphabetic language, it is reasonable that it should share a letter-sound benchmark with other alphabetic languages (including Setswana and the Nguni languages). Following Ardington et al. (2021a) in the Sepedi benchmarking report, we consider whether the letter-sound benchmark of 40 correct letter-sounds per minute is appropriate for Tshivenda by examining both the fluency-speed relationship and the performance profile at or below the benchmark in Tshivenda compared to other African languages.

Figure 17 shows the relationship between speed and accuracy in Tshivenda letter-sound knowledge for Grade 3 and Grade 4 learners. Accuracy is defined as the percentage of attempted letters that a learner got correct. As is the case for word reading, speed and accuracy increase sharply together before accuracy flattens off. Reading at least 40 letter-sounds per minute coincides with greater accuracy.

Figure 17: Letter-sound knowledge speed and accuracy



Performance in relation to the letter-sound benchmark is shown in Figure 18. Learners are classified as i) unable to sound one letter, 2) not reaching the benchmark, or 3) reaching the benchmark. The figure shows that just over half of Tshivenda learners in both Grade 3 and Grade 4 reached the benchmark of 40 correct single letter-sounds per minute. This performance profile mimics the results obtained in the Sepedi benchmarking study, where 56% of pre-pandemic Grade 2 learners and 55% of post-pandemic Grade 3 learners reached this benchmark (Ardington et al., 2021a). For Setswana, by the end of Grade 2, 53% of pre-pandemic learners reached the benchmark, whilst 63% of post-pandemic end-of-year Grade 3 learners reached the benchmark. Note, however, that the Setswana letter-sound assessment was harder in the pre-pandemic assessment as it included the complex consonants and diacritics (Wills et al., 2022b).

Figure 18: Percentage of learners reaching the letter-sound benchmark



Observations: 1014 Grade 3, 1022 Grade 4

7.2 ESTABLISHING A FLUENCY BENCHMARK: AN ANALYSIS OF READING SPEED AND ACCURACY

Accuracy moderates the relationship between speed and comprehension, with errors in accuracy both reducing speed and cluttering working memory. We, therefore, investigate the speed-accuracy relationship in Tshivenda, using the number of words attempted in a minute (taken as the average per minute from the total three-minute time limit) as the measure of speed and the percentage of words read correctly out of those attempted per minute as the measure of accuracy. The relationship is displayed using polynomial regressions.¹⁵ Figure 19 shows the average accuracy associated with each level of speed for Grade 3 and 4 learners. The red dashed horizontal lines represent 90% and 95% accuracy levels. For instance, at 95% accuracy, a learner would get 95 words correct for every 100 words attempted. The grey dashed vertical line represents the number of words (35 words per minute) associated with a 92-94% level of accuracy.

¹⁵ Locally weighted

Across both grades and all passages, we observe a consistent pattern in the speed-accuracy relationship. Accuracy and speed increase steeply together. Then, the relationship tends to flatten off when accuracy levels reach around 92-94% or when the learner is reading 35 correct words per minute (represented by the grey dotted line). For example, in both Grade 3 and Grade 4, learners reading 20 words per minute are getting every second word incorrect. Accuracy improves steeply with speed so that learners reading 30 words per minute achieve an accuracy level of 90%. After 40 words, we see little changes in accuracy with increasing speed, suggesting that an accuracy benchmark has been reached. This provides preliminary evidence that 35 correct words per minute may be a *minimum* Tshivenda reading benchmark that learners should achieve by the end of Grade 2 (given that the Grade 3 learners in our study are proxies for Grade 2 learners at the end of their academic year). Reading slower than that is associated with very poor comprehension. To verify this, we look next at the fluency-comprehension relationship.





Observations: 1034 Grade 3, 1027 Grade 4

7.3 RELATIONSHIP BETWEEN FLUENCY AND COMPREHENSION FOR GRADE 2 AND 3 BENCHMARKS

Understanding the relationship between fluency and how learners comprehend a passage is helpful for understanding whether the minimum fluency benchmarks identified through the accuracy-speed relationship result in learners actually comprehending passages. Figure 20 presents the relationship between ORF (the number of correct words per minute from a passage) and oral reading comprehension (the comprehension score among learners who attempted at least 70% of the comprehension questions). We limit the analysis to those learners who read far enough within the 3-minute time limit to attempt at least 70% of the comprehension questions. Both passages for Grades 3 and 4 are narrative passages (i.e., fictional stories), whilst for Grade 7, their first passage is informational (i.e., non-fiction), and the second is narrative.

Figure 20 shows that the fluency-comprehension relationship is similar for Grade 3 and 4 learners, with comprehension scores increasing steeply with fluency initially and then flattening out at around 35 *cwpm*. Grade 3s perform similarly in both passages, whilst Grade 4s do better in the first passage than the second. Nonetheless, Grade 3 and Grade 4 learners reading slower than 35 cwpm are achieving poor comprehension outcomes. Below 35 *cwpm*, it seems that working memory is dedicated to effortful decoding, leaving little room for engaging with the meaning of the text. This supports the analysis in section 7.2 that 35 *cwpm* should be the minimum Tshivenda reading benchmark that learners achieve by the end of Grade 2.

To establish the benchmark that learners should be reaching by the end of Grade 3, we examine the number of *cwpm* our Grade 4 learners (proxies for end-of-year Grade 3s) need to read to score more 'comfortably' in their comprehension. We define this as scoring between 60% and 80% on the trimmed comprehension assessment, which is achieved at 55 *cwpm* (represented by the second grey dotted line). As expected, the comprehension skills of Grade 3 learners (proxies for end-of-year Grade 2s) reading at this level of fluency are less developed (these learners achieved comprehension scores of around 50% on both passages).

