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MALAWI TEACHER PROFESSIONAL DEVELOPMENT SUPPORT (MTPDS) PROGRAM

2010 EARLY GRADE READING ASSESSMENT:

National Baseline Report

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Abbreviations

cwpm	correct words per minute
CBE	Complementary Basic Education
CEED	Central East Education Division
CONFEMEN	Conférence des Ministres de l'Education Nationale
CWED	Central West Education Division
DFID	UK Department for International Development
DIBELS	Dynamic Indicators of Basic Early Literacy Skills
DTED	Department of Teacher Education and Development
EDC	Education Development Centre
EGMA	Early Grade Math Assessment
EGRA	Early Grade Reading Assessment
EMIS	Education Management Information System
FTI	Fast Track Initiative
IPTe-ODL	Initial Primary Teacher Education through Open and Distance Learning
IRR	Inter-Rater Reliability
MIE	Malawi Institute of Education
MIS	Management Information System
MoEST	Ministry of Education Science and Technology
MTPDS	Malawi Teacher Professional Development Support
NED	Northern Education Division
NESP	National Education Sector Plan
NPC	National Primary Curriculum
ORF	Oral Reading Fluency
PASS	Primary Achievement Sample Survey
PCAR	Primary Curriculum and Assessment Reform
PIRLS	Progress in International Reading Literacy Study
PISA	Program for International Student Assessment
PSLCE	Primary School Leavers' Certificate Examination
RTI	RTI International
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SEED	South East Education Division
SHED	Shire Highlands Education Division
STATA	Statistical Software Package
SWED	South West Education Division
TIMSS	Trends in International Mathematics and Science Study
USAID	U.S. Agency for International Development

1. Executive Summary

The Malawi Teacher Professional Development Support (MTPDS) program, in partnership with the Ministry of Education, Science and Technology (MoEST) conducted a national baseline assessment of early grade reading skills in November 2010.

Using the Early Grade Reading Assessment (EGRA), MTPDS program worked with MoEST to assess students' reading skills in Malawi across a variety of essential areas of literacy. EGRA does not assess a specific curriculum, such as the National Primary Curriculum (NPC) of Malawi, but instead measures the rate at which students are developing critical skills that they must acquire in order to learn to read successfully. The skills assessed are found through research to be predictive of later reading ability, and that can be improved through effective teaching. The assessment was developed specifically for the Chichewa language (see **Annexes A and B**). It included a variety of subtests, including *letter naming fluency, syllable fluency, phonemic awareness, word reading fluency, unfamiliar word naming fluency, oral reading fluency, reading comprehension, and listening comprehension*. The sample consisted of approximately 1,000 students. The purposes of the assessment were to investigate the level of reading skills of children in Malawi in order to obtain a national level perspective of early reading development, to provide baseline data for MTPDS Program activities, and identify areas of weakness for future decision-making and curricular and pedagogical interventions. The report provides results and implications, and makes some recommendations for the improvement of early grade reading in Malawi for the consideration of the MoEST and relevant stakeholders.

1.1. Data Collection

Data collection took place in 50 schools across all six education divisions. Students were each given two assessments—one in math and one in reading. The results of the reading assessment are discussed in this report. Data collection took place over a period of 3 weeks and included one MoEST staff member as the supervisor for each data collection team. A process of adaptation, piloting, and training of data collectors took place before actual field work occurred. This process ensured that the assessment was valid and reliable for the Chichewa language and in the Malawian context. It also allowed for Ministry participation and consensus in developing the assessment instrument. Data collectors were trained for one week before data collection could begin.

The sample included students in standards 2 and 4. Assessments took place at the beginning of the school year therefore reflecting skills gained by the end of standards 1 and 3. **Table 1** summarizes the sample of students tested.

Table 1: Malawi National Baseline Sample

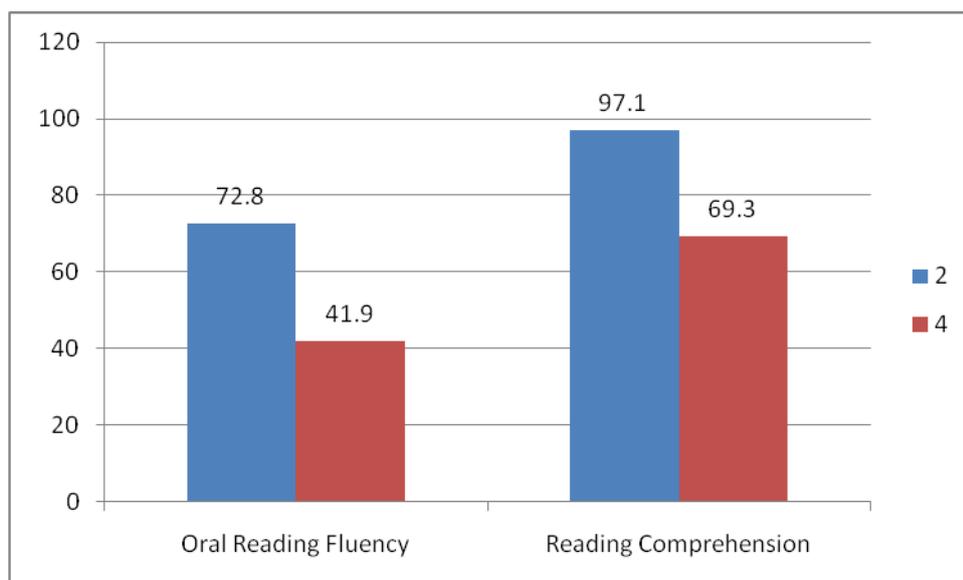
Division	Schools	Children Assessed
Central Eastern	7	140
Central Western	16	279
Northern	7	139
Shire Highlands	7	140
South Eastern	8	158
South Western	8	140
Total	50	996

The sample was based on population in each division. As such, more students were assessed in the densely populated Central Western Division than in the other divisions. Following each reading assessment, students were briefly interviewed with questions about socioeconomic status, family, and home life. Teachers and head teachers were interviewed regarding their attitudes and knowledge of reading strategies.

1.2. Early Grade Reading Findings Overview

Overall the findings show that early reading in Malawi is very weak. Students in both standards know few letter names, read few words, and thus comprehended little of the text that was presented to them. **Figure 1** shows the percent of students in each standard that scored zero on the oral reading fluency and reading comprehension subtests. Students were asked to read a short story and then answer questions about the part of the story they read. A total of 72.8% of standard 2 students and 41.9% of standard 4 students could not read a single word of the story. These results point to a real lack of knowledge of the letter-sound relationship and the understanding of how to sound out words. The percentage of zero score on the reading comprehension questions was even higher: 97.1% of standard 2 students and 69.3% of students in standard 4 could not answer one comprehension question correctly. These numbers imply that even students who were able to read some words did not understand enough to correctly answer any of the questions.

Figure 1: Percentage of Zero Scores for Oral Reading Fluency and Reading Comprehension by Standard



For a more detailed look at the EGRA outcomes, **Table 2** shows the means for each subtest included in the EGRA measure by standard. Each subtest (section of the test) measures a reading skill important to the development of reading. The table shows that students' scores on all subtests are very low. Students could name an average of 10.13 letters in one minute, with standard 4 students naming 21.36 letters in one minute—far less than would be expected. Standard 4 students read at a rate of 11.66 words correct per minute. This suggests that after three years of school, students require an average of five seconds to read one word. The consequence of poor foundational reading skills like these is that students use so much working memory to read the words that they have little memory left to remember the words they just read and to make meaning of them. As a result, students registered low scores on the reading comprehension subtest in both standards 2 and 4 (1.80% and 21.37%).

Table 2 does show that student scores indicate some progress among the grades, although the increase from standard 2 to standard 4 is lower than results in other country assessments. It should be noted that only three students in the sample were able to read at 80% comprehension, meaning that they were able to answer 4 out of 5 comprehension questions. The oral reading fluency scores for these students were 50 words correct per minute (cwpm), 50 cwpm, and 55 cwpm. An area in which students did show more positive outcomes (but still not high) was the syllable segmentation subtest, where students were asked to separate words, into syllables. Students in standard 2 correctly segmented 4.31 words and standard 4 students segmented 6.54 words out of 10 total items. Students doing well on this very early skill are demonstrating an awareness that words are made up of smaller parts. That awareness leads toward successful decoding abilities. Students' scores on the listening comprehension subtest also suggest that when they are told a story rather than reading a story, their comprehension is higher (standard 2 scored 31.44% and standard 4 scored 50.71%). Although this result is not necessarily high, it is much higher than the reading comprehension scores.

Table 2: EGRA Means by Standard

	Letter Naming	Initial Sound	Syllable Segmentation	Syllable Reading	Familiar Words	Non Words	Oral Reading Fluency	Reading Comprehension (%)	Listening Comprehension (%)
Standard 2	2.25	0.51	4.31	1.33	0.81	0.63	1.06	1.80	31.44
Standard 4	21.36	1.46	6.54	19.02	11.45	7.85	11.66	21.37	50.71
Total	10.13	.90	5.23	8.62	5.20	3.61	5.43	9.84	39.35

1.3. Recommendations

A brief overview of the recommendations based on the results of the assessment and on early grade reading research is below. These recommendations are meant to be discussed and prioritized with the MoEST to ensure that they way forward will be sustainable and country-led. The recommendations will be fully “unpacked” or reviewed jointly in the larger recommendations section at the end of the report. :

Focus on reading and reading instruction. Ensuring that reading is taught every day for at least 45 minutes will make reading a priority in schools and provide students with the instructional time they need to develop foundational reading skills. In the current curriculum 30 minutes per day is dedicated to reading, but there is evidence that class periods are often shortened from the intended time (Wiener, 2010).

Start early—in standards 1 and 2. Teaching reading from the first day of standard 1 and making reading instruction a priority will ensure that students learn to read early. While, worldwide, about 40% of grade 1 and 2 teaching is focused on language instruction, including reading, in Malawi it competes with a range of teaching priorities.

Teach decoding. If students are taught specific decoding strategies, they are able to read faster and more accurately, leaving more working memory for comprehending. Decoding allows students to gain the necessary skills for word reading. This could easily be added into the Primary Curriculum and Assessment Reform (PCAR) lessons.

Teach formal comprehension strategies. Comprehending stories is a stepping stone to being able to comprehend nonfiction text, such as a science textbook, that allow students to learn specific subject matter. Without the ability to use strategies such as predicting, self questioning, and summarization, students are likely to comprehend at a surface level only.

Review reading curriculum and textbooks. A review the curriculum and textbooks is important to see if decoding skills are being sufficiently taught and to consider revisions making these skills a focus of early reading instruction, along with incorporating early comprehension strategy instruction.

Reduce class size. The importance of finding ways to reduce class size cannot be overstated. Students in the early standards need significant instructional time and considerable teacher attention to their development, or they will not be able to learn and retain necessary skills. See **Annex C** for further explanation of how class size may affect student outcomes. While a decision that must be made and implemented by the MoEST, a logistically simple solution to class size issues would be to have 2 four-hour shifts each day. This would reduce the class size in half without the need for extra staffing or construction of schools. Reductions in class size present challenges, but the benefits to children and society may outweigh the difficulties.

Review teacher in-service and pre-service professional development. The data suggest students are either not being taught or are not understanding the instruction on letter sounds and word reading. Developing teachers' skills in this area would be a key element to improving reading outcomes. The new approach to literacy instruction through PCAR does not seem to be clear to teachers, including the reading skills they should be teaching their students (Wiener, 2010) CPD formulations implemented through MTPDS are making an effort to improve this situation but teachers need more professional development and coaching. Working with pre-service institutions would also vastly improve teacher knowledge from the outset.

Develop, publicize, and advocate for a National Early Literacy Strategy. Having a National Early Literacy Strategy focused solely on primary school students learning to read by end of standard 2 would make early reading the focus not only of the government but of the nation. Such a national strategy might establish policy and legislation that would allow for smaller class sizes, more professional development for teachers, and a review of curriculum and materials, among other steps that could dramatically improve early reading in Malawi and allow students to acquire the foundational skills needed to succeed and remain in school.

2. Introduction

As part of the MTPDS program, it is important to understand how Malawian children are developing early standard reading skills. In November 2010, MTPDS conducted a nationally representative baseline of early standard reading skills using Malawian-developed Early Grade Reading Assessment (EGRA); see *Annexes A and B* for the instrument and instructions in Chichewa. The results of the national baseline follow in this report with the purpose of informing MoEST, donors and other relevant stakeholders of the current status of early grade reading development in Malawi. Additionally, this report was undertaken to provide policy relevant and actionable information regarding the relative effectiveness of various instructional approaches and to identify particular areas of need for further attention and investment by MoEST and the donor community. The hope is that this will allow MoEST in conjunction with donors and Malawian stakeholders to consider options for "next steps" for improving early grade reading, and importantly ensuring ownership and sustainability of reforms for the country.

2.1 Malawi Context

Malawi is a small, country in sub-Saharan Africa with a rapidly growing and youthful population of 15,253,000 people. With an economy based in agriculture, Malawi is one of the poorest and most densely populated countries in Africa. According to the World Bank¹, the literacy rate is 73%. The education system in Malawi follows the 8–4–4 system: primary school (standards 1–8), secondary school (form 1–4), and university. In Malawi, children generally enter primary school at age 6. However, students' ages can widely vary depending on their socio-economic status and parents' education levels.

¹ <http://data.worldbank.org/country/malawi>

The current primary education system has a number of inherent challenges that are likely to impact student performance in the early grades. These include: crowded classrooms, high student-to-teacher ratio, lack of learning materials, limited instructional time, limited support for teacher improvement, and high absenteeism and dropout rates. Efforts to improve learner performance in schools are spearheaded by strategies which the Government of Malawi has devised through the National Education Sector Plan 2008-2017 (NESP). The strategies aim at (1) expanding equitable access to schooling, (2) improving quality and relevance of education to reduce dropout and repetition and promote effective learning, and (3) improving governance and management of the system to enable more effective and efficient delivery of services.