Figure 20: Grade 3 and 4 data: Relationship between ORF and comprehension for learners attempting at least 70% of comprehension questions



Observations: 809 Grade 3, 830 Grade 4

To establish the benchmark that Grade 6 learners should achieve by year-end, we look at results for Grade 7s (proxies for end-of-year Grade 6s). The fluency-comprehension relationship is much flatter and more linear for the two Grade 7 passages, echoing Grade 7 results for Sepedi presented by Ardington et al. (2021a). Even at a fluency level of 35 *cwpm*, Grade 7 learners cannot answer half of the trimmed comprehension questions correctly. It is only at a fluency level of around 90 *cwpm* that Grade 7 learners are achieving good comprehension scores (above 60%). The third grey dotted line represents this. It is also interesting to note that the two Grade 7 passages' fluency-comprehension relationship is very similar, even though the first passage was an informational text and the second a narrative text, and that average fluency and comprehension scores differed. As expected, the learners struggled more with the informational text (achieving lower ORF and comprehension scores). Nonetheless, the relationship between fluency and comprehension remained consistent across the two passages.

The Grade 7s' comprehension skills in both their oral and written comprehension tests increase with fluency (Figure 21). The oral comprehension increases linearly (in a nearly flat line), whilst the written comprehension tests initially increase sharply with fluency and then begin to flatten off. At 90 *cwpm*, Grade 7s achieve written comprehension scores of about 65%.



Observations: 876

Figure 21: Relationship between fluency and written comprehension, Grade 7

Whilst learners struggled more with some comprehension questions than others, there were similarities in the fluency-comprehension relationship, supporting the choice of 35 *cwpm*, 55 cwpm and 90 *cwpm* as the Grade 2, 3 and 6 minimum reading benchmarks, respectively. Figure 22 to Figure 27 show locally weighted polynomial regressions for the proportion of learners answering each question correctly at each level of ORF. The histograms show the distribution of ORF for learners attempting each comprehension question. The graphs are plotted for the full samples of learners assessed in each grade. The differences in the height of the lines point to substantial variation in question difficulty, as we know from section 6.4.3. However, the fluency-comprehension gradient is fairly similar across questions (see the vertical dashed line across the graphs).







Figure 23: ORF and individual comprehension questions - Grade 3 Passage 2: Nunu na Bova (Nunu and Bova)

Figure 24: ORF and individual comprehension questions - Grade 4 Passage 1: Lusunzi na Liivha (Ant and Dove)





Figure 25: ORF and individual comprehension questions - Grade 4 Passage 2: Mathomo maswa (A new beginning)







Figure 27: ORF and individual comprehension questions - Grade 7 Passage 2: Vhuhali ha Nangani (Nangani's bravery)

These results support the identification of a minimum Grade 2 ORF benchmark of 35 *cwpm*, a Grade 3 benchmark of 55 *cwpm* and a Grade 6 benchmark of 90 *cwpm*. At these levels of fluency, learners are reading with at least 92% accuracy, indicating that learners are no longer effortfully decoding and can begin engaging with the meaning of the text. While Grade 3 learners reading at the Grade 2 minimum fluency benchmark of 35 *cwpm* are achieving less than 50% on the comprehension questions, the focus of reading instruction in Grade 2 should still be on fluency practice to improve accuracy and speed. By Grade 3, reading instruction should begin to shift towards developing comprehension skills. For this reason, we set the Grade 3 fluency benchmark at a level where this study's sample of Grade 4 learners (a proxy for Grade 3 learners pre-pandemic) achieved good comprehension scores (above 60%). Similarly, we set the Grade 6 minimum fluency benchmark at the level where Grade 7 learners (a proxy for Grade 6 learners pre-pandemic) achieve at least 60% in comprehension – that is, 90 *cwpm*. Grade 7s are achieving written comprehension scores of between 70% and 75% at this fluency level.

7.4 FLUENCY BENCHMARKS: ATTAINABILITY AND LEARNER PROFILES

An important requirement for the identified benchmarks is that they are both realistic enough that they are being reached by an acceptable number of learners and aspirational enough to ensure that aiming for these benchmarks will lead to overall reading improvement. We investigate whether this is the case for the proposed minimum fluency benchmarks by calculating the proportion of learners in all three grades who fall into each of the following five categories: i) unable to read; ii) reading below the Grade 2 ORF benchmark; iii) reaching the Grade 2 ORF benchmark but below the Grade 3 ORF benchmark; iv) reaching the Grade 3 ORF benchmark but below the Grade 6 ORF benchmark; and v) reaching the Grade 6 ORF benchmark. Table 15 and Figure 28 show the percentage of learners in each grade reaching these minimum fluency ORF benchmarks.

	Grade 2 ORF	Grade 3 ORF	Grade 6 ORF
	benchmark	benchmark	benchmark
Grade 3s (proxy for Grade 2s)	44%-56%	10%-25%	0%-1%
Grade 4s (proxy for Grade 3s)	56%-57%	22%-23%	1%
Grade 7s (proxy for Grade 6s)	83%-89%	58%-75%	8%-29%

Table 15: Percentage of learners in each grade achieving the ORF benchmarks

Between 44% and 56% of Grade 3 learners (a proxy for Grade 2s) are reaching the Grade 2 year-end minimum benchmark of 35 *cwpm*. This suggests that this minimum fluency benchmark is not out of reach for Grade 2 learners. Between 22% and 23% of Grade 4 learners reached the Grade 3 benchmark of 55 *cwpm*, suggesting that this fluency level is not out of reach for Grade 3 learners. While only 8% of Grade 7 learners achieved the Grade 6 benchmark of 90 *cwpm* on the first passage (the informational passage), 29% of Grade 7 learners did so on the second passage (the narrative passage). Concerningly, 42% of Grade 7 learners did not reach the Grade 3 benchmark on passage 1, and 25% did not meet the Grade 3 benchmark on passage 2.




Observations: Grade 3 1037, Grade 4 1042, Grade 7 1072

7.5 CONCURRENT VALIDITY OF THE TSHIVENDA FLUENCY BENCHMARKS

Reading benchmarks are expected to distinguish learners of different grades into different stages of reading development across other reading categories such as letter-sound knowledge, complex consonants and diacritics, word reading, comprehension and vocabulary tasks. This is the case for our proposed Grade 2, 3 and 6 Tshivenda ORF benchmarks, as shown in Table 16. For simplicity, the results are presented only for the second passage in each grade, which are all narrative texts.

As can be seen from this table, learners who cannot read a single word also have extremely poor alphabetic knowledge: 7% of Grade 3 and 16% of Grade 4 learners are unable to correctly sound one single letter, and about three-quarters of the learners in both grades cannot sound any complex consonants or diacritics. This highlights how failure to master letter sounds, especially complex consonants and diacritics, is a barrier to reading in Tshivenda. A few Grade 7s still cannot read a single word in the passage (2% of all Grade 7s sampled) and scored 17% in their vocabulary test on average. Such learners have poor decoding skills, as reflected in an ORF score, and poor language proficiency, as reflected in vocabulary performance.

Performance improves for those learners who read at least one word but are below the Grade 2 benchmark. The results are very similar across Grades 3 and 4. In one minute, on average, they can sound 33 to 34 single letters correctly, but they can only sound 7 to 8 complex consonants and diacritics correctly, and they only get 32% to 35% in the comprehension questions they attempt correct. A substantial portion of these learners cannot identify a single complex consonant or diacritic (44% of the Grade 3s and 33% of the Grade 4s in this subgroup). Reaching 92% accuracy in their word reading was out of reach for most learners in this subgroup (this was reached by only 14% of the Grade 3s and 17% of Grade 4s). The Grade 7s in this subgroup really struggle with comprehending and reflecting on the passages meaningfully, and they score on average 20% for those comprehension questions they attempt. On average, their vocabulary scores (26%) improve slightly compared with Grade 7s who cannot read a word. At this slow level of ORF, written comprehension scores are also low, at 26% for Grade 4 and 27% for Grade 7.

Performance improves markedly amongst learners who achieve the Grade 2 benchmark (i.e., they can read at a minimum level of 35 *cwpm*) but fall below the Grade 3 benchmark. This highlights the importance of this minimum milestone for learners. Again, the results are very similar amongst Grades 3 and 4. In a minute, on average, Grade 3s and 4s sound 42 to 45 letter sounds correctly and score 55% to 62% in the comprehension questions they attempt. A much higher proportion of these learners reach 95% accuracy in their word reading (51% of the Grade 3s and 60% of the Grade 4s). However, the proportion of Grade 4 learners in this category (17%) that cannot sound a single complex consonant or diacritic is higher than for Grade 3s (10%), suggesting that continued focus on complex consonants and diacritics throughout the early years is important for the weakest learners. In this subgroup, the average number of complex consonants and diacritics sounded correctly is between 19 and 22 for Grades 3 and 4. There is substantial improvement in comprehension scores (50%) and vocabulary scores (50%) for Grade 7s in this subgroup relative to those who do not achieve the Grade 2 benchmark. Written comprehension scores are much higher at this benchmark, at 54% for Grade 4 and 50% for Grade 7.

The improvements in many reading categories are more muted as learners progress and achieve the Grade 3 benchmarks. On average, single letter-sound knowledge plateaus with Grades 3 and 4 in this group achieving 48 to 51 clspm. There are still notable improvements in complex consonants and diacritics, with Grades 3 and 4 in this group scoring 28 to 30 correct. Again, a higher proportion of Grade 4 learners (12%) are unable to sound a correct complex consonant or diacritic than is true for Grade 3s (5%), underscoring the value of continued focus on learning complex consonants and diacritics. For Grade 3, there is little difference in the average comprehension results between those who achieve the Grade 2 benchmark (62% for questions attempted) and those who achieve the Grade 3 benchmark (64%). The improvements in comprehension scores are more marked for Grades 4 and

7. On average, Grade 4s that achieve the Grade 3 benchmark score 66% for questions attempted and Grade 7s score 63%. Written comprehension scores are also higher at this benchmark, 68% for Grade 4 and 66% for Grade 7. The Grade 7s in this sub-group also improved their average vocabulary scores, scoring 68%.

As expected, very few Grade 3s and 4s achieved the Grade 6 benchmark. These high-achieving Grade 3s and 4s achieved 51 to 57 *clspm*, indicating limited improvement in letter sounds compared to the other Grade 3s and 4s. However, again, there were marked improvements in complex consonants and diacritics, with scores averaging 43 and 46. Across all three grades, learners who achieved the Grade 6 benchmark did very well in comprehension, scoring between 71% and 77% of their oral questions attempted. Grade 4s and 7s in this group also did very well in their written comprehension, scoring 79% on average, and the Grade 7s in this group scored 77% on average for their vocabulary. Note that the small sample sizes of Grade 3 and 4s in this more proficient group (n=12 and 11, respectively) may limit the reliability of the results.