One major challenge is overcrowding in classrooms. Once primary education was made free in 1994, children of all socioeconomic statuses gained access to schools; however, there continues to be insufficient resources available to provide all of these children with quality education. The lack of classrooms and teachers has led to a crisis of overcrowding in many schools. It is not unusual for classrooms to have 200 students or more in one room. Education management information system (EMIS) data from 2009 shows that average student to teacher ratios in standards 1–4 are all well over 100 to 1. **Table 3** shows that students in standard 1 have the highest ratio—184 students to 1 teacher; standard 4 students have a much lower but still extremely high ratio of 121 students to 1 teacher. Student to teacher ratios such as these do not allow teachers to give proper and thoughtful instruction to students in order to ensure that all students are learning.²

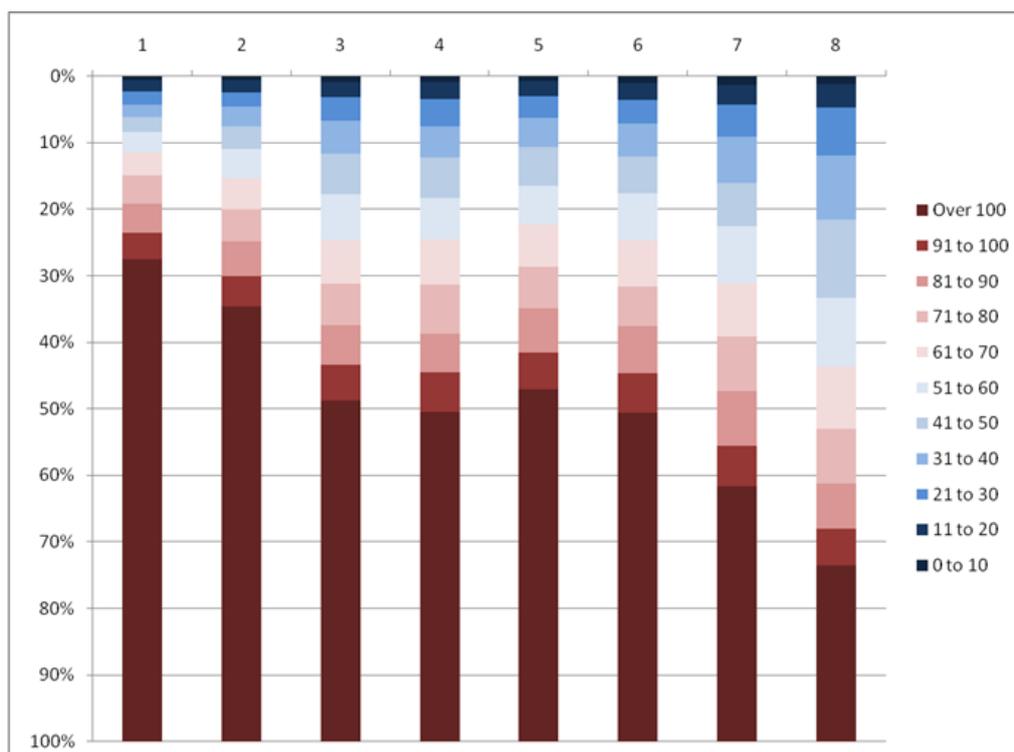
Figure 2 uses the same EMIS data to demonstrate of the severity of the situation by showing the distribution of student to teacher ratios by standard. This data shows that over 70% of classrooms in standard 1 have a student to teacher ratio of over 100 to 1. Standard 2 is approximately 65% while standard 3 is over 50%. In contrast, only 25% of standard 7 classrooms have student to teacher ratios of over 100 to 1.

Table 3. Student to Teacher Ratios by Standard

Standard	Student-Teacher Ratio
Standard 1	184:1
Standard 2	160:1
Standard 3	125:1
Standard 4	121:1

² Wiener, K. (2010). *Analysis of Best Practices in Early Literacy in Malawi*. Technical report prepared through the Malawi Teacher Professional Development Support Project (MTPDS).

Figure 2: Percentage of Student to Teacher Ratio Frequency by Standard



These data illustrate that teacher resources are being concentrated at the higher standards. While it is likely that fewer students are enrolled at the upper standards, there are still more teachers for the students who are enrolled. Class sizes in this study were just as large. According to the EMIS 2009 data the average class size in the schools that were sampled for this study was 129 students. In the sample, 61% of students in standard 2 and 44% of standard 4 students were in a class with over 100 students. The largest class size was found to be in a standard 2—a class of 298 students. **Annex C** gives an explanation of the negative effects of these extremely large class sizes on student learning based on data collected in this study. The NESP plans to reduce the teacher learner ratio progressively to 1: 60 and eventually to 1:40 by 2017. This is expected to be achieved through increased teacher supply.

Teacher resources combined with class size and other challenges make circumstances very difficult for learning.

Many teachers are not given adequate and appropriate pre- and in-service training. A new national curriculum with reading methodology is being implemented. However, there is limited ongoing support for teachers to learn how to implement the instructional practices required by this new curriculum. The curriculum is also only in Chichewa while several other languages are spoken throughout the country forcing students to learn to read in a language they may have little experience or understanding of.

The availability of teaching and learning materials, especially textbooks in schools, has been an ongoing problem in primary schools. In 2007, for example, only 27.1% of standard 6 learners had an English textbook, 9.5% shared one textbook, 55.5% of learners were in classes where more than two learners shared a textbooks, and 7.9% had no textbook

(Southern and Eastern Africa Consortium for Monitoring Educational Quality [SACMEQ III]).³ The NESP has targeted a textbook–learner ratio of 1:1 by the end of the plan period. When learners have textbooks, more time is spent on active learning than on copying notes from the blackboard and teachers can use a wide range of strategies to stimulate classroom interaction.

Absenteeism of learners in Malawian schools is a cause for concern. GoM/UNICEF (2008) have recorded learner absenteeism averaging over 25% in the lower standards on any school day.⁴ This renders teaching very ineffective as a quarter of the learners are not able to follow the previous day's work on any school day.

Grade repetition is rampant, is a feature of the primary school system, and contributes to the inefficiency of the primary school sector. In 2010 the repetition rates ranged from 12.8% in standard 7 to 24.6% in standard 1. One of the targets of the NESP/PIF is to reduce these repetition rates to 5% by 2012.

The primary school day in Malawi is much shorter than that of most countries in the region, starting at 7:30am and ending at 10:40am giving time on task close to three hours only. This gives very limited time for teachers to give intensive instruction.

All these challenges culminate into learners dropping out of school at various points. In 2010 the dropout rates ranged from 8.9% in standard 6 to 12.7% in standard 1; these figures vary from year to year. Cohort analyses indicate that 30% of boys and 22.9% of girls survived to standard 8 in 2005 and 53.1% of boys and 45% of girls survived to standard 8 in 2010. It is one of NESP's priorities to reduce the dropout rates in primary schools. Even with the surviving learners, pass rates in Primary School Leavers' Certificate Examination (PSLCE) have ranged between 68% and 74%.

Other external factors contribute to the wastage. Rural life is labor intensive and the demand for children to contribute to family income is high. This results in little attention to the need for children to attend school regularly and with appropriate parental support. Over 90% of the population of Malawi live in rural areas and belong to the low socio economic group which in turn affects the schooling of children.

Previous studies on student performance: Over the past decade several studies have been conducted with the aim of providing guidance to policy makers in relation to the provision of primary school. Studies of interest are those that have investigated the factors that affect learners' performance given the dire situation of schools and a diversity of family backgrounds. Most notably, SACMEQ studies conducted between 1997 and 2007 have been seminal in the policy debates in the country. The studies were conducted to find out:

1. the baseline data for selected factors to primary schools
2. how conditions of primary schools compare with the Ministry's own standards
3. the extent of equitable allocation of educational inputs in the primary schools
4. the reading levels of grade 6 learners

³ Chimombo, J., Kunje, D., Banda, T. and Milner, G. (2010) SACMEQ III.

⁴ GoM/UNICEF (2008). *Sentinel sites surveillance*. CERT/MoEST,

5. the numeracy levels of grade 6 learners and
6. which educational factors appear to have the most impact on reading and numeracy achievement among learners.

The studies used standard 6 learners and the results were analyzed by educational division, gender, school location and socioeconomic status. The overall results of SACMEQ I (1997), SACMEQ II (2000) and SACMEQ III (2007) were that Malawi consistently performed poorly compared to the other 15 consortium countries and that the reading and numeracy levels were increasing slightly but were always below the regional average. Also consistent were results on gender with boys performing better than girls, schools located in large cities performing better than those in other locations, and learners whose parents belong to the high socioeconomic level being favored. There was, however, no particular pattern for the performance based on Educational Division (Milner et al., 2001; Chimombo et al., 2005; forthcoming SACMEQ III)

After the introduction of PCAR, the Malawi Institute of Education (MIE) under the auspices of DFID and MoEST, carried out a baseline study to find out the performance of learners under the new curriculum.⁵ Data were collected from 12 districts selected from all the six Educational Divisions in the country. The focus was on

1. Assessing the achievement of standard 2 and 5 learners in numeracy and mathematics, Chichewa, and English
2. Finding the impact of school and home factors on learner achievement
3. Determining the challenges being experienced in the implementation of PCAR.

While the validity of the claim to using standard 2 and standard 5 learners was questioned, the mean scores in numeracy and mathematics were above 50% while the mean scores in English and Chichewa were well below 50%. The study showed that learners had immense problems in reading. Boys consistently performed better than girls in the three test areas and urban schools performed better than rural schools in all the three test areas. An interesting result from the study was that repetition at this early stage did not seem to enhance learner scores and that teacher's academic qualification had a positive correlation with learner achievement.

A follow-up study by the same MIE was reported in 2010 where the same learners were tested using the same instruments after completing one year in standard 3 and 6. In general the learners performed better in the post test than in the pre-test but most learners were not able to demonstrate the skills they were expected to acquire over the academic year.⁶

In a parallel study, MoEST conducted a Primary Achievement Sample Survey (PASS) to assess learner achievement levels in English and mathematics in standards 3, 5 and 7 and also assess the impact of school and home factors on learner achievement.⁷ The study involved 10% of the schools in Malawi and used 10, 067 pupils as a sample. Employing various statistical tests, the study found that less than 8% of the learners attained the grade

⁵ MIE (2008) *Assessment of Learning achievement in Standards 2 and 5 in English, Mathematics and Chichewa in Malawi Primary Schools*. Department of Research, Evaluation and policy studies, MIE

⁶ Manganga, J., Mwale, L., Mapondera, A. and Saka, T.(2010) *Learning Achievement of Standards 3 and 7 Learners in Malawi*. MIE

⁷ MoEST (2010) *Primary Achievement Sample Survey: Report*. MoEST

level proficiency and competences expected in standard 3 and none of the learners scored above 50% in standard 5. In standard 7 the results were similar; 95% scored below 50% in English and 99% scored below 50% in mathematics. These results cast doubt on the method used in promoting learners from one standard to the next standard in schools. Head teacher's experience as head, number of teachers in a school, and the qualification of a teacher were found to strongly correlate with learner performance. The socioeconomic status of parents, plus age and sex of a learner, were also found to be connected with learner achievement. Learner repeating a class was shown not to be helpful in increasing performance in mathematics.

In another study, Kunje, Meke and Ogawa (2009) investigated how school, classroom and pupil factors influenced pupil achievement in mathematics, English, and Chichewa in 100 primary schools where tests in the three subjects were administered to 6,000 learners in standards 5 and 7.⁸ The results were consistent with findings from the other studies and indicated among others that there was generally low achievement in English and mathematics; greater achievement in urban than rural schools especially in English; better pupil performance in schools with teacher-pupil ratios below 50 in standard 7; better pupil performance in classes with trained teachers; and better pupil performance in classes with textbooks in any ratio than those without textbooks. At the upper level, pupils at an appropriate age performed better than over-age or underage pupils; boys consistently performed better than girls though the differences were small; pupil's family socioeconomic status had positive influence on achievement; and mother's education was also positively related to performance. The study concluded that basic education with rudimentary structures requires appropriate trained teacher-to-pupil ratios to promote cognitive growth.

These studies consistently show low performance levels of learners in schools. Results of the Early Grade Reading Assessment are broadly consistent with these other studies, and this assessment is able to further illuminate the essential foundational skills in literacy which many Malawian learners do not have.

2.2 Objectives

The ability to read and understand a text is the most fundamental skill a child learns. At its most basic level, this skill gives students the ability to learn all other subject matter in order to be successful in school and life. Without literacy, there is little chance that a child will escape the intergenerational cycle of poverty. Yet, in many countries, students who have been enrolled in school for four—or as many as six—years are unable to read and understand simple texts. Evidence indicates that learning to read early and at a sufficient rate, with comprehension, is essential for learning to read *well*; reading well is critical for overall academic success. Children who do not learn to read in the first few standards are more likely to repeat and eventually drop out or will fall behind others for the rest of their lives. In terms of student achievement, countries in which the population cannot read well will tend to lag behind more educated countries⁹. EGRA's objective is to provide evidence in

⁸ Kunje, D., Meke, E. and Ogawa, K. (2009). An Investigation of Relationship Between School and Pupil Characteristics and Achievement at the Basic Education Level in Malawi. *CICE Hiroshima University Journal of International Cooperation in Education*, Vol. 12, No. 2, pp. 33–49.

⁹ Good, Simmons, Smith (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills, *Educational and Child Psychology*, Vol. 15 (1) pp.56-70.

these important areas. EGRA measures the foundational early reading skills students need to learn to read and comprehend. Knowing what students know and do not know about reading will allow decisions to be made at a national, division, district, and even classroom level. These results can be used to inform policy decisions that can improve quality of education and learning outcomes.

2.3 Rationale: Why EGRA?

EGRA is comprised of a series of short subtests that measure early reading skills, such as letter name knowledge and word reading fluency. The skills measured by EGRA have been found to be important to master in order to develop later reading skills. These are also the skills found to be most predictive of later reading success. The strategy behind EGRA is to determine the skills of reading or pre-reading in which children have particular difficulty. This will allow policy makers in Malawi to target curriculum and instruction at the reading components that are most likely to increase outcomes. Given the low levels of student achievement in sub-Saharan Africa,¹⁰ and the lower levels of student achievement in developing countries in international assessments,¹¹ several international donors (particularly the US Agency for International Development and the World Bank) and organizations (particularly RTI International) collaborated to fund and create EGRA. Development of EGRA occurred between 2006 and 2007, drawing on research from other contexts, especially the Dynamic Indicators of Basic Early Literacy Skills (DIBELS), a U.S.-based early literacy assessment.

The need for EGRA is clear. The average child from the low-income countries participating in international tests performed approximately at a level equivalent to the lowest 3-4% of children in developed countries. Unfortunately, it is difficult to disentangle whether a child's knowledge and skills are lacking, or whether the lack of foundational reading ability hinders the child's ability to understand the assessment. In response to this need, EGRA was designed to orally assess literacy acquisition for children in standards 1–4. The instrument measures oral reading fluency, reading comprehension, letter recognition, and phonemic awareness, among other skills predictive of future reading success. The need for EGRA has been echoed in low-income countries across the world, with the instrument implemented in more than 40 countries and 60 languages since 2006. EGRA is used for two main purposes. First, EGRA is designed to provide governments and ministries of education with policy-making information regarding areas of improvement. Second, early standard reading achievement is a proxy for the quality of the early part of a school system. If reading, particularly in local languages, is not being learned sufficiently by children, it is likely that achievement in other subjects will be similarly low. As intended, findings and recommendations from this report can be used per the scope of work of this report to assist MoEST to more fully recognize and prioritize reforms that can positively affect quality or early grade reading instruction. The international community has been receptive to EGRA, and it has become a relatively standard assessment tool with applications in many sub-Saharan African countries. Experience to date in Malawi indicates its tremendous potential.

¹⁰ Measured by Southern and Eastern African Consortium for Monitoring Education Quality and Programme d'Analyse des Systemes Educatifs de la CONFEMEN.

¹¹ Programme for International Student Assessment, Trends in International Mathematics and Science Study [TIMSS] and Progress in International Reading Literacy Study [PIRLS].

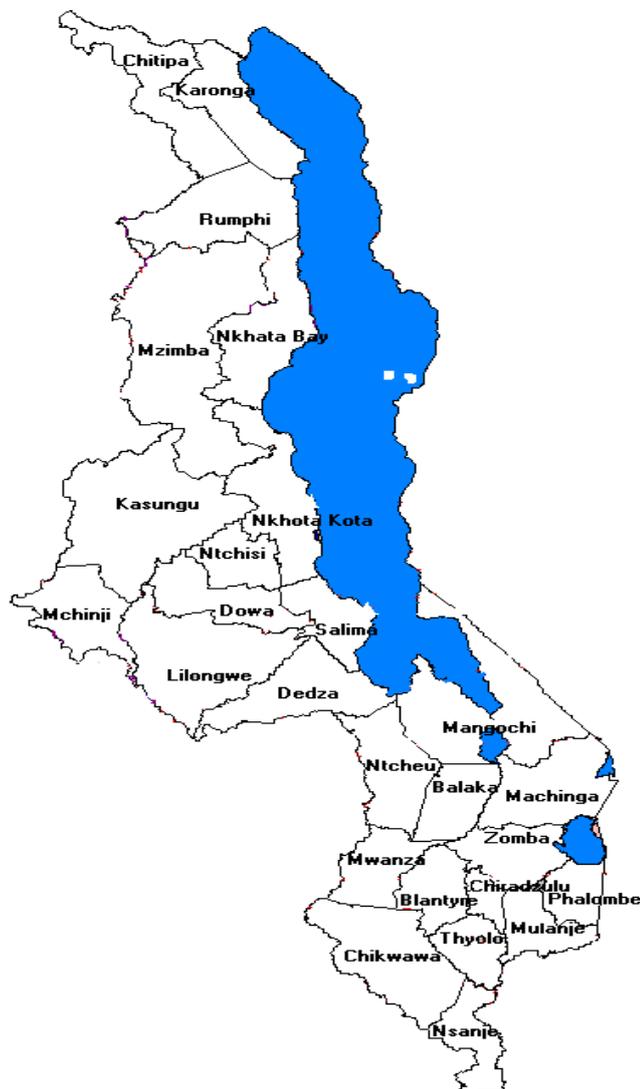
3. Research Design

There are 34 education districts in Malawi which are divided into 6 Divisions as follows:

Division	Districts
Northern Education Division (NED)	Chitipa, Karonga, Rumpi, Mzimba North, Mzimba South, Mzuzu, Nkhata Bay, Likoma Island
Central East Education Division (CEED)	Kasungu, Ntchisi, Dowa, Salima, Nkhotakota
Central West Education Division (CWED)	Lilongwe Urban, Lilongwe East, Lilongwe West, Mchinji, Dedza, Ntcheu
South East Education Division (SEED)	Zomba Urban, Zomba Rural, Machinga, Mangochi, Balaka
South West Education Division (SWED)	Blantyre Urban, Blantyre Rural, Mwanza, Neno, Chikhwawa, Nsanje
Shire Highlands Education Division (SHED)	Mulanje, Phalombe, Thyolo, Chiradzulu

The geographical location of each district is illustrated in the map presented in **Figure 3** below.

Figure 3: Malawi's Districts



3.1 Piloting

To ensure that the EGRA instrument was appropriate for the Malawian context and Chichewa language, significant preparation and consultation was necessary. The standard 2 and standard 3 textbooks were obtained and used to create letter, syllable, and word frequency lists. These lists allowed the team to know the frequency of the appearance of each letter, the most frequent syllables, and words in standard appropriate texts. These became the items for several of the subtests. The draft instrument was adapted and vetted to the Malawian context during workshops in October 2010. This workshop was attended by MTPDS project staff, and ministry officials and literacy experts from Malawi Institute of Education, Centre for Education Research and Training, Centre for Language Studies, Chancellor College, Domasi College of Education, Teacher Training Colleges, Malawi Nation Examinations Board, CBE/World Relief, and Tikwere/EDC were, in the literacy and evaluation departments. Facilitation of the workshop was conducted by RTI's EGRA Project Leader Jessica Mejia and Reading Expert Dr. Sylvia Linan-Thompson. Over the course of 4

days, the group discussed and revised each section and correctly translated instructions to be read by the assessor to the student. The instrument was informally tested with 48 students in standards 2 and 3 in a school located at the edge of Lilongwe. Outcomes of this workshop included a draft instrument ready for piloting, consensus among the project staff and MoEST on the utility of the instrument, and capacity of MoEST staff to create early literacy instruments.

Piloting of EGRA was carried out in schools in peri-urban and urban areas of Lilongwe. Four schools were chosen, of which two were believed by ministry inspectors to be high performing and two to be low performing.¹² A total of 254 assessments were collected for children in standards 2 and 4 in these schools.

Results in pilot schools were low. For example, 63% of children were unable to read a single familiar word. Of those who attempted the story reading subtest, only 31% could read a word of text. The listening comprehension subtest showed a normal distribution, which means that the items were at the correct level of difficulty for the students tested. In general, the lowest results were found on assessments of phonemic awareness (three subtests) and decoding or letter sound correspondence (three subtests). Since the assessment was lengthier than desired (more than 15 minutes), one section of phonemic awareness and one section of letter sound correspondence were removed. The letter sound assessment showed 70% of students at floor (scoring 0). Related subtests of phonemic awareness and the phonics that assessed letter identification, initial sound identification, syllable segmentation, syllable reading and nonsense word reading, were retained so that those important competencies would still be included.

3.2 Sampling

To have a complete picture of children's early reading levels, the Malawi EGRA national baseline sample included children at the beginning of standard 2 and standard 4. This sample gives us an idea of what children have learned after a full 1 and 3 years of learning, respectively. Standards 1–3 are normally considered to be the standards in which primary school students, if given proper learning conditions, will learn to read. In standard 1, many early foundational skills are learned, and it is a common expectation that children can read by the end of standard 2. As such, children in Malawi could easily be expected to read fluently and with comprehension before standard 3. For the first few years, the language in which children learn is Chichewa, according to policy and practice. As such, this was the language assessed.

To provide a nationally representative sample of standards 1 and 3 learners, 996 students were assessed from 50 schools. Schools were selected at random from a list, provided by the MoEST's 2009 EMIS database, of all schools in the country. The sample was random

¹² Choice of schools with high or low performing children helps ensure that the full range of student ability is captured for the grades assessed. Having a good range of student ability increases the chances that the pilot analysis will reveal level of appropriateness and validity. For example, if all children got a 0 or 100% on the assessment (were at floor or ceiling), we would not know any more about the student than that their actual ability level is above or below our assessment, but we do not know how much or why this is the case. In other words, we do not learn much about the child, and we need to adjust the assessment level. Also, to check validity, we determine whether there are items that at times better readers have trouble with and poor readers do well with. We can study the item and see if it is not valid (for example, if a vocabulary word used is not as familiar to a particular subgroup of students).

but the sample list was organized to reflect regional differences and school sizes. To ensure that schools were evenly distributed across the country, the list was stratified by division and district. The sampling process used was systematic random sampling, proportional to population. Proportional to population sampling ensures that the sample reflects the manner in which the population of children is apportioned to schools. Within the school, the assessment was given to a random sample of students that included approximately 10 girls and 10 boys. **Table 4** shows the sample disaggregated by standard and gender. It demonstrates that student distribution across and among groups was approximately even.

Since this was a nationally representative sample, **Table 5** shows the sample spread across divisions. The sample was drawn based on how students are allocated to schools. Differences can be seen in the number of students assessed in Central Western Division (281 students) division compared to the other divisions (139–158 students). Central Western Division has more students in schools than the others.

Table 4: Sample Students by Standard and Gender

EGRA Sample			
Standard	Male	Female	Total
2	258	264	522
4	243	231	474
Total	501	495	996

Table 5: Sample Students by Division and Standard

Standard	Divisions						Total
	Central East	Central West	Northern	Shire Highlands	South Eastern	South Western	
2	70	143	72	78	89	71	523
4	70	138	67	62	69	69	475
Total	140	281	139	140	158	140	998

Sample Limitations. The sample was not designed to detect differences between subgroups such as urban and rural, or between regions. The focus of the study was to provide a general picture of the development (and weaknesses) of basic competency in foundational literacy and math skills in the early grades in the general population. To be sure to capture statistical differences in the subgroups of division and gender (especially by grade), the sample would need to be larger (roughly doubled for each subgroup added). However, the statistical differences reported in this study are at the 95% confidence level, meaning that there is only a 5% or less chance that the results obtained occurred by chance rather than representing the true population.

As part of the study, teachers (82) and head teachers (50) were also interviewed at each school. These interviews consisted of questions about training, experience, and reading instruction. Interviews will be used as part of the analysis of predictive factors of reading performance.

3.3 Data Collection

Data collection took place in 50 schools across all six divisions in November of 2010. Teams of enumerators were led by a group of supervisors from educational institutions including the Department for Teacher Education and Development (DTED), Domasi College of Education, Teacher Training Colleges, Centre for Education Research and Training and Centre for Language Studies. The enumerators and supervisors were trained on how to collect data, sample learners in the schools and administer interview protocols for teachers and head teachers. The National baseline had 6 teams, each comprising 1 supervisor, 2 numeracy and 2 literacy enumerators. Testing was completed during a 1-day visit at each school. Two assessments (reading and mathematics) were completed at each school during morning hours. Each learner was tested in each of the two subjects, reading and math. While the content of the instrument was Chichewa, because that is the language in which children learn to read in the early grades in Malawi, Tumbuka and Chiyao were used to give instructions to children if one of those was dominant. To decrease communications barriers, language speakers of other major language groups (not Chichewa) were sent to regions where they could more easily communicate with children. This was especially true for Tumbuka and Yao speakers. Enumerators were given instructions to translate instructions after it was clear that students were unable to understand instructions in Chichewa but no items were translated. Students were chosen randomly from class registers provided by the teacher or school director and were called to the assessment area by the supervisor.

As for the instrument itself, EGRA is designed to provide a baseline on how well standard 2 and 4 pupils are reading—in this case, at the beginning of the year. It assesses children's degree of mastery of specific component skills of reading. A student questionnaire is included with the assessment, containing questions about selected factors in their school and home environment that have been shown to be related to learning to read in other studies. In addition to the student data above, teacher and head teacher data were compiled for each school and relevant standard level. The analysis explores the relationship of the reading skills assessed to these students, teachers, and director factors.

Throughout this report, results are cited for both the population of students sampled and for each group of interest in the sample. The sample results, including frequencies and percentages, should be interpreted as representative of the students in Malawi. Estimations, including means and regression results, allow for interpretation of results for the entire population of interest. The estimations of means and significance levels were calculated in STATA¹³, using the survey command (svy) to establish the parameters for each level of selection. Similarly to other countries, the sample drawn was not at the individual student level, but at school level. It was not possible to draw a simple random sample of the population of students in each group of interest for cost and efficiency reasons. To enable us to make inferences about the performance of the entire population and not just those sampled, we weighted our results.

The data had to be weighted because the sample design did not give each individual an equal chance of selection. If a simple random sample of all students were conducted, it would have required sending the assessment teams to thousands of schools throughout the

¹³ STATA is data analysis and statistical software that was used to analyze the data in this study. For more information see the company website (www.stata.com).

country. Instead, we grouped students within grade levels and schools and corrected for this grouping using weights. (Weighting in this way uses a mathematical formula to compensate for underrepresented areas of the country that had smaller numbers of students sampled making these areas more representative when analysis is conducted.) Based on the estimated total population of the country and the number of students in the final sample, we calculated a weight at each level of selection (schools, students) and for each observation (student). STATA takes this final student level weight to determine the best estimation of the results for the entire population of students. This weighting requires that instead of reporting the standard deviation (which tells the average of the difference from our sample mean); we must report a standard error or the accuracy of our estimation (mean) for the population.

4. Descriptive Statistics

As part of EGRA application, students were asked several questions pertaining to demographic information, socioeconomic status, and other possible home and family factors that may affect their reading outcomes. In this section, the sample is further described using the answers to these interview questions.

We found that the average age of students who participated in the study was 8.4 years in standard 2 and 10.9 in standard 4. **Table 6** presents the wide range of student ages that exist in Malawian classrooms. In standard 2, students ranged from 5 to 15 years old, and, in standard 4, students were 7 to 19. This range of ages adds to the complexity of the Malawian classroom. Teaching students with such varied ages requires adapting instruction for a wide range of cognitive development and experiences.

Table 6: Student Age by Standard

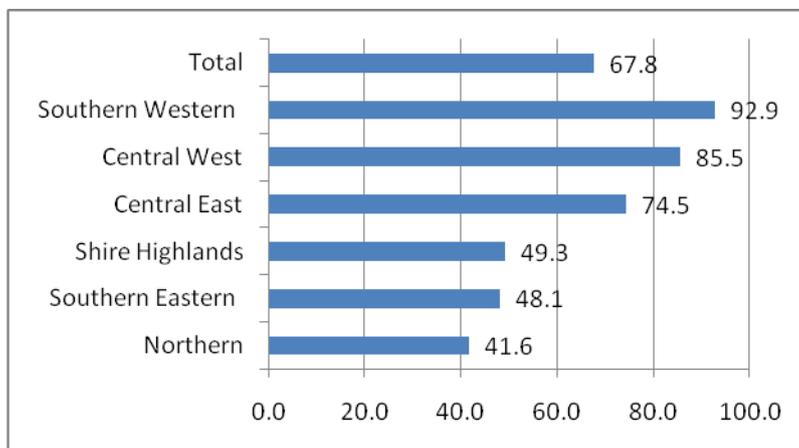
Age of Students				
Standard	Minimum	Maximum	Average	Standard Error
2	5	15	8.4	.2
4	7	19	10.9	.2

The match between home and school language is one of the major complicating factors in sub-Saharan Africa. EGRA tests reading skills in a particular language. This can be affected by familiarity with the language both in experience with sounds and words as well as vocabulary. However reading skills are not language specific, an important distinction as a review of the findings of this report and related MTPDS work is undertaken. The reading process is the same across alphabetic languages but the ease and success students have learning to read can be affected by their familiarity with the language.¹⁴ Being able to understand the language in which one is being taught is key to a student's success. Students were asked if they spoke the same language at school and at home. **Figure 4** shows that in 3 of 6 divisions, approximately half of students spoke the same language at home as in school and half did not. Overall, 30.29% of students in the sample did not speak

¹⁴ For more information about EGRA and the effect of language knowledge see EGRA toolkit at <https://www.eddataglobal.org>.

the same language at home and school. The division with the highest percentage of language match is South Western Division (92.86%).

Figure 4: Home Language Matches School Language by Division



On the other hand, the lowest percentage of children with a match between their language and the language taught at the school (Chichewa) is found in Northern Division (41.6%). This division is different from the others in that Chichewa is not the main language used by the population. However, it is still the language of instruction and the language in which students are expected to learn to read. (It is the understanding of MTPDS that schools in this division use Chichewa as the medium of instruction with support in Tumbuka when necessary for students to understand new concepts. This is not an uncommon approach.)

When students were asked if they spoke the same language at home and school, 58.4% of students said no and 53.3% said they speak Tumbuka. While this study was not designed to fully understand the effects of these language differences, research has shown that students who first learn to read in a different language than they speak at home can struggle due to their lack of familiarity with the sounds and vocabulary of the language. It is not an ideal situation but it is common in many countries.

This finding indicates a potential for significant repercussions if students attend school with little to no knowledge of the school's language. Limited knowledge of the school language means that students will have limited vocabulary and experience with the sounds and structure of the language. Students in this situation have little chance of learning to read without modified instruction in the new language. A caveat to this is that many children in African countries are exposed to several languages before they are in school, so it would be possible for students to have some basic knowledge of the school language. However, this knowledge may not be as extensive as their knowledge of their home language. For example, students would likely understand vocabulary necessary to communicate in stores or while playing with other children but would lack vocabulary necessary to understand the more academic language needed in school.