	Grada 3	Grada 4	Grada 7		
Connet read	(O cutom)	Grade 4	Grade /		
Cannot read		12.22			
l atten correct letter-sounds per minute	13.33	13.23			
Letter-sounds scoring zero (%)	7.0%	15.5%			
Complex consonant sounds per minute	1.02	1.22			
Complex consonants scoring zero	/6.6%	/4.5%	17.10/		
Vocabulary (%)			17.1%		
Observations	128	110	24		
Reading below the Gr	rade 2 benchmark	22.05			
Mean correct letter-sounds per minute	32.23	32.05			
Complex consonant sounds per minute	7.31	8.74			
Complex consonants scoring zero	43.8%	32.9%			
% with at least 95% accuracy in word reading	13.6%	17.1%			
Comprehension (% of total correct)	21.1%	26.3%	6.2%		
Comprehension (% of attempted correct)	34.8%	32.0%	20.3%		
Written comprehension score (%)		26.1%	26.9%		
Vocabulary (%)			26.4%		
Observations	331	340	120		
Reaching the Grade 2 benchmark					
Mean correct letter-sounds per minute	44.49	41.68			
Complex consonant sounds per minute	21.66	19.07			
Complex consonants scoring zero	9.8%	16.6%			
% with at least 95% accuracy in word reading	51.4%	59.8%			
Comprehension (% of total correct)	62.1%	53.6%	36.4%		
Comprehension (% of attempted correct)	62.3%	54.9%	49.5%		
Written comprehension score (%)		53.9%	49.8%		
Vocabulary (%)			53.4%		
Observations	315	361	202		
Reaching the Grade 3 benchmark					
Mean correct letter-sounds per minute	50.56	48.35			
Complex consonant sounds per minute	30.16	28.37			
Complex consonants scoring zero	5.2%	12.3%			
% with at least 95% accuracy in word reading	69.6%	78.6%			
Comprehension (% of total correct)	63.3%	65.1%	59.9%		

Table 16: Performance of different categories of readers on other reading assessment tasks

	Grade 3	Grade 4	Grade 7		
Comprehension (% of attempted correct)	63.6%	65.7%	62.7%		
Written comprehension score (%)		68.0%	66.3%		
Vocabulary (%)			67.8%		
Observations	250	220	414		
Reaching the Grade 6 benchmark					
Mean correct letter-sounds per minute	56.5	50.9			
Complex consonant sounds per minute	46.2	43			
Complex consonants scoring zero	0	0			
% with at least 95% accuracy in word reading	83.3%	90.9%			
Comprehension (% of total correct)	71.4%	76.7%	72.2%		
Comprehension (% of attempted correct)	71.4%	77.3%	72.3%		
Written comprehension score (%)		79.2%	79.1%		
Vocabulary (%)			77.4%		
Observations	12	11	311		

Note: Results are shown for Passage 2.

We next consider performance in the written comprehension tests in relation to the ORF benchmarks in more detail. Figure 29 and Figure 30 show the distribution of ORF scores associated with each written comprehension score for Grade 4 and Grade 7 (Grade 3 did not do a written comprehension) using box and whisker plots. The grey dashed reference lines indicate the Grade 3 and Grade 6 minimum fluency benchmarks (55 *cwpm* and 90 *cwpm*).

Almost none of the Grade 4 learners who scored zero in their written comprehension had achieved 55 *cwpm*. As written comprehension results improve, the proportion of learners achieving 55 cwpm increases (this is shown by the increasing amounts of the whiskers and boxes sitting above the grey line of 55 *cwpm*). Over half the Grade 4 learners who scored 6 out of 7 for their written comprehension achieved 55 *cwpm*. These results support the concurrent validity of the ORF benchmark for Grade 3.





Similarly, among the Grade 7 learners, almost none of the learners that scored below two (2) in their written comprehension achieved 90 *cwpm*. As the written comprehension scores improve, greater proportions of the learners score above 90 *cwpm*. Over half the Grade 7 learners that score above 9 out of 10 for their comprehension achieve the Grade 6 benchmark of 90 *cwpm*. This supports the concurrent validity of this benchmark.





8 SUMMARY OF TSHIVENDA READING BENCHMARKS

The benchmarks for early-grade reading sub-skills in Tshivenda are presented as follows:



- The Grade I letter-sound benchmark of 40 *clspm* remains as valid for Tshivenda HL learners as it is for other African language readers.
- By the end of Grade 2, all Tshivenda HL learners should be able to read at least 35 correct words per minute when reading a passage.
 - Below this benchmark, accuracy is poor, and learners struggle to comprehend what they are reading. Instruction needs to focus on developing fluency and providing learners with plenty of opportunities to practice reading extended text aloud, individually, in pairs or in small groups. This is a minimum benchmark that learners must reach so that instruction can shift away from decoding and towards the engagement of higher-order reading skills during reading. Post-pandemic, between 44% and 56% of Grade 3 learners in this sample reached this benchmark in Term 2.
- By the end of Grade 3, all learners should be able to read at least 55 correct words per minute when reading a passage.
 - When learners reach this level of fluency, working memory is no longer engaged in effortful decoding and is freed up to engage with the meaning of the text. Between 22% and 23% of post-pandemic Grade 4 learners reached this minimum fluency

benchmark in Term 2. During Grade 3, learners should be exposed to both narrative and information texts to develop their fluency in reading. The new series of books developed for the Foundation Phase in the *Ulwazi Lwethu* project (https://www.ulwazilwethu.org.za/) should help in this regard.

- By the end of Grade 6, all Tshivenda HL learners should be able to read at least 90 correct words per minute when reading a passage.
 - By Grade 6, learners should be able to read longer and more complicated texts, which means they need to free up their working memory. Learners reading slower than 90 *cwpm* will struggle to remember all the information in a text, which especially affects the reading of longer passages. In the post-pandemic Grade 7 sample tested in Term 2, only 29% of learners could reach this benchmark on a narrative text, while a mere 8% reached this benchmark on an informational text. This points to the need to expose learners to a wider variety of texts in the African languages so that they can engage with more than just narrative texts in primary school.