4.1 Background Questionnaire

In addition to questions about age and language, children were asked questions that served as indicators about their socioeconomic status, families, and school backgrounds. **Table 7** summarizes students' responses to these questions based on weighted data. Some are proxies for socioeconomic status and others are factors shown in research to correlate with student learning. The findings showed that socioeconomic status is low across all regions. Results of the questionnaire also show that 50.5% of students reported attending kindergarten or nursery school. Also, students who reported having textbooks were quite variable across regions, ranging from 17.4% to 48.2%. This is significant because students who do not have textbooks generally perform lower on reading assessments.

Table 7: Percentages of Self-reported Figures by Division

Item	Central East	Central West	Northern	Shire Highlands	South Eastern	South Western	Total
Has Radio	77.9	68.7	82.7	78.4	84.7	82.1	77.7
Has Phone	63.6	45.2	65.5	55.1	49.4	57.1	54.3
Has Electricity	15.0	15.4	10.1	16.7	28.7	26.4	18.4
Has Television	20.0	16.5	5.8	12.2	21.7	16.4	15.7
Has Refrigerator	9.3	6.5	1.4	5.0	12.7	15.0	8.2
Has Toilet	7.1	4.3	2.9	2.9	6.4	9.3	5.3
Has Bicycle	75.0	72.4	74.6	75.5	86.0	70.7	75.4
Has Motorcycle	6.4	9.3	2.9	2.2	10.8	7.1	6.9
Has Vehicle	20.0	14.3	21.7	18.7	17.2	16.4	17.5
Went to Nursery/Kindergarten	41.7	45.6	69.1	59.4	46.2	46.4	50.5
Was Absent	33.8	30.3	13.9	43.9	22.4	24.3	28.3
Had Textbook	33.1	48.2	17.4	39.6	26.0	38.1	35.6
Has Other Books	28.8	38.0	16.2	48.9	20.4	45.7	33.4
Mother Finished Primary	38.1	48.0	36.0	32.1	52.9	39.3	42.3
Father Finished Primary	44.3	51.3	36.0	30.3	48.7	43.2	43.9

5. EGRA National Baseline Results

In this section, the results of the national baseline study will be examined. First, a brief explanation of the instrument and its different sections will be provided. Having the conceptual knowledge of each individual measure will allow for better understanding of the results. An overview of the Malawian context will follow with some general observations concerning the results. Next, analysis of the results by division will explain the pattern of outcomes found across the country. This is followed by a brief discussion of result difference by standard. Results for each measure will be presented with an explanation of their affect on overall reading ability. Finally, there will be a discussion of what students know about literacy by standard, based on their performance across all subtests.

5.1 EGRA Instrument

EGRA is an individually and orally administered standardized assessment. EGRA takes approximately 15 minutes to administer and is often combined with a questionnaire measuring a variety of student background variables to assist in explaining some of the reading outcome findings. The Malawian EGRA was adapted into Chichewa with MoEST linguistic and curriculum specialists well-versed in the teaching of Chichewa reading skills in primary schools. The adaptation process ensures that items are specific to Chichewa rules and structure. The assessment consists of the following components, which have been found to be highly correlated with one another.

1. *Letter-naming fluency*: Ability to say the names of the letters of the alphabet accurately, without hesitation and naturally. This is a timed test that assesses automaticity and fluency of letter name knowledge—measured in correct letters per minute.
2. *Initial sound awareness*: One of two measures of phonemic awareness (the understanding that words are made of sounds). This subtest measures students' ability to hear and isolate the first sound in a word. This is generally considered a pre-reading skill and can be assessed in a variety of ways.
3. *Syllable segmentation*: The second measure of phonemic awareness. The subtest measures students' ability to hear a word and break it up into syllables. This is one of the first skills needed to understand how to read new words by decoding.
4. *Syllable reading fluency*: This subtest is used because Chichewa is considered by Malawians to be syllabic in nature¹⁵. This subtest asks children to identify the most commonly occurring syllables in a particular language—measured by correct syllables read per minute.
5. *Familiar word fluency*: Ability to read high-frequency words. This assesses whether children can process words quickly—measured by words read correctly per minute.
6. *Nonsense word reading fluency*: Ability to decipher “words” that follow the linguistic rules but do not actually exist in Chichewa. The non-words used for EGRA are truly made-up words. It assesses a child's ability to “decode” words fluently—measured by words read correctly per minute.
7. *Connected text oral reading fluency*: Ability to read a passage, approximately 60 words long—measured by words read correctly per minute.
8. *Reading comprehension of connected text*: Ability to answer several comprehension questions based on the passage read—measured by percent correct out of five comprehension questions.
9. *Listening comprehension*: Ability to follow and understand a simple oral story. This assesses a child's ability to concentrate and focus to understand a very simple story and answer both literal and inferential questions without the burden of reading the story. It is a more complete measure of students' ability

¹⁵ Characterizing a language as syllabic is not necessarily agreed upon as appropriate in the research.

to comprehend stories. Measured by percent correct out of five comprehension questions.

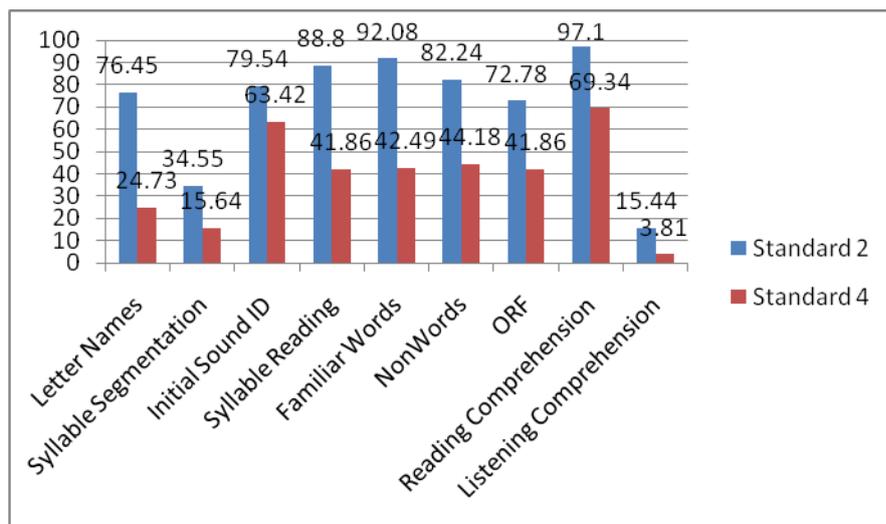
Initial pre-testing and piloting of the instrument showed that student results were extremely low. Due to these preliminary findings, a decision rule was instituted to avoid undue distress to students who were unable to perform the subtests. The EGRA instrument is designed so that the measures are in approximate order of cognitive difficulty, thus students who score zero on the initial measures of the assessment are highly likely to score zero on the later measures. The decision rule applied in Malawi was that students who did not read a single word correctly on the familiar word reading subtest would not attempt the nonsense word reading, oral reading fluency, or reading comprehension. It was assumed that these students would also score zero on the nonword reading, oral passage reading, and reading comprehension subtest. However, all students were given the chance to attempt the listening comprehension subtest, allowing for at least one measure of comprehension for all students.

For more information about the EGRA instrument's validity, reliability, and standard error, see *Annexes D and E*.

5.2 Early Reading Achievement in Malawi Is Low

Across the sample, early reading skills are extremely low. This is true of student scores across all EGRA measures. Very few students in the sample could read with enough automaticity (fluency) to allow for real comprehension. In *Figure 5*, the percentages of zeros scores are presented. These are the percentage of students in each standard who were unable to name a single letter or read a single syllable or word or correctly answer one question about of a simple story. Based on this data, 76.45% of students in standard 2 did not know a single letter name, and 41.86% of students reached standard 4 without being able to read a single word of a simple story. In Malawi, Chichewa is considered a syllabic language, meaning that it is constructed or based on syllables. Thus, learning to read syllables would be an important early or foundational step of learning to read. However, as is shown in this data, students were only slightly better at reading syllables than whole words, 88.8% of standard 2 students and 41.86% of standard 4 students were unable to read even one syllable. These results are even more disheartening when considering that research has shown that students should be able to be fluent readers by the end of the equivalent of two years of schooling. The basic skills required for students to read and comprehend are not being developed, thus students are not learning to read.

Figure 5: Percentage of EGRA Zero Scores by Standard



An interesting finding in **Figure 5** is that the percentage of zero scores in oral reading fluency (ORF) in both grades is lower than all other subtests that require knowledge of decoding—72.78% of standard 2 students and 41.86% of standard 4 students. This finding may indicate that there is a lack of instruction in decoding skills, making students unfamiliar with the subtest and leaving students without skills to read or decode new words. The new curriculum focuses on a whole word reading method so students may have memorized some words but lack instruction in how to break apart and sound out new or unfamiliar words. Consequently, students likely have no strategies for dealing with new words. Thus, the percentage of zero scores on syllable reading, familiar word reading, and nonword reading are higher.

The international community has recently begun to put much emphasis on students learning to read early. Organizations such as USAID¹⁶ and the Fast Track Initiative (FTI)¹⁷ have begun to ask countries to track the proportion of students who are sufficiently developing reading skills to comprehend and learn from the materials they are reading. This action points to the fact that students in Malawi should also be expected to learn to read by the end of standard 2; however, based only on this analysis, it is clear that students in Malawi are not acquiring these skills. In fact, only 27.2% of children can read a single word in standard 2.

Standard 4 outcomes are somewhat higher than those identified in standard 2. It is unclear if this is because the students who most struggled in standards 1 to 3 have dropped out, thereby skewing the standard 4 sample—or whether children have learned some very basic skills. In any case, this outcome indicates that students are capable of and are learning; however, percentages of zero scores are still far too high to be acceptable. Additionally, significantly fewer students are scoring zero on syllable segmentation (34.55%, 15.64%) and listening comprehension (15.44%, 3.81%), which suggests that students may have some very low-level reading or pre-reading skills. This is evidence that while reading skills are low, they are not completely at zero.

¹⁶ USAID Education Strategy, 2011–2015. http://www.usaid.gov/our_work/education_and_universities/documents/USAID_ED_Strategy_feb2011.pdf.

¹⁷ FTI indicators. <http://www.educationfasttrack.org/FTI-at-Work/learning-outcomes/>.

Further data demonstrating differences between the two standards are presented in **Figure 6**. These data show that reading scores on all measures are very low; with grade gain differences (the additional learning supposedly acquired between grade 2 and grade 4) are quite low. These differences cover the variances in student outcomes shown in **Figure 6** and appear to be more aligned with those expected for differences between standards 1 and 2 rather than standards 1 and 3. On average, standard 4 students read 10.61 more cwpm, and comprehension increases almost 20 percentage points over standard 2 students. The difference in the nonwords measure in Malawi is 7.21 cwpm, which is significantly less than other subtests that measure decoding. It is expected that students gain approximately 10 words per minute for each standard. These differences are very small, but demonstrate that while some learning is taking place, it is about half of what would be expected. It is also important to note that the differences are not truly comparable across subtests because they are measured in different units. Comprehension measures are reported in percentage point differences while familiar word, nonword, and oral reading are measured in words per minute difference. Syllable reading is measured in syllables per minute. Syllable segmentation and initial sound are measured in correct items out of 10, and letter names are measured in correct letters per minute.

Figure 6: EGRA Subtest Differences in Outcomes between Standard 2 and 4

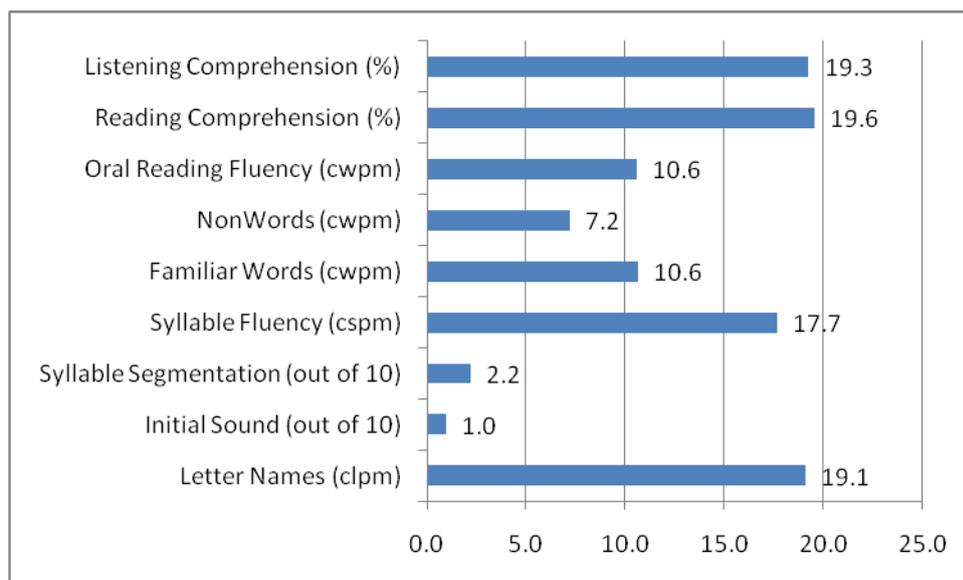
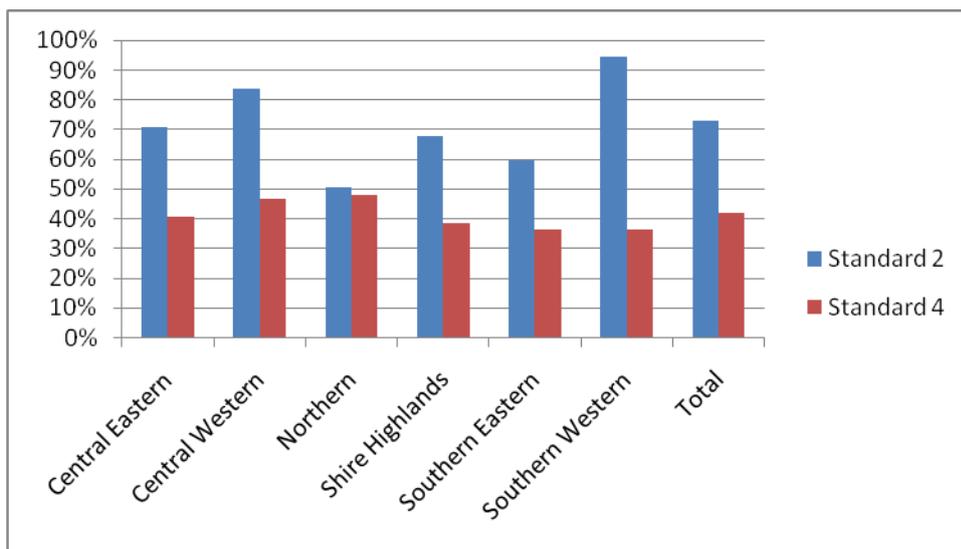


Figure 7 shows the percentage of students who scored zero on the oral reading fluency measure (a short simple story using words with which students should be familiar) by standard. The percentages across divisions vary between 94.3% of students in standard 2 in South Western to 36.2% of students in standard 4 in both South Eastern and Western. The western part of the country seems to have the most zero scores in standard 2 on this measure, which is unexpected since students in this region have the highest percentage of children for whom Chichewa is their home language. This seems to suggest that other factors, such as quality of instruction more than language match, are making a difference in learning. Standard 4 students' percent of zero scores is lower than that of standard 2, across all divisions, but still remains alarmingly high. The Northern Division shows an interesting pattern of some of the lowest percentages of zero score yet very little difference in zero

scores between standards. This is interesting for two reasons. First, students in this division tend to speak Tumbuka more than Chichewa yet have few students who scored zero. Secondly, there is almost no difference in the percentage of zero scores between grades. This may point to a lower quality of education or some difference in population in Northern Division that keeps students from progressing through the grades. More pointed research would be needed to fully understand the causes of this exceptional pattern in the Northern Division. However, the main point of concern with this analysis is that the low reading development does not appear to be concentrated in any one part of the country.

Figure 7: Percentage of Children Scoring Zero on Oral Reading Fluency by Standard and Division

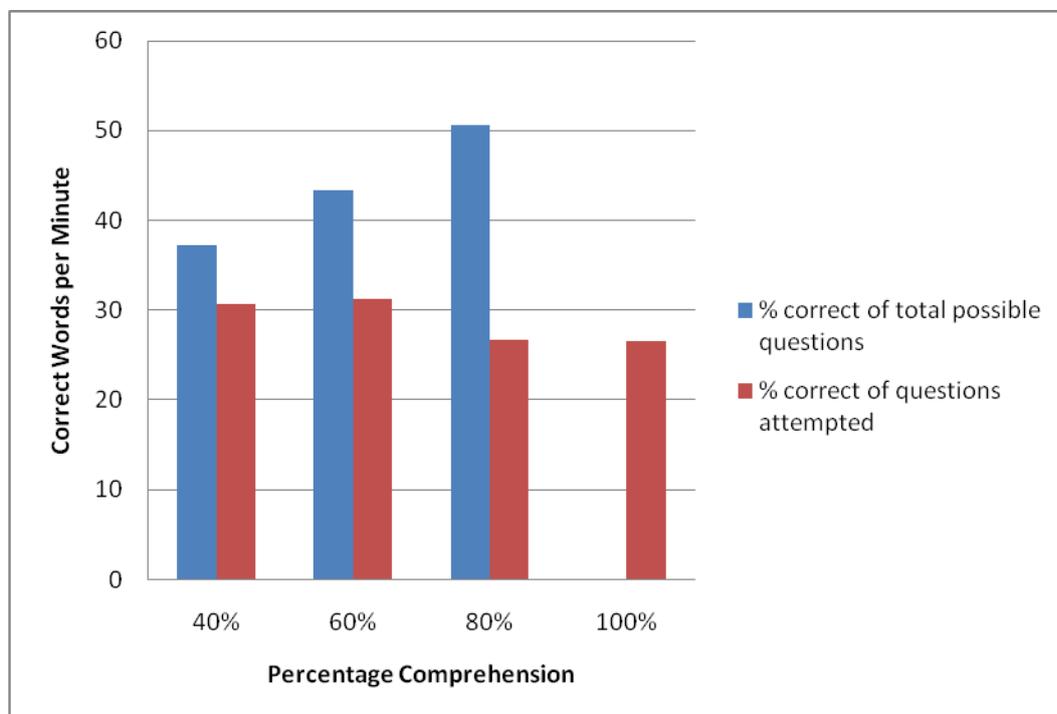


The relationship between oral reading fluency (story reading) and reading comprehension is close, for several reasons. Reading fluency is particularly important because the fluency portion of the task measures whether students have the ability to read with enough speed and automaticity so that they can concentrate on comprehending rather than sounding out every word. Students who must sound out each word use most of their working memory thinking about the sounds that letters make and then putting the sounds together. Students who read fluently decode words automatically and can use their working memory to make meaning of what was read. Reading fluency is necessary but not sufficient for comprehension, and one piece of the comprehending process.

In this section we explore more deeply the relationship between reading fluency and comprehension. The purpose of this section is to dissect the data from the MTPDS baseline to determine whether it can provide some suggestions for what levels of oral reading fluency are necessary for comprehension. Looking at oral reading fluency scores, the highest score in the sample was 56 cwpm. This student obtained a comprehension score of 60% meaning the student was asked all five questions and answered three of them correctly. **Figure 8** shows below shows the mean oral fluency scores different levels of comprehension. A total of 27 students in the sample answered three or more questions correctly and the mean of these students was 43.3 cwpm. Only three students in the sample in Malawi were able to read enough to correctly answer 80% of the comprehension questions, meaning that they

were able to answer 4 out of 5 questions correctly. These students had a mean of 50.6 cwpm. And no student answered all 5 questions correctly.

Figure 8: Mean Oral Reading Fluency Score by Percentage of Comprehension



For the 3 children (0.3%) of the sample that read at 50.6 words per minute on average, they benefited because they comprehended the story at acceptable levels. However, this leaves out the 99.7% of the sample that did not comprehend, most likely because they were not reading at sufficient levels of fluency to read all of the words in the story, nor at sufficient levels of fluency to focus on the meaning of the story rather than decoding the words.

Let us look at the data another way. While the analysis above focuses on the reading comprehension percentages of children out of the 5 questions, whether or not the child read enough to answer all five questions, this section presents the reading comprehension outcomes slightly differently. In this definition, reading comprehension scores are related to the percentage of questions answered correctly out of those asked (accounting for the fact that many weak readers would not be asked some of the questions). As would be expected, this definition of reading comprehension results in higher scores (see **Figure 8** above). However, the ideas are the same: children need fluency in order to read with comprehension. The average reading comprehension score for children who had 60% comprehension rates or higher was 31.2 cwpm,

While the data included very few children reading with comprehension, this does show that comprehension (whichever way it is defined) is dependent on reading fluency rates of between 30 wpm and 60 wpm, which is significantly higher than where the average child is currently reading. In fact, using the very lowest possible fluency rate associated with comprehension, 30 wpm, and the data reveals that less than 10% of the sample is reading at even this rudimentary level. In short, given that the purpose of reading is to comprehend, the

data reveals that the average Malawian child has quite a long way to go in their reading fluency skills to ensure the level of comprehension necessary for ongoing learning.

5.3 EGRA Findings by Subtest

In this section, results of each EGRA measure will be presented with a brief interpretation. Overall scores are quite low in both standards. Scores are shown by standard and gender; however, no significant differences were found between genders on any of the measures. This could be because scores are so low that differences typically seen in other countries are irrelevant here.

Letter naming fluency. This subtest consisted of a page of 100 randomly distributed upper and lowercase letters. Students were asked to state the names of as many letters as possible in one minute. Letter name knowledge is a first step and predictive skill for later reading success. Scores for this subtest were the number of letters students correctly named in one minute (correct letters per minute). **Table 8** shows that students in standard 2 know almost no letter names (male 2.14 and female 2.37). This could be an indication of a lack of instruction on letter names. Although the new curriculum does include some letter recognition activities, many teachers have not yet been trained to teach this information. Furthermore, currently only the vowels are introduced in Malawian early reading curriculum, and not the consonants, while all letters are equally important to know. Thus, these scores may be a reflection of lack of implementation and the need for more explicit teaching of letter recognition. Recall from the pilot results that scores were even lower on the even more critical skill of letter sound identification. In any case, children in standard 2 are, for the most part, unable to identify letters. Even by standard 4, the sampled children can only identify one letter for every three seconds, which is extremely low.

Table 8: Letter Naming Fluency by Standard and Gender

Letter Naming Fluency		Mean	Standard Error
Standard 2	Male	2.14	0.57
	Female	2.37	0.48
Standard 4	Male	21.37	1.54
	Female	21.16	1.94
Total		10.13	0.65

Phonological awareness. To read, students must turn the letters seen into sounds, sounds into words, and words into meaning. Successfully managing this process first requires the ability to work in reverse; that is, in order to understand the process of moving from letters to sounds to words, students should also grasp that words are composed of sounds and understand the process of separating (and manipulating) words into sounds at the syllable, onset rime and phoneme level. This ability to identify sounds in words, to separate words into sounds, and to manipulate those sounds is termed “phonological awareness.” This skill is one of the building blocks of reading. To understand the process of decoding, students need to understand that the words they hear are made up of individual sounds and that those sounds will be represented in writing with letters. The EGRA instrument in Malawi has two phonological awareness subtests: syllable segmentation and initial sound identification.

Syllable segmentation. In this subtest, the assessor read aloud a word and asked students to divide that word into syllables. There is no reading involved, so students are tested on their ability to separate syllables. This skill is one of the most basic skills of phonological awareness. It is a skill that students gain as the very first understanding that words are made of parts. Scores for this are out of 10 items. Learner’s scores on this measure are relatively higher than scores on measures that test decoding skills. **Table 9** shows the mean for the total sample to be 5.23, which is approximately 50%. This mean percentage is much higher than that of other measures; however, this is also likely the easiest or most natural skill for students to learn, according to research.

Table 9: Syllable Segmentation by Standard and Gender

Syllable Segmentation		Mean	Standard Error
Standard 2	Male	4.21	0.25
	Female	4.42	0.26
Standard 4	Male	6.61	0.26
	Female	6.48	0.36
Total		5.23	0.19

Initial sound identification. The subsection, called “initial sound identification,” also a measure of a students’ phonemic awareness assessed students’ ability to hear a word read aloud by the assessor and separate and identify the first sound or phoneme in the word. This is a more difficult skill, as is evident by the scores shown in **Table 10**. Results for the initial sound identification showed that standard 2 students answered less than one item correctly, and standard 4 students answered less than 2 out of 10 items correctly.

Table 10: Initial Sound Identification by Standard and Gender

Initial Sound Identification		Mean	Standard Error
Standard 2	Male	0.49	0.10
	Female	0.53	0.13
Standard 4	Male	1.42	0.26
	Female	1.54	0.36
Total		0.90	0.17

Initial sound recognition requires the ability to hear and separate the sounds in words. This subtest can be difficult if students have not been taught or are not practiced in it. Students who were not taught to separate words into sounds would be unfamiliar with this subtest and would likely not perform well. Yet this is an essential foundation skill for students to understand the relationship that exists between the written and spoken word (and is highly predictive of later reading skill).

Syllable reading. Syllable reading fluency, much like letter naming fluency, is measured by a list of 100 syllables from which students are asked to read as many as possible in one minute. This measure of alphabetic principle was added to the Malawian EGRA, because Malawians generally think of Chichewa as a syllabic language and has traditionally been taught using a syllabic method¹⁸. This idea is not something that is necessarily substantiated by research. Many experts feel that reading a syllable requires the same knowledge and process as reading a word or nonword, thus there should be little difference in students' ability to read syllables or whole words beyond reading them more quickly because they are shorter than most words. In effect, if Chichewa is a syllabic language and teachers are using a syllabic method, this measure should show that students are able to read syllables significantly better and faster than whole words.

Students' scores, as seen in **Table 11**, however, indicate that they are unable to read syllables automatically in either standard. Standard 2 girls could not even read an average of one syllable per minute. Standard 4 girls improved significantly, but they are still lower than what one would expect if they were reading words fluently, because syllable reading should be faster than word reading. However, even though the means on this measure are higher than the word, reading measures scores still appear to be much lower than would be expected if the syllabic theory was true. Either the theory is not true or the students reading levels are so low that if it is true the students are getting no advantages from the syllabic method. Further research would be required to better understand which is accurate.

Table 11: Syllable Reading by Standard and Gender

Syllable Reading Fluency			
		Mean	Standard Error
Standard 2	Male	1.71	0.68
	Female	0.97	0.34
Standard 4	Male	19.67	2.04
	Female	18.41	2.22
Total		8.62	0.71

Familiar words. Children's decoding skills are often assessed using reading lists of unrelated words. This allows for a purer measure of word recognition and decoding skills than does reading comprehension paragraphs, because children are unable to guess the next word from the context. In the familiar word reading subtest, students were given a list of 50 common simple words with instructions to read as many as they could in one minute. Familiar word reading means (in correct words per minute) revealed a significant lack of knowledge of letter sound correspondence. **Table 12** shows the highest score for this measure is 11.56 cwpm, which means standard four boys took over five seconds to read one word. This points to a lack of knowledge of letter sounds and how they are put together to make words, which are essential strategies for reading new words. For examples of items, see **Annex A**.

¹⁸ Syllabic method usually involves teaching students to read groups of syllables (ma me mi mo mu) sometimes instead of letter sounds and then joining syllables together to make words.

Table 12: Familiar Word Reading by Standard and Gender

Familiar Word Reading		Mean	Standard Error
Standard 2	Male	0.99	0.39
	Female	0.64	0.21
Standard 4	Male	11.56	1.25
	Female	11.41	1.36
Total		5.20	0.42

Nonsense word reading. This subtest required that children use their decoding skills to identify nonsense words using the rules of decoding. Invented word reading is a measure of decoding ability and is designed to avoid the problem of sight recognition of words. Many children in the early standards learn to memorize, or recognize by sight, a broad range of words. To be successful readers, children must combine both decoding and sight-recognition skills. Tests that do not include a decoding exercise can overestimate children’s ability to read unfamiliar words, because the words tested may be part of the sight-recognition vocabulary. Similar to the word reading measure, students were asked to read as many invented words in one minute as they could. Examples of nonsense words can be found in the EGRA instrument in **Annex B**.

Table 13 shows that out of 50 possible non-words, the mean for standard 4 students is between 7 and 8 correct words per minute. Standard 2 students fared even worse scoring almost zero—females .49 and males .77. The results of this measure further demonstrate students’ inability to read new words. Students who know letter sounds and understand how to decode would be able to read these words almost as efficiently as familiar words. One of the consequences of not teaching letter sounds and decoding strategies is that students do not have a way to deal with new words; however, they also have a memory capacity and cannot memorize the written representation of every single word.

Table 13: Nonword Reading by Standard and Gender

Nonword Reading		Mean	Standard Error
Standard 2	Male	0.77	0.29
	Female	0.49	0.12
Standard 4	Male	8.24	0.83
	Female	7.45	0.82
Total		3.61	0.28

Oral reading fluency. In this subtest, children were asked to read aloud a narrative passage of local relevance within one minute. Oral reading fluency is a measure of overall reading competence: the ability to translate letters into sounds, unify sounds into words, process connections, relate text to meaning, and make inferences to fill in missing information¹⁹. As

¹⁹ Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher*, 59(7), 636–644.

skilled readers translate text into spoken language, they combine these skills in a seemingly effortless manner. Because oral reading fluency captures this complex process, it can be used to characterize overall reading competency. The variable used was the correct number of words read within that one minute—adjusted for time for the fast readers. Data from **Table 14** show that students in Malawi have yet to master this complex process. An overall mean of 5.43 cwpm is extremely low. This mean would be unexpectedly low even for students at the end of standard 1. Standard 4 boys seem to read the most words at 12 cwpm, but this is still significantly below expected means for standard 1. These results include students who scored zero on the subtest. They indicate that students are generally not learning to read in the early standards.