Children can and should reach these grade benchmarks. However, many older children do not reach this benchmark, pointing to serious pedagogic shortcomings in classrooms rather than that the benchmarks are or will not be attainable.

9 RECOMMENDATIONS

Early grade reading in Tshivenda is not currently systematically measured in South Africa at district, provincial or national levels. Without credible measurement of foundational early reading skills, tracking reading progress will not be possible. This study, therefore, contributes to the establishment of reading benchmarks. These benchmarks will add value to monitoring national reading progress, guide provincial and district strategies towards achieving these benchmarks, and for teachers to use to assess learner reading progress. The table below illustrates some of the ways in which these benchmarks can enhance early grade reading in South Africa.

NATIONAL AND PROVINCIAL ADMINISTRATION	SCHOOL	CLASSROOM
Establishes a definition of reading proficiency	Establishes standards and targets that school leaders can aim towards aligned with national reading goals	Standard against which to measure learner reading skills and the extent of remedial support in specific schools
Clearly communicate standards and targets across the system	Standardises assessment practices across and within schools and that school level assessment is aligned with informing tracking against national reading goals	Focus on interventions to support teachers in the reading and provision of remedial support, and for teachers to adapt instructional focus to meet learners' needs
Monitors progress based on understanding the size and extent of reading gaps and paves the way for a constructive intervention response	Teachers can identify how many children in their class are on track and what support is required for learners who are not on track	Target remedial programmes and activities to learners at risk of not being able to read and those not achieving the benchmark

Table 17 Use of benchmarks to improve early grade reading In South Africa

In light of the findings from the research, the following recommendations are made:

- 1. These Tshivenda HL benchmarks must be included in implementing a national system to test and monitor early-grade reading skills.
- 2. All early grade reading programs must ensure that rigorous data collection methods and systems are established at the start of all reading programs. The data should contribute to increasing datasets on early grade reading in Tshivenda. As more data is collected, current benchmarks and thresholds can be re-evaluated.
- 3. Ensure that EGRA-type assessments are included as a critical aspect of formative assessment practice in primary schools, in both Foundation and Intermediate Phases. Educators must be equipped with the necessary knowledge, practice and resources to implement such

assessments and use the results to inform their teaching practice. This must be included in preservice training and ongoing professional development.

- 4. Early-grade reading programs must ensure that evidence-based best practices are followed so that new assessments can support benchmarking exercises.
- 5. Urgently provide readers, graded readers and other reading resources for both Tshivenda and EFAL teaching to schools with similar profiles to the ones in the research. Medium sized schools, particularly, seem to be at a greater disadvantage.
- 6. Consistently prioritise access to Tshivenda reading resources in policy and budgets. A multisectoral approach may be helpful.
- 7. Urgent allocation of resources for large-scale reading programs in all Tshivenda schools is required. The effectiveness of existing and remediation programs must be evaluated to inform current EGR teaching responses.
- 8. Further research is required to understand Tshivenda linguistics and the most effective approaches to teaching reading skills.
- 9. It is imperative that teachers are equipped to teach at the Foundation Phase level and, particularly in EGR. Teachers require strategies for improving oral language proficiency, correcting decoding failures, promoting reading fluency, and ultimately reading comprehension.

10 BIBLIOGRAPHY

Abadzi, H. 2012. Developing Cross-Language Metrics for Reading Fluency Measurement, Developing Cross-Language Metrics for Reading Fluency Measurement. https://doi.org/10.1596/26819

Adams, M. J. 1994. Beginning to read: Thinking and learning about print.

Alcock, KJ, Ngorosho, D, Deus, C & Jukes, MCH. 2010. We don't have language at our house: Disentangling the relationship between phonological awareness, schooling and literacy. British Journal of Educational Psychology, 80(1), 55-76. Doi:IO.I348/000709909X42441 I

Anderson, N.J. 1999. Improving reading speed: Activities for the classroom. English Teaching Forum 37: 2–5.

Ardington, C. & Henry, J. 2021. Funda Wande Limpopo Impact Evaluation. Midline Report. SALDRU, University of Cape Town. Cape Town.

Ardington, C., Wills, G. & Kotze, J. 2021b. COVID-19 learning losses: Early grade reading in South Africa. International Journal of Educational Development, vol 86, 102480.

Ardington, C., Wills, G., Pretorius, E., Deghaye, A., Mohohlwane, & N., Menendez. 2021a. Benchmarking oral reading fluency in the early grades in Nguni languages. International Journal of Educational Development, 81, 102433. DOI: 10.1016/j.ijedudev.2021.102433

Ardington, C., Wills, G., Pretorius, E., Deghaye, N., Menendez, A., Mohohlwane, N., Mtsatse, N. & Van der Berg, S. 2020. Technical Report: Benchmarking early grade reading skills in Nguni languages. Stellenbosch: ReSEP, Stellenbosch University. Cape Town: SALDRU, University of Cape Town. Chicago: NORC at the University of Chicago. Pretoria: Department of Basic Education.

Aro, M. 2004. Learning to read: The effect of orthography. Jyväskylä Studies in Education, Psychology and Social Research 23T. University of Jyväskylä.

Aro, M. 2017. Learning to read Finnish. In Verhoeven, L & Perfetti, C. (eds), Learning to read across languages and writing systems (pp 416-435). Cambridge, Cambridge University Press.

Betts, E. A. 1946. Foundations of reading instruction, with emphasis on differentiated guidance. American Book Co.

Brown, C. S. 2014. Language and literacy development in the early years: Foundational skills that support emergent readers. *Language and Literacy Spectrum*, 24, 35-49.

Castles, A., Rastle, K. & Nation, K., 2018, 'Ending the reading wars: Reading acquisition from novice to expert', Psychological Science in the Public Interest 19(1), 5–51. https://doi.org/10.1177/1529100618772271 Cossu, G. 1999. The acquisition of Italian orthography. *Learning to read and write: A cross-linguistic perspective*, 2, 10-33.