Table 14: Oral Reading Fluency by Standard and Gender

Oral Reading Fluency			
		Mean	Standard Error
Standard 2	Male	1.27	0.41
	Female	0.86	0.22
Standard 4	Male	12.00	1.45
	Female	11.35	1.25
Total		5.43	0.45

Again, it is interesting to notice that these scores are somewhat higher than other word reading means above. While the oral reading fluency scores are extremely low, students are seemingly able to read words better in this situation, perhaps because they are able to guess the words from context. Without further study, these differences seem to indicate that students know some words but have little to no ability to read unfamiliar words, as shown in the mean scores of the non-word reading subtest.

Reading comprehension. On this subtest, children were simply asked to answer five basic comprehension questions (read aloud to them by the assessor) based on the connected text passage they just read. This subsection was based on how much of the oral reading passage students were able to read and understand. Students were only asked to attempt questions for the comprehension section pertaining to the section of text they read in the passage. Thus, if they only read half the text, students were only asked the questions that could be answered by half the passage. Also, if students did not read any of the text, they were not asked any questions. Thus, for this subsection, the sample size is different for each of the five questions: It is made up of only students who read some part of the oral reading passage. Scores on this measure are presented as the percentage of questions answered correctly out of the number attempted. **Table 15** shows comprehension scores by grade and gender. Scores are reported for both the percentage of questions students answered correctly out of the total number attempted and the percentage of questions answered correctly out of the total number possible which is 5. The difference in the two scores is that the first indicates the percentage of the story the students read and understood while the second indicates the percentage of the total story students understood regardless of how much they read. The table shows that standard 2 males answered 1.96% of the questions they attempted correctly while standard 4 males answered 24.22% of questions attempted correctly. The scores based on the total possible questions are lower because few students

were asked all questions, only 2 students read enough of the story to be asked all questions and only 22 students were asked 4 questions. Ideally, students should understand everything they read, thus these scores indicate that students who are reading something do not understand what they are reading, likely because they are spending most of their effort sounding out words.

Table 15: Reading Comprehension by Standard and Gender

Percentage of Questions Attempted and Correctly Answered			
		Mean	Standard Error
Standard 2	Male	1.96	0.01
	Female	1.65	0.01
Standard 4	Male	24.22	0.03
	Female	18.62	0.03
Total		9.84	0.01

Percentage of Questions Correctly Answered Out of Total Possible (5)			
		Mean	Standard Error
Standard 2	Male	0.94	0
	Female	0.67	0
Standard 4	Male	11.68	0.02
	Female	8.25	0.01
Total		4.57	0.01

Listening comprehension. On this subtest, children listened to a short story. They were then asked some questions about the story and were required to respond. Including a measure of listening comprehension allows students to demonstrate their comprehension ability without the burden of reading the passage. The listening comprehension section consisted of a shorter passage that was read aloud to the students. Students were then asked five comprehension questions of varying difficulty similar to the reading comprehension measure. Because students did not have to read to answer the questions, all students were asked and attempted to answer all questions in the subtest. Students' listening comprehension ability was much improved over reading comprehension as evidenced by **Table 16**. However, the percentage of correctly answered questions for all groups is still quite low. The best group was the standard 4 males, who answered 52.47% of questions correctly. This indicates that while students have some comprehension skills, they are still not yet fully developed and demonstrates that students understand several times more of what they hear than what they read. While scores on this subtest are still very low, it does show that students can understand the language; however, they are simply unable to read and understand.

Table 16: Listening Comprehension by Standard and Gender

		Percentage of Questions Attempted and Correctly Answered	
		Mean	Standard Error
Standard 2	Male	30.96	0.02
	Female	31.81	0.02
Standard 4	Male	52.47	0.02
	Female	48.46	0.02
Total		39.35	.012

5.4 Reading Outcomes by Division

Across the six divisions in Malawi, differences can be seen in how students are developing early standard reading skills. The most obvious patterns can be seen in the measures of decoding. **Table 17** shows the means by division of the subtests that measure fluency and decoding, as well as reading comprehension. Here we see that the Northern Division consistently has the lowest scores across sections and subsequently has the lowest mean percentage of reading comprehension. Students in this division read less than two cwpm, so it is not surprising that they comprehend so little of what they read. As mentioned, the Northern Division also has the highest percentage of students who do not speak Chichewa at home. Though significant research is required to understand the current relationship with reading outcomes and language differences in this region international and regional research would suggest it is likely that this language difference is affecting student outcomes. On the opposite end of the continuum, students in South Eastern Division scored on average the highest of all the divisions. While the scores in this division are still extremely low for students in both standards 2 and 4, they are significantly higher than the scores in the rest of the country.

Table 17: Means of Measures of Decoding and Comprehension by Division

Division	Syllable Reading	Familiar Words	Non Words	Oral Reading Fluency	Reading Comprehension (%)
Northern*	2.32	1.08	0.95	1.85	1.60
Central Western	6.54	4.06	2.94*	3.81	8.90*
Shire Highlands	7.71*	4.67*	2.62*	4.78*	7.60*
Central Eastern	7.93*	5.01*	3.57*	5.10*	9.60*
South Western	9.85*	5.88*	4.25*	6.10*	10.20*
South Eastern	17.33*	10.22*	6.95*	11.30*	19.40*

*Northern Division was used as reference point for test of significance, $p < .05$.

Apart from the South Eastern Division, students in South Western Division are also scoring higher in comparison to the rest of Malawi, which is an interesting comparison since students in this division also have the highest percent of zero scores on oral reading fluency. It is possible that the higher scores are due to the fact that home and school language match, as

noted in the student background questionnaire (92.86%). South Western Division had the highest match between home and school language. Exposure to language outside of school may facilitate easier reading, or perhaps, it is helping students to know more words by sight. The pattern across divisions, however, seems to indicate that there are significant differences in educational quality and/or the population between the Northern and Central Western Divisions and the rest of the country when compared to the Northern Division, the lowest scoring division across all subtests. The differences in the Southern divisions are significantly different on most measures as compared to the other divisions.

5.5 EGRA Data Compared Across Subtests

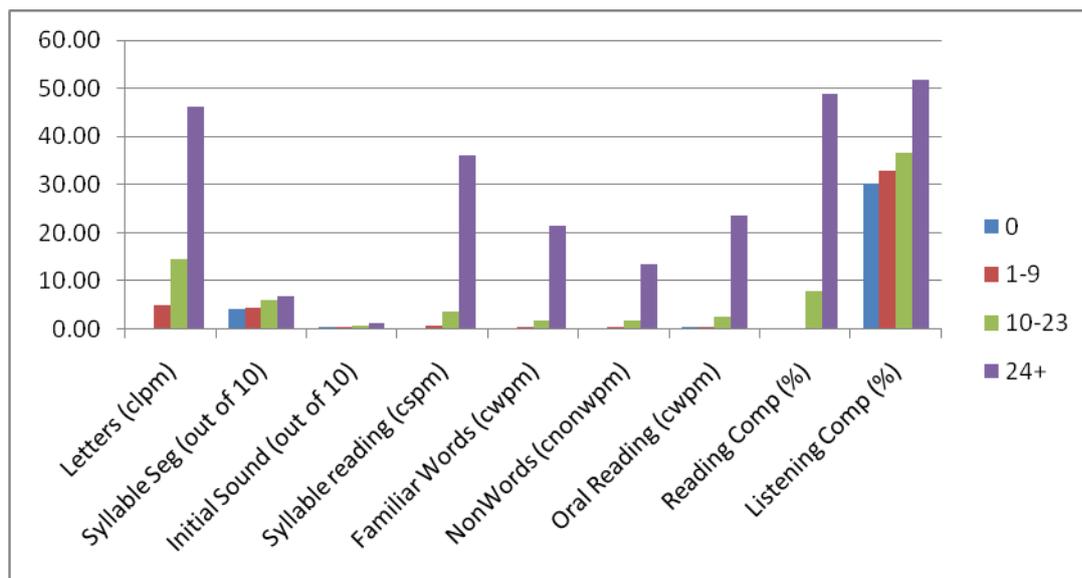
In this section, data will be compared across subtests, analyzing the range of what students who are grouped by their letter naming score can obtain on other subtests, and the significance this has on their reading ability. As noted, EGRA measures key early reading skills using the different subtests. The skills measured by the individual subtests are all part of a process that students must go through to learn to read. Development of one skill can affect the development of the other skills. Students need to learn to separate words into parts and recognize letters to learn how to read syllables and words they have not already memorized.

For this analysis, students were divided into groups by their score on the letter naming subtest. Looking at the scores for this subtest, groups were formed based on research on letter naming fluency rates that are predictive of oral reading success. The groups are based on DIBELS middle of kindergarten benchmark for letter naming. These groups represent students who know no letters (0), who are at risk (1–9), who are at some risk (10–23), and who are at low risk (24+).²⁰ For Malawi, the largest group by far was the group of students who score zero.

Standard 2. In standard 2, a total of 19 students correctly identified 24 or more letters in one minute. Looking at **Figure 9**, these students outperformed the rest of the groups on all subtests except for initial sound identification. The scores for students in this group were significantly higher, indicating that students who know letters also know how to read words and have better comprehension. Students in the other groups scored zero or close to zero on the other subtests. The one subtest in which all students appeared to score high was in listening comprehension. All four of the groups scored 30% or higher; the group that scored 24 or more letters scored above 50%. However, this is a percentage of correct responses to the five questions asked. These scores imply that students at best answer 50% of the questions correctly. Students who understand the entire story would be expected to score closer to 80% or 90%, at minimum.

²⁰ Dynamic Indicators of Basic Early Literacy Skills (DIBELS) benchmark scores are based on extensive research on students in the United States to determine students who are at risk for reading difficulty. The purpose is to know where students fall so that teachers may change instruction based on students' needs. <https://dibels.uoregon.edu/benchmark.php>.

Figure 9: Standard 2 EGRA Means by Letter Naming Fluency

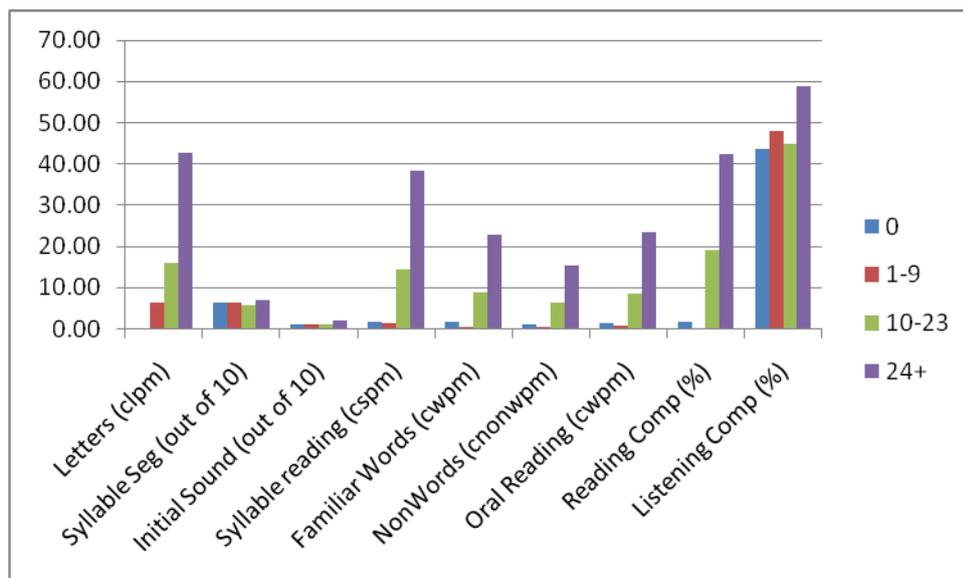


Standard 4. Students in standard four were grouped in the same way as the students in standard 2 and also show similar patterns. The number of students in each group are more evenly distributed in standard 4, with 116 students scoring 0, 57 students scoring 1–9, 102 students scoring 10–23, and 198 students scoring 24 or more on the letter naming subtest.

Figure 10 shows that the students in the two lowest groups are still scoring zeros or nearly zero on all but syllable segmentation and listening comprehension. The difference in standard 4 is that scores for the second highest group (10–23) are much higher than the standard 2 students. This may indicate that standard four students are gaining word reading fluency despite their lack of letter recognition. Standard 4 students have likely been exposed to more words and more text than standard 2 students, so perhaps these students are improving based on more exposure resulting from more time in school.

One interesting pattern is that students in standard 4 scoring 24 or more on the letter naming have almost the same mean on oral reading as the standard 2 students. However, they have higher comprehension scores on both reading and listening comprehension. This may also be an effect of having more experience with school, stories, or familiarity with the subtest since teachers may not be teaching comprehension skills in standard 2 but they may have begun to teach or expect students to answer comprehension questions by standard 4.

Figure 10: Standard 4 EGRA Means by Letter Naming Fluency



Overall, these two figures help to explain how the separate skills in the EGRA instrument combined constitute a successful reader. Students who can recognize letters can also read syllables and words. They also comprehend better. However, students who cannot recognize letters also score lower on all other subtests. The measure that does not fit the pattern is phonemic awareness. This measure does not involve decoding and may indicate that it is less important than other skills, such as letter-sound knowledge. This may be due to the fact that Chichewa is more regular or transparent in letter sounds correspondence than languages like English. The main point to take away from this analysis is the connection between decoding skills, such as syllable and nonword reading, with oral reading fluency, which requires students to read a text and comprehend what they read. Students who could not decode had less chance of being able to comprehend.

6. Predictive Factors

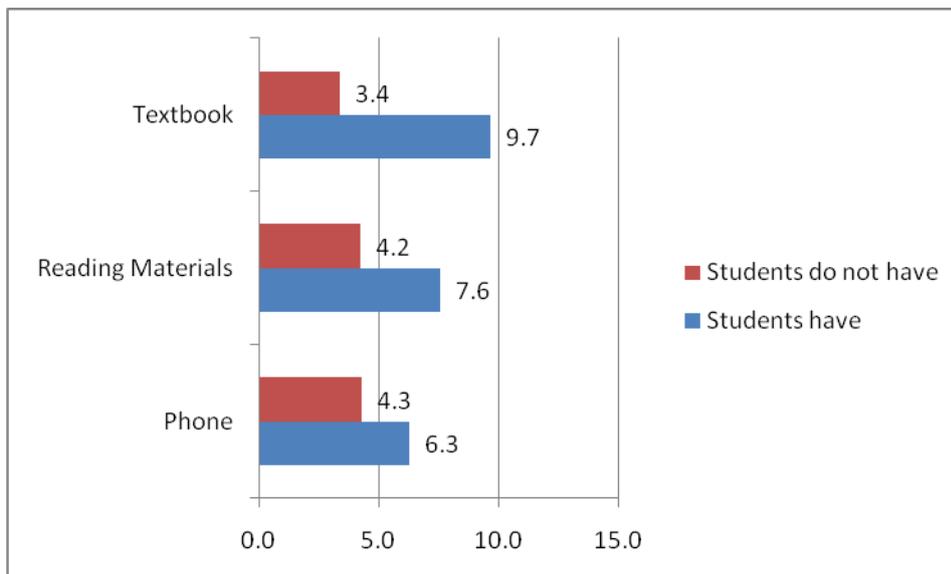
Students come to school not as blank slates but with previous experiences and direct influences from their lives outside of school. Also, teachers and head teachers are likely to affect student learning based on their own experiences and training. Therefore, it is useful to look at which of these experiences and influences may impact student learning in Malawi. In this section the results of multiple regression models to examine which factors predict achievement on reading outcomes will be discussed. Responses to the questionnaires were compared with oral reading fluency scores in order to seek out relationships or factors that might predict pupil outcomes. Those presented here are the relationships that are statistically significant. There were very few statistically significant relationships found due to a lack of variance because of the low scores across all students. Factors of socioeconomic status and family education may not make a difference if all students' scores are similarly low.