Dale, E.& Chall, JS. 1948. A formula for predicting readability and A formula for predicting readability: Instructions. Educational Research Bulletin, XXVII (January 21 and February 18, 1948), 11-54.

Dawes, A., Biersteker, L., Girdwood, E., Snelling, M. & Tredoux, C. 2017. Innovation Edge Briefing Document. The Development and Age Validation of the Early Learning Outcomes Measure (ELOM). Available: http://elom.org.za/wp-content/uploads/2017/07/ELOM-Briefing-Document.pdf

DBE, 2011. Curriculum ad Assessment Policy Statement. Foundation Phase Grades 1-3. English First Additional Language. Department of Basic Education, South Africa. Pretoria.

https://www.education.gov.za/Portals/0/CD/National%20Curriculum%20Statements%20and%20Vocat ional/CAPS%20ENGLISH%20FAL%20GR%201-3%20FS.pdf?ver=2015-01-27-155321-957

DBE, 2017. Summary Report: Results of Year 2 Impact Evaluation. The Early Grade Reading Study (EGRS). Department of Basic Education, South Africa. Pretoria.

https://www.education.gov.za/Portals/0/Documents/Reports/EGRS%20Summary%20Report.pdf?ver= 2017-08-17-090215-583

DBE, 2020a. Action Plan to 2024. Towards the realisation of Schooling 2030. August 2020. Department of Basic Education. Pretoria, South Africa.

DBE, 2020b. National Framework for the Teaching of Reading in African Languages in the Foundation Phase. Department of Basic Education. Pretoria, South Africa.

de Jong, P. F., & van der Leij, A. 1999. Specific contributions of phonological abilities to early reading acquisition: Results from a Dutch latent variable longitudinal study. Journal of educational psychology, 91(3), 450.

Dehaene-Lambertz, G., Monzalvo, K., & Dehaene, S.(2018. The emergence of the visual word form: Longitudinal evolution of category-specific ventral visual areas during reading acquisition. *PLoS biology*, *16*(3), e2004103.

Deno, SL, Fuchs, LS, Marston, D & Shin, J. 2001. Using curriculum-based measurement to establish growth standards for students with learning disabilities. School Psychology Review, 30(4), 507–524.

Department of Basic Education and the University of the Witwatersrand. 2020. Early Grade Reading Study 2017-2019, Waves 1-4 Merged [dataset]. Version 1. Pretoria: DBE and Wits [producers], 2020. Cape Town: DataFirst [distributor], 2020. DOI: https://doi.org/10.25828/qwx3-4m77

Department of Education and Training. 1988. Setswana. Terminology and orthography, no. 4. Government Printer Pretoria, South Africa.

Dowd, A.J., Bartlett, L., 2019. The Need for Speed: Interrogating the Dominance of Oral Reading Fluency in International Reading Efforts. Comp. Educ. Rev. 63, 189–212. https://doi.org/10.1086/702612

Durgunoğlu, A & Öney, B. 1999. A cross-linguistic comparison of phonological awareness and word recognition. Reading and Writing: An Interdisciplinary Journal, 11, 281–299.

Eagleman, D. 2015. The brain: the story of you. First American edition. New York, Pantheon Books.

EGRS II. 2018. Year 2 report: Learner performance after the second year of implementation. Pretoria: Department of Basic Education.

Florit, E & Cain, K. 2011. The simple view of reading: Is it valid for different types of alphabetic orthographies? Educational Psychology Review, 23, 553–576. doi:10.1007/s10648-011-9175-6

Fuchs, LS, Fuchs, D, Hosp, MK & Jenkins, JR. 2001. Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. Scientific Studies of Reading, 5(3), 239–256.

Geva, E. & Zadeh, Z.Y. 2006. Reading efficiency in native English-speaking and English-as-a-secondlanguage children: The role of oral proficiency and underlying cognitive-linguistic processes. Scientific Studies of Reading 10(1): 31–57.

Gough, P & Tunmer, W. 1986. Decoding, reading, and reading disability. Remedial and Special Education, 7,6-10.

Hasbrouck, J. & Tindal, G., 2017. An update to compiled ORF norms (Technical Report No. 1702). Eugene, OR, Behavioral Research and Teaching, University of Oregon.

Hasbrouck, J., Tindal, G.A., 2006. Oral Reading Fluency Norms: A Valuable Assessment Tool for Reading Teachers. Read. Teach. 59, 636–644. https://doi.org/10.1598/RT.59.7.3

Hoover, WA & Gough, PB. 1990. The simple view of reading. Reading and Writing: An Interdisciplinary Journal, 2, 127–160. doi:10.1007/BF00401799

Howie, S., Combrinck, C., Roux, K., Tshele, M., Mokoena, G., & McLeod Palane, N. (2017). Progress in International Reading Literacy Study 2016 - South African Childrens' Reading Literacy Achievement. Pretoria: Centre for Evaluation and Assessment.

Jimerson, S. R., Hong, S., Stage, S., & Gerber, M. 2013. Examining oral reading fluency trajectories among English language learners and English speaking students. New Approaches in Educational Research, 2(1), 3–11. Jukes, M., Pretorius, E., Schaefer, M., Tjasink, K., Roper, M., Bisgard, J., & Mabhena, N. 2020. Setting Reading Benchmarks in South Africa. Khulisa Management Services: Johannesburg. Department of Basic Education: Pretoria. Available from: <u>https://pdf.usaid.gov/pdf_docs/PA00XINZ.pdf</u>.

Kaminski RA & Good RH. III. 1996. Toward a technology for assessing basic early literacy skills. School Psychology Review, 25(2), 215-227.

Katz, J. 2020. Back to basics - comparing the orthographic, phonic and grammatical features of English and African languages to improve literacy teaching. Presentation at PrimTEd Literacy Working Group Seminar. Materials for literacy teacher programmes.

Katz, L., & Frost, R., 1992. The Reading Process is Different for Different Orthographies: The Orthographic Depth Hypothesis, in: Frost, R., Katz, L. (Eds.), Orthography, Phonology, Morphology, and Meaning. Elsevier Science Publishers, Amsterdam, pp. 67–84. https://doi.org/10.1016/S0166-4115(08)62789-2

Kendeou, P, Papadopoulos, TC & Kotzapoulou, M. (2013). Evidence for the early emergence of the simple view of reading in a transparent orthography. Reading and Writing: An Interdisciplinary Journal, 26, 189–204. doi:10.1007/s11145-012-9361-z

Kilpatrick, DA 2012. Essentials of assessing, preventing and overcoming reading difficulties. Hoboken, NJ: John Wiley & Sons.

Kim, Y.-S., Park, C., & Wagner, R.K. 2014. Is oral/text reading fluency a "bridge" to reading comprehension? Reading and Writing, 27(1), 79–99. doi:10.1007/s11145-013- 9434-7

Kim, YG. (2020). Hierarchical and Dynamic Relations of Language and Cognitive Skills to Reading Comprehension: Testing the Direct and Indirect Effects Model of Reading (DIER). Journal of Educational Psychology, 112(4), 667-684. http://dx.doi.org/10.1037/edu0000407

Kim, YG. 2017. Why the simple view of reading is not simplistic: Unpacking the simple view of reading using a direct and indirect effect model of reading (DIER). Scientific Studies of Reading, 21, 310–333. http://dx.doi.org/10.1080/10888438.2017.1291643

Kruger, J., & Dunning, D. 1999. Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. Journal of personality and social psychology, 77(6), 1121.

Kruger, J.M. & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. Journal of Personality and Social Psychology, 77(12), 1121-1134

LaBerge, D., Samuels, S.J., 1974. Toward a theory of automatic information processing in reading. Cogn. Psychol. 6, 293–323. https://doi.org/10.1016/0010-0285(74)90015-2 Land, S. 2015. Reading isiZulu: Reading processes in an agglutinative language with a transparent orthography. Unpublished doctoral thesis, University of KwaZulu-Natal, Pietermaritzburg, South Africa.

Lekgoko, O. & Winskel, H. 2008. Learning to read in Setswana and English: cross-language transference of letter-knowledge, phonological awareness and word reading skills. Perspectives in Education, 26(4): 57 - 73.

Leppänen, I, Aunola, K, Niemi, P & Nurmi, J-E. (2008). Letter knowledge predicts Grade 4 reading fluency and reading comprehension. Learning and Instruction, 18, 548-564.

Lesaux, N. K. and L. S. Siegel (2003). The development of reading in children who speak English as a second language. Developmental Psychology 39 (6): 1005-1019.

Lipka, O. & Siegel, L.S. 2007. The development of reading skills in children with English as a second language. Scientific Studies of Reading 11(2): 105–131.

Liswaniso, B.L. 2021. The design and effects of a catch-up reading intervention for Grade 5 teachers and learners in Namibia. Unpublished PhD thesis, University of South Africa.

Maboya, M., 2020. Report on Foundational Skills of Literacy and Numeracy. Curriculum Policy, Support and Monitoring, Department of Basic Education, Pretoria, South Africa.

Makaure, ZP. 2021. The contribution of phonological processing skills to early literacy development in Norther Sotho-English bilingual children: A longitudinal study. Unpublished doctoral thesis, University of South Africa, Pretoria.

Malda, M, Nel, C & van de Vijver, FJR. 2014. The road to reading for South African learners: The role of orthographic depth. Learning and Individual Differences, 30: 34-45. http://dx.doi.org/10.1016/j.lindif.2013.11.008

Melawana ya Mokwalo le Mopeleto SETSWANA 2008. PanSALB. Arcadia. Ramagoshi, R.M. 2020. A re Bueng Setswana.

Melby-Lervåg, M, Lyster, S & Hulme, C. 2012. Phonological skills and their role in learning to read: A meta-analytic review. Psychological Bulletin, 138(2):322-52. doi: 10.1037/a0026744.

Menendez, A & Ardington, C. 2018. Impact Evaluation of USAID/South Africa Story Powered School Programme – Baseline.

Mohohlwane, N. 2023. (How) Should the language policy promote mother-tongue instruction or a straight-for-English approach in primary schooling in South Africa: what does empirical data contribute? [PhD Thesis]. Stellenbosch University.

Mohohlwane, N., Wills, G., & Ardington, C. (2022). A review of recent efforts to benchmark early reading skills in south African languages. In Early Grade Reading in South Africa (Vol. 1, pp. 83–108). Oxford University Press.

Mutema, F. 2021. The development of reading literacy skills in the early years of primary schooling: a case of four Zimbabwean schools. Unpublished doctoral thesis, University of South Africa, Pretoria.

Piper, B. 2009. Integrated Education Program: Impact Study of SMRS Using Early Grade Reading Assessment in Three Provinces in South Africa. RTI International. Research Triangle Park, NC.

Piper, B., & Zuilkowski, SS. 2015. Assessing reading fluency in Kenya: Oral or silent assessment? International Review of Education, 61(2): 153-171. DOI 10.1007/s11159-015-9470-4

Pretorius E.J., & Spaull, N. 2022. Reading research in South Africa (2010-2022): Coming of age and accounting for empirical regularities. In Spaull & Pretorius (eds). *Reading: Early grade reading in South Africa.* Cape Town: Oxford University Press.