6.1 Student Factors

Students were asked several questions concerning socioeconomic status and experience and exposure to literacy in and out of school. Results from the analysis showed four main factors that affect student performance on oral reading fluency. One clear pattern of difference emerged from the questions concerning access to reading materials both in and out of school. Students who reported having the reading textbook, as well as students who reported having reading material at home, scored significantly higher on the oral reading fluency subtest than students who reported not having these texts. **Figure 11** shows those students with reading textbooks read 6.3 cwpm more than students without the reading textbook. This demonstrates the importance of having the textbook in order to become a successful reader.

Similarly, students are not likely to learn to read if they have nothing to read beyond what they view on the chalk board. Students who reported having other reading materials at home, such as newspapers, books or magazines, read 3.4 cwpm more than students who did not have reading materials. This effect, while slightly less than the first, is still quite significant. Both have important implications for improving the quality of education. These effects imply that resources should be allocated to ensure that all students have textbooks from which to learn. In addition, having reading materials that students can take home, or finding ways to make reading materials more available to communities such as in mobile libraries, would allow students to have materials to read when they are not in school. This is extremely important because students who are learning to read need sufficient time to practice reading. Plus, having reading materials at home indicates that other people in the house may know how to read and can help students learn and practice.

Figure 11: Oral Reading Fluency Scores for Students Who Have or Do Not Have Predictive Factors

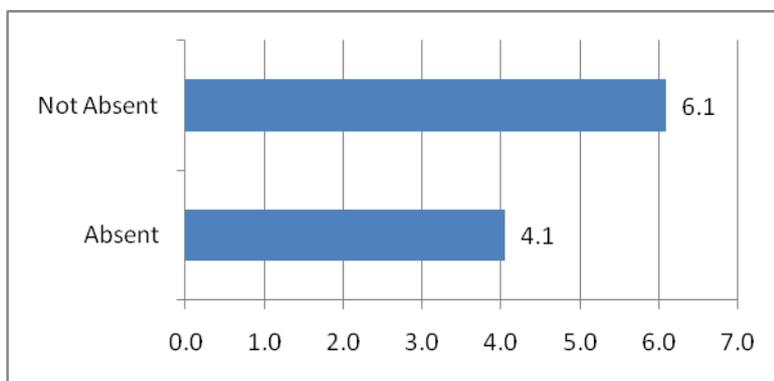


A third effect found in the students factors in one of socioeconomic status. Students were asked several questions about amenities they had at home, such as electricity and refrigerators. These questions were proxies for poverty levels. Of the nine questions, only the mobile phone question had a significant effect. The popularity of mobile phones may be a

significant sign of wealth in a country like Malawi. Students who had a mobile phone in their family had a cwpm advantage over students who did not report having a mobile phone in their family.

The final student factor that seemed to make difference was absenteeism. Students were asked if they had been absent for more than a week of school during that school year. **Figure 12** shows the effect of students' who were absent and who are not absent. Students who were not absent read two cwpm more than students who were absent. The importance of this effect is clear. Students who are not in school are not learning as much as students who go to school every day. If students are to learn to read and comprehend, they require dedicated instructional time and can only get this by being present in the classroom.

Figure 12: Oral Reading Fluency for Students Who Were and Were Not Absent (cwpm)



6.2 Teacher and Head Teacher Factors

As with the students, teachers and head teachers were also interviewed. Questions ranged from professional experience and knowledge to distance between home and school. Due to the small number of significant factors results for both, interviews are combined in this section.

Head teachers were asked if they were satisfied with the reading performance of students in their school and if they had received training specific to a reading program. **Figure 13** shows the affects for both these questions. Oral reading scores decreased by more than 2 cwpm if the head teacher said that they were satisfied with reading performance. This is interesting because of the negative effect, indicating a possible proxy for how aware head teachers are of what reading performance should be. Along the same lines, head teachers who received training in reading programs had a positive effect on student oral reading scores by more than three cwpm. This affect indicates that head teachers that have knowledge of reading instruction can make a difference in the quality of instruction and student outcomes. Head teachers should ideally be instructional leaders that can assist and give feedback to teachers. These results support the importance of a knowledgeable head teacher.

Figure 13: Effect of Head Teacher Factors on Oral Reading Fluency (cwpm)

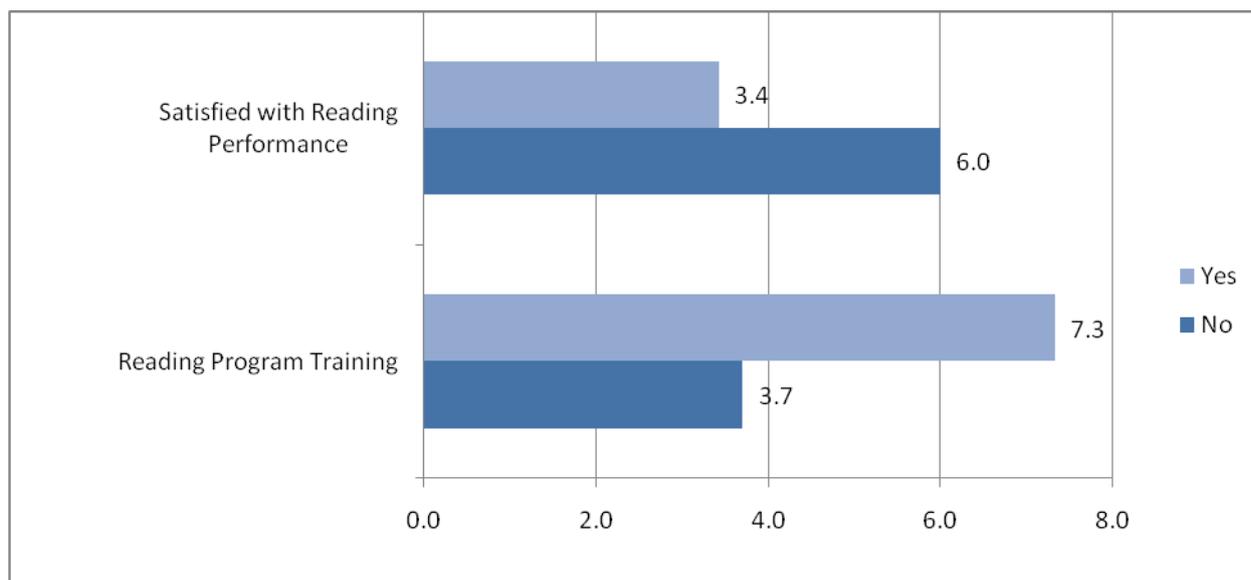


Table 18 supports the need for knowledgeable head teachers. It shows that there is a 4.7 cwpm increase on students’ oral reading fluency scores for every hour of instructional support they provide to teachers. Instructional guidance is important for teachers, especially those who are less prepared to teach effectively. **Table 18** also demonstrates the effect of homework on students’ oral reading fluency scores. A 2.7 cwpm effect was found for the number of days teachers give homework. Homework means that students are required to practice skills they have learned in the classroom. It also may include the assistance of a parent or more knowledgeable family member. The more often teachers reported giving homework the higher students reading scores were.

Table 18: Head Teacher and Teacher cwpm Effect

Factor	cwpm
Hours of instructional support	4.7
Number of days teacher gives homework	2.7

7. Recommendations

Findings from the national baseline study show that overall students in Malawi are not learning to read even after 3 full years of schooling. Standard 4 students at the beginning of the school year are reading less than 12 cwpm and not one student out of almost 1,000 who were tested was able to comprehend 100% of the oral reading fluency passage. Currently, there are a number of literacy programs being carried out in Malawi intended to help improve early grade reading, including GTZ’s Complementary Basic Education, which is focusing on out-of-school children who may have dropped out of school due to other problems. This is

being implemented in selected districts in Malawi. Save the Children's Literacy Boost is focusing on literacy development in learners in early grades in selected schools in Zomba.

Table 19: Recommendations at a glance

Review current policies affecting early grade reading – policies such as class size, length of school day, teacher preparation, language of instruction could be changed to improve student learning
Review current curriculum – based on results of EGRA a review of currently curriculum could be helpful to find gaps in what students need to know and what is in the curriculum
Review of current materials – reviewing textbooks and other reading materials used in classrooms for appropriateness, materials should be based on a logical scope and sequence of letter sounds and words should start simple and get more complicated. This hold true also for story complexity etc if materials are not appropriate they should be updated
Train Teachers – professional development is needed in specific instructional strategies and methods focused on reading, both pre and in-service training on reading instruction should be made focus nationwide
Focused instruction on early reading skills – assuring that teachers are teaching both decoding skills and comprehension skills for at least 45 minutes every school day
Train PEAS to be instructional coaches – Refocusing PEAs focus to be experts in early reading instruction and coaching. This could include modeling and providing constructive feedback to teachers during regular classroom visits
Research – design a study to test research based best practices of early literacy instruction for Malawian context that would include design of reading intervention, teacher training, implementation in several hundred schools, and capacity building and policy dialogue for MoEST to be able to scale up

Also, adult literacy programs are being carried out in selected districts in Malawi and target both men and women to help them to be able to read, write and make calculations. EDC's Tikwere is supporting the development of literacy in schools by providing radio programs to standard 1-3 classes. MTPDS is developing a reading program, which targets early grades in Salima and Ntchisi. Standard 1-4 teachers have been trained on the foundations of reading which prepares them to more effectively teach reading in Chichewa. MTPDS is also involved in supporting teachers on how to teach literacy better by using the Continuous Professional Development (CPD) modules. MTPDS is also supporting development of teaching and learning resources for literacy, children's readers and teacher's manuals, for the reading intervention in Salima and Ntchisi. Monitoring and supporting the establishment of literacy centers in schools through involvement of the community members is also being undertaken through MTPDS and is working hand-in-hand with the PEAs to sensitize the community on the establishment of school libraries. MTPDS (as well as CIDA) is supporting MoEST in the revision of textbooks in Chichewa and English for primary schools. This is occurring through the Malawi Institute of Education.

These programs are pioneering approaches and primary steps. Nonetheless, MTPDS recommends the use of *focused* instructional activities accompanied by policy changes to improve curriculum and increase teacher knowledge. Likewise, the widespread encouragement of a reading culture in the country will be important.

The following offers several policy and instructional recommendations based on these findings and which are believed may lead to measurable improvements in early reading outcomes for Malawi. These are meant to aid the MoEST in its decision-making process and planning by helping chart what "next steps" would be required to improving educational

quality. MTPDS began this course of action through a policy dialogue process coupled with the design and implementation of a small reading intervention (to be conducted in the upcoming academic year). Both recommendations and the reading intervention include pedagogical approaches that are based on reading research and that may or may not be currently taught at teacher training colleges in Malawi. Further policy dialogue with the MoEST is proposed to consider these recommendations in support of the Government of Malawi as it prioritizes and plans policy reforms needed to improve early grade reading.

Focus on reading and reading instruction. Considering the importance of reading to students' success in school and life, reading instruction should be a focus of each school day. "The amount of time that students are engaged in relevant reading and mathematics tasks is positively associated with academic achievement" (Borg, 1980, p. 59).²¹ Ensuring that reading is taught every day for at least 45 minutes will make reading a priority in schools. It will also offer students the dedicated instructional time they need to develop strong foundational reading skills. This could be achieved by lengthening the school day, as one policy option. As part of an increased focus on reading, students should be expected to read both at home and in class. Research in developed countries shows that students need to practice reading *regularly*, beginning at the earliest stages. Reading at home will increase to the time students engage with text and practice to gain fluency and comprehension skills. This is also a way to engage family and community in students' education.

Start early—Standards 1 and 2. As seen in these results, students are not learning to read by standard 4 despite the fact they are capable of learning to read. Students in standard 4 are still learning to recognize letters, even after three full years of school. Teaching of reading from the first day of standard 1, and making this instruction a priority, will help ensure that students learn foundational skills early by giving them additional time to develop higher level skills.

Teach decoding. The results show that most students are unable to decode words, leaving them with little to no help when encountering new words. Students who cannot decode words also were not able to read connected text or comprehend in both standards. If students are taught specific decoding strategies, they will be able to read faster and more accurately²². This would leave more working memory for comprehension. Teaching decoding skills need not be a full 30 minute-long lesson but should be a focus, especially in the early standards. This would allow students to gain the necessary skills for word reading. This instruction could be added into NPC/PCAR lessons without difficulty if stories taught were chosen based on the words in the story and ordered into a scope and sequence. The sounds in the words could be taught along with reading of words, which would be connected to the story taught in the daily lesson. This would allow for decoding lessons to be contextualized as part of a story. This is different from the whole word method of reading instruction that requires students to learn whole words instead of word parts and decoding strategies²³. In the whole word method, students spend time with text at what can be termed

²¹ Borg, W. R. (1980). Time and school learning. In C. Denham & A. Lieberman (Eds.), *Time to learn* (pp. 33-72). Washington, DC: U.S. Department of Education, National Institute of Education.

²² Juel, C. (1991). Beginning Reading. In R. Barr, M. L. Kamil, P. Mosenthal, & P. D. Pearson (Eds.), *Handbook of Reading Research* (pp. 759-788). New York: Longman.

²³ Liberman, I. Y. & Liberman, A. M. (1990). Whole language v. code emphasis: Underlying assumptions and their implications for reading instruction. *Annals of Dyslexia*, 40(1), 51-76.

the word level and are not necessarily taught letter sounds. In practice, this means that students must memorize what each word looks like, or its appearance. This method can work well for a small number of words with few letters. But, students cannot memorize all words in a language and especially one like Chichewa with multiple syllables per word. It is clear that if students are only taught by whole word methods they will have no strategies for reading or identifying new words. Students who have been taught to decode words, however, can both see new words and sound them out. Provided they have an understanding of the concept of the word, they can then use it to make meaning. Teaching decoding will only assure that students can read all text they come across as they are able to interact with it or decode it.

Teach formal comprehension strategies. Along with decoding skills, EGRA results show that students are not comprehending much of what they read and only about 50% at best of what they hear. Students are not born with comprehension skills. Like all parts of language, learning comprehension is something that can be improved through systematic instruction²⁴. Comprehending stories is a stepping stone to being able to comprehend nonfiction text, such as a science textbook, that allow students to learn specific subject matter. Without strategies such as predicting, self-questioning, and summarization, students are likely to comprehend only at a surface level without depth of understanding. Comprehension strategies can be taught beginning as early as standard 1 by listening to stories and then transferring those strategies to text reading.

Encourage reading. Reading in and out of school is an important activity to be strongly encouraged. The student questionnaire results show that students who reported having both a textbook and reading materials had higher scores on the oral reading fluency measure. Students who read more will read better. Reading should be encouraged not only for students but for the entire community. If the community supports students in learning a culture of reading will continue to grow and be sustained over time. Such efforts as Read Malawi, a USAID-funded activity, is developing supplementary readers in Chichewa and English for standards 1-3 learners with the aim of developing a reading culture and improving reading skills.

Review reading curriculum and textbooks. Results of the EGRA application show that across the nation, students' reading skills are especially low. The lack of decoding skills overall indicates that these skills are either not being taught, or the method used to teach these skills is not effective for students in Malawi. While there are many ways to teach decoding, not all methods will work for all students. It would be important to review the curriculum and textbooks to determine if decoding skills are being taught sufficiently and to consider revisions to make these skills a central focus of early reading instruction, along with incorporating early comprehension strategy instruction.

Set literacy benchmarks. Setting goals to monitor students' progress is key to moving students forward. Because most benchmarks of reading are based on research in developed countries, in languages such as English or French, it would be important for reading and language experts to collectively set benchmarks applicable to Chichewa. For example, benchmarks for reading fluency could be based on students who are able to reach 80% comprehension of a text such as the 3 students in this study. These benchmarks could be

²⁴ Pearson, P.D. & Johnson, D. (1978) *Teaching reading comprehension*. New York: Macmillan.

used to follow student progress and to know if curriculum and interventions are working, or if further changes need to be made going forward.

Reduce class size. Essential to improving quality of education in Malawi is the reduction of class size. It is not feasible for over 200 students to be successful and learn to read in one classroom with one teacher. Annex C illustrates the potential effects based on the results of this study. This analysis shows that students in classes of 150 students or more are reading 2 cwpm while students in classes smaller than 150 are reading at about 12.8 cwpm. Considering ways to reduce class size cannot be overemphasized. Students in the early standards need significant instructional time and considerable attention to their development if they are to be able to learn. Yet, students in Malawi are crowded into classrooms where teachers have limited room to walk amongst the class, much less interact with and give feedback to each student. Upon initial consideration this recommendation may seem impractical or possibly fraught with complication and expense. However this recommendation is one of the most powerful and likely to achieve the greatest gain. While it is outside the scope of MTPDS, it is a critically important policy consideration for the Government of Malawi and the donor community. Regardless of instructional methodology, materials, or well prepared teachers, students are unlikely to learn in classrooms of over 100 students, or only a smaller percentage will. One option for reconciling this issue would be implementing shifts so that MoEST could bring class size down by half. This would not require construction of new schools or increases in staff, although it presents numerous other challenges in policy and practice.

Lengthen school day. Currently the school day in Malawi typically ends by 11a.m. This leaves a maximum of 3 hours for instruction in all subject areas. However, actual learning time can be as low as 1 hour per day in some schools, with teachers attempting to teach all subjects in that time²⁵. Reasons for this include; tardiness of teachers and pupils, time needed to manage and instruct a large class, breaks, school feeding, administrative tasks and complementary programs outside of the curriculum. As mentioned, primary school students require a significant amount of time on task to learn to read and to extract meaning from that process. Lengthening the school day by even 1 hour would be a less complicated or simple way to give teachers more time to focus on reading. This would have few budgetary implications and would not involve hiring of new personnel or major reorganization. This extra hour, if added, would make the most difference if the time was used to focus solely on reading instruction. Worldwide, average instructional time for primary grades is 700-800 hours per year (761 in Sub-Saharan Africa), of which an average of 41% is dedicated to language instruction, which equals about 1.5 hours per day.²⁶ In the United States where early reading is a major focus, primary schools often spend up to an hour and a half on instruction related to reading alone. In Malawi, adding an extra hour would give teachers and students the instructional time need to learn to read successfully without a large amount of change to the system.

Review teacher in-service and pre-service professional development. Another vital element to quality improvement would be to consider the preparation and ongoing

²⁵ Wiener, K. (2010). *Analysis of Best Practices in Early Literacy in Malawi*. Technical Report prepared through the USAID-Funded Malawi Teacher Professional Development Support Project (MTPDS).

²⁶ Benavot, A. (2004). A global study of intended instructional time and official school curricula, 1980-2000. Background paper prepared for the Education for All Global Monitoring Report 2005. (Accessed May 26 at <http://unesdoc.unesco.org/images/0014/001466/146625e.pdf>)

professional development received by teachers in Malawi. Are teachers being properly prepared and trained to teach students how to read? In many countries, teachers are taught to teach language as a subject; however, this is very different from the teaching of reading. Also, explicitly teaching the relationships between letters and sounds and word reading are not typical subject matter that teachers know how to convey. Data suggest that students are either not being taught or are not understanding the instruction on letter sounds and word reading. Thus, developing teachers' skills in this area would be critical to improving reading outcomes. MTPDS is already working toward this end with a CPD component as well as the reading intervention planned to be implemented in the upcoming academic year. Both interventions will work to improve teacher knowledge through in-service training. However, more professional development is needed with a focus on preparing new teachers with strategies and knowledge to teach reading specifically, to achieve dramatic and widespread change.

Develop, publicize, and advocate for a National Early Literacy Strategy

MTPDS program is aware that Malawi has undertaken a national campaign to advocate for mass Adult Literacy and commends the government of Malawi for its commitment. However, having a National Early Literacy Strategy focused specifically on supporting primary school children's reading development would make early reading the focus of the government and of the nation. Such a targeted campaign would take a concerted effort but would allow for social advocacy initiatives, making parents and communities aware of the low literacy levels and specific obstacles children face, and call for support for the improvements required to raise student outcomes. It could include social marketing campaigns, competitions at the school, district or national level of reading improvement, or legislative changes, all of which MTPDS encourages MoEST to consider. This study revealed that head teachers who are aware of student reading difficulties also have students who are better readers with higher literacy levels. This suggests that having *accurate* information can lead to *increased* intervention, thus *higher* gains. A national primary grade literacy strategy would also help foster the dialogue necessary for policy and legislation to be established that might allow for smaller class sizes, more professional development for teachers, and a review of curriculum and materials. These, among other steps, could dramatically improve early reading in Malawi and enable students to acquire the foundational skills needed to succeed at school. As part of this strategy MoEST should continue to monitor the progress of learners' achievement in early grade reading. This should be done as a supportive intervention and not as a punishment to teachers. Those that monitor reading are well positioned to become an essential and constructive part of the routine activities or interventions of the Department of Inspection and Advisory Services and Department of Basic Education. The findings and recommendations of this report offer a prospective road map for MoEST consideration and to significantly improve the quality of primary education in Malawi.

Annex A: Malawi Early Grade Reading Assessment: Student Stimuli Booklet, October 2010: Chichewa

Annex B: Malawi Early Grade Reading Assessment: Student Response Form: Administrator Instructions and Protocol, October 2010: Chichewa

Annex C: Malawi EGRA and Class Size Comparison Findings

Annex D. Reliability and Validity of EGRA Instrument

Adaptation

EGRA assessments are always adapted to fit the context and languages that are appropriate to the population being tested. The subtests are created based on the rules and structures of the language being assessed—in this case, Chichewa. Language and reading experts are included. The adaptation workshop participants (25) included staff from MTPDS and ministry officials and literacy experts from Malawi Institute of Education, Centre for Education Research and Training, Centre for Language Studies, Chancellor College, Domasi College of Education, Teacher Training Colleges, Malawi National Examinations Board, CBE/World Relief, EDC/Tikwere, in the literacy, math and evaluation departments.

The standard 1, 2 and 3 learners' textbooks for Chichewa were obtained and used to create letter, syllable, and word frequency lists. These lists allowed the team to know the frequency of the appearance of each letter, the most frequent syllables, and words in standard-appropriate texts. Stories for the comprehension passage at approximately the second grade level were written according to a framework for structure and complexity (see EGRA Toolkit, 2009).²⁷ Individual test items were reviewed for difficulty level, and appropriateness to the context and the grade assessed.

Pre-testing and Pilot Testing

During pre-testing, student instructions, examples, and test items that appeared to be giving students trouble were refined and improved.

After piloting of the instrument, psychometric analysis (Rasch) was undertaken to test reliability of the data. The results of psychometric analysis guide the researcher to improve the reliability of an assessment. In theory, two people who are the same in terms of the construct being measured should get the same score across items. There should be a good distribution of difficulty levels represented, and if possible, a normal distribution in performance. The analysis also looks for “misfit” items that don't fit the data model. For example, if some children who are generally good at the construct (like reading) overall consistently do poorly on a certain item—or the opposite, an item that poorer students consistently get correct—the item is said to be acting strangely and should be reviewed. There should not be an excessive amount of misfits, although a few can be expected. Sometimes more misfits appear when there are large ceiling and floor effects because of having very little data to base the model on.

The results of the psychometric analysis showed a good distribution of difficulty levels in letter reading, syllable segmentation, syllable reading, word reading, nonword reading and

²⁷ RTI International. (2009a). *Early Grade Reading Assessment toolkit*. Prepared for the World Bank, Office of Human Development, under Contract No. 7141961. Research Triangle Park, North Carolina: RTI International. Retrieved August 23, 2010, from <https://www.eddataglobal.org/documents/index.cfm?fuseaction=pubDetail&ID=149>

listening comprehension. There were few items performing unexpectedly (misfits). The initial sound, syllable segmentation, and oral reading fluency assessments had large floor effects and so are difficult to measure. Letter sound identification had largest floor effect and was dropped for that reason.

Enumerator Training, Fieldwork, and Data Entry

Enumerator Training: One important focus for EGRA reliability is the consistency and accuracy of enumerator performance. The enumerators who administered EGRA and EGMA in Malawi went through a rigorous training including an introduction to the instruments, practice with each other and pilot data collection with children in schools. Furthermore enumerators were required to take an inter-rater reliability (IRR) test, which assesses the degree to which they agree in their scoring of the same observation. Repeated IRR assessment and feedback assures that we have at least 90% agreement between raters on the scoring of the same observation by the end of the training. IRR is conducted by pre-coding errors into an assessment sheet, then administering it in small groups to enumerators. Enumerators' scoring sheet should agree with the pre-coded error sheet. We score it at an item level. Eighty percent is considered good. Any enumerator in training who did not meet the requirement was not permitted to collect data. Furthermore, enumerators were observed in relation to variables in assessment administration including; 1) correct use of a stopwatch, 2) standardized instruction to students, and 3) proper and timely marking of forms.

Enumerator-Student Interaction: One of the performance criteria for selection and retention of enumerators is their ability to interact in a friendly and respectful way with students. Enumerators must smile, introduce themselves, and make sure that the child is comfortable and responsive from the outset of the assessment. Enumerators are observed by supervisors during practice assessment in schools, and results are recorded on an "Enumerator Observation Protocol." Enumerators who are unfriendly with students are not permitted to collect data.

Furthermore, almost all assessment components included an example that enumerators would illustrate and then ask the child to attempt prior to beginning the assessment activity. This way the learner knew what was expected of him or her.

Fieldwork: In the field, the reliability of the data was protected by the supervisors. Supervisors received training and practice in both administering the assessment and supervising the team. MoEST supervisors, MTPDS program team and USAID Senior Education Advisor/COTR of MTPDS Program, Ms. Aabira Sher Afgan observed on random sample basis, the administration and monitored assessments to be sure of consistent application.

Data Entry: Data entry specialists were trained for 3 days. Although a 10% data entry check may be more usual as a minimum standard, for the data entry for Malawi 2010 EGRA data, 75% of assessments entered were checked by a supervisor, and errors were corrected.

Statistical Tests Based on EGRA 2010 Results

Cronbach's Alpha (Overall Alpha = .90)

Variable	Item-Test Correlation	Item-Rest Correlation	Average Inter-item Covariance	Alpha
Correct Letters per Minute	0.88	0.81	47.90	0.88
Correct Syllables per Minute	0.97	0.96	42.30	0.87
Syllable Segmentation	0.30	0.26	72.80	0.91
Initial Sound Identification	0.22	0.20	74.10	0.91
Correct Words per Minute	0.96	0.05	53.60	0.87
Correct Nonwords per Minute	0.95	0.93	59.00	0.88
Oral Reading Fluency	0.97	0.95	51.70	0.87
Reading Comprehension	0.84	0.83	73.60	0.91
Listening Comprehension	0.40	0.38	73.90	0.91
Test Scale			59.90	0.90

Inter-item Correlations

	Correct Letters per Minute	Correct Syllables per Minute	Syllable Segment	Initial Sound ID	Correct Words per Minute	Correct Nonwords per Minute	Oral Reading Fluency (on passage)	Reading Comp.	Listening Comp.
Correct Letters per Minute	1								
Correct Syllables per Minute	0.814	1							
Syllable Segment	0.236	0.254	1						
Initial Sound ID	0.227	0.193	0.144	1					
Correct Words per Minute	0.791	0.945	0.249	0.177	1				
Correct Nonwords per Minute	0.763	0.935	0.243	0.188	0.942	1			
Oral Reading Fluency	0.777	0.936	0.232	0.167	0.938	0.916	1		
Reading Comp.	0.667	0.813	0.211	0.107	0.814	0.805	0.860	1	
Listening Comp.	0.370	0.369	0.263	0.118	0.366	0.348	0.334	0.311	1

Research on EGRA versus other international assessments: A review of international assessments undertaken for UNESCO, which included PIRLS, Program for International Student Assessment (PISA), SACMEQ, Programme d'Analyse des Systèmes éducatifs des États et governments members de la CONFEMEN (PASEC), EGRA, and Pratham's assessments, concluded that, "EGRA is the sole tool which has explicitly taken into account the results of the current scientific literature. In addition, at the difference of PIRLS and PISA, EGRA is a tool that can be used with beginning readers (as PRATHAM and PASEC), which is also very important." Furthermore, it found that, "... EGRA ... is currently the only one that can help to identify very early and very precisely the origin of the children's reading difficulties, and thus that could guide educational policies."²⁸

²⁸ Sprenger-Charolles, L. and Messaoud-Galusi, S. (2009). *Review of research on reading acquisition and analyses of the main international reading assessment tools*. Report, IIEP-UNESCO.

Annex E. Standard Error Tables

EGRA Standard Error for Total Population

Subtest	Mean	Std_Err	Samp_Size
Correct Letters per Minute	10.1	0.64	987
Correct Syllables per Minute	52.2%	1.90%	991
Initial Sound ID	9.0%	1.71%	991
Syllable Segment	8.6%	0.69%	991
Correct Words per Minute	5.2	0.41	990
Correct Nonwords per Minute	3.6	0.28	989
Oral Reading Fluency	5.4	0.45	990
Reading Comp	4.6%	0.56%	991
Listening Comp	39.4%	1.23%	991

EGRA Standard Error by Grade

Grade	Subtest	Mean	Std_Err	Samp_Size
2	Correct Letters per Minute	2.3	0.43	516
4	Correct Letters per Minute	21.4	1.54	471
2	Correct Syllables per Minute	42.9%	1.91%	518
4	Correct Syllables per Minute	65.5%	2.66%	473
2	Initial Sound ID_	5.0%	0.99%	518
4	Initial Sound ID_	14.6%	2.79%	473
2	Syllable Segment	1.3%	0.41%	518
4	Syllable Segment _	19.1%	1.79%	473
2	Correct Words per Minute	0.8	0.24	518
4	Correct Words per Minute	11.5	1.08	472
2	Correct Non-words per Minute	0.6	0.17	516
4	Correct Non-words per Minute	7.9	0.70	473
2	Oral Reading Fluency	1.1	0.26	518
4	Oral Reading Fluency	11.7	1.16	472
2	Reading Comprehension	0.8%	0.34%	518
4	Reading Comprehension	10.0%	1.39%	473
2	Listening Comprehension	31.4%	1.22%	518
4	Listening Comprehension	50.7%	1.81%	473