Pretorius, E.J., & Spaull, N., 2016. Exploring relationships between oral reading fluency and reading comprehension amongst English second language readers in South Africa. Read. Writ. 29, 1449–1471. https://doi.org/10.1007/s11145-016-9645-9

Pretorius, EJ. 2014. Supporting transition or playing catch up in Grade 4? Implications for standards in education and training. Perspectives in Education 32(1): 51-76.

Pretorius, EJ. 2018. Getting it right from the start: some cautionary notes for early reading instruction in African languages. In N Spaull & JP Comings (Eds). Improving Early Literacy Outcomes: Curriculum, Teaching and Assessment (pp63-80). Leiden: IBE/BRIL

Prinsloo, D. J., & de Schryver, G. M. 2002. Designing a Measurement Instrument for the Relative Length of Alphabetical Stretches in Dictionaries, with special reference to Afrikaans and English. In 0th EURALEX International Congress (EURALEX-2002) (pp. 483-494). Center for Sprogteknologi.

Psychological Services, Broward County Public Schools. 2012. Oral Reading Fluency Data for English Language Learners (ELL). August 2012.

Room to Read, 2018. Setting Data-Driven Oral Reading Fluency Benchmarks Guidance Note. Research Triangle Park, NC.

RTI International. 2017. All Children Reading-Asia: EGRA Benchmarks and Standards Research Report

Samuels, S.J., & Flor, R.F., 1997. The importance of automaticity for developing expertise in reading. Read. Writ. Q. https://doi.org/10.1080/1057356970130202 Seidenberg, M. 2017. Language at the Speed of Sight: How we Read, Why so Many CanÖt, and what can be done about it. Basic Books.

Seymour, PHK., Aro, M. & Erskine, JM. 2003. Foundation literacy acquisition in European orthographies. British Journal of Psychology, 94, 143–174.

South African Government. 2019. "State of the Nation Address by Cyril Ramaphosa, 2019." June 20. https://www.gov.za/speeches/2SONA2019.

Spaull, N. & Pretorius, E. (2022). *Early Grade Reading in South Africa.* Oxford University Press. Cape Town.

Spaull, N., Pretorius, E. & Mohohlwane, N. 2020, 'Investigating the comprehension iceberg: Developing empirical benchmarks for early-grade reading in agglutinating African languages', South African Journal of Childhood Education 10(1), a773. https://doi.org/ 10.4102/sajce.v10i1.773

Spaull. N. 2023 2023 Background Report for the 2030 Reading Panel. Cape Town.

Spear-Swerling, L. 2006. Children's reading comprehension and oral reading fluency in easy text. Reading and Writing: An Interdisciplinary Journal, 19, 199-220.

Spencer, L. H., & Hanley, J. R. 2004. Learning a transparent orthography at five years old: Reading development of children during their first year of formal reading instruction in Wales. Journal of Research in reading, 27(1), 1-14.

Stanovich, KE. 2000. Progress in Understanding reading: Scientific foundations and new frontiers. New York: The Guildford Press.

Statistics South Africa. Census 2022, Statistical Release P0301.4.

Stern, JMB, Dubeck, M & Dick, A. 2018. Using Early Grade Reading Assessment (EGRA) data for targeted instructional support: Learning profiles and instructional needs in Indonesia. International Journal of Educational Development 61 (2018) 64–71.

Torppa, Georgiou, Lerkkanen, Niemi, Poikkeus, & Nurmi, 2016. Examining the Simple View of Reading in a Transparent Orthography: A Longitudinal Study From Kindergarten to Grade 3. Merrill. Palmer. Q. 62, 179. https://doi.org/10.13110/merrpalmquar1982.62.2.0179

Treiman, R. 2018. What research tells us about reading instruction. *Psychological Science in the Public Interest*, Vol. 19(1) 1–4. DOI: 10.1177/1529100618772272

University of Oregon. 2021. 8th Edition of Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Administration and Scoring Guide, 2021 Edition. Eugene, OR: University of Oregon.

Wang, Z., Sabatini, J., O'Reilly, T., & Weeks, J., 2019. Decoding and Reading Comprehension: A Test of the Decoding Threshold Hypothesis. J. Educ. Psychol. 111, 387–401.

Wills, G., & Ardington, C. 2022. Benchmarking a pathway out of learning poverty.

Wills, G. & Van der Berg, S. 2020. Measuring School Leadership and Management and Linkages with Literacy: Evidence from rural and township primary schools in South Africa. Educational Management Administration and Leadership. 45 (5) 708-731. DOI: 10.1177/1741143220915923

Wills, G., Ardington, C. & Sebaeng, M. L. 2022a. Foundational Skills in Home Language Reading in South Africa: Empirical Evidence from 2015-2021 in Spaull, N. & Pretorius, E. (eds). *Early Grade Reading in South Africa*. Oxford University Press: Cape Town.

Wills, G., Ardington, C., Pretorius, E., Pooe, E., Ramagoshi, R. & Sebaeng, L. 2022b. Benchmarking Early Grade Reading Skills: Setswana Summary Report. Khulisa Management Services. Johannesburg, South Africa.

Wissing, M. P. 2018. "Embracing well-being in diverse contexts: The third wave of positive psychology," in Invited Address at the First Africa Positive Psychology Conference, Potchefstroom, South Africa, (Potchefstroom: FAPPC)

Zenex Literacy Project: Learner reading assessment results. 2017. ERA: Stellenbosch University.

Department of Basic Education Private Bag X895, Pretoria, 0001, Sol Plaatjie House, 222 Struben Street, Pretoria, 0002, South Africa Tel.: (012) 357 3000, Fax: (012) 323 0601, <u>www.education.gov.za</u>