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Vamos Ler!

Language Mapping Study in Mozambique

Final Report



PHOTO BY KAITLIN CARSON

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This report was prepared by Pooja Nakamura, Kaitlin Carson, Dustin Davis, Nisha Rai, and Amy Todd from the American Institutes for Research.

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ACRONYMS AND INITIALS

AIR	American Institutes for Research
ApaL	Aprender a Ler
CIDA	Canadian International Development Agency
Creative	Creative Associates International
EGR	Early grade reading
EGRA	Early grade reading assessment
FGD	Focus group discussion
IDI	In-depth interview
L1	First language
L2	Second language
L3	Third language
LM	Language mapping
LOI	Language of instruction
MT	Mother tongue
MINEDH	Ministério da Educação e Desenvolvimento Humano
OLP	Oral language proficiency
OSC	Overseas Strategic Consulting Ltd.
RQ	Research question
SF	Semantic fluency
USAID	United States Agency for International Development

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EXECUTIVE SUMMARY

Language ability is at the core of learning to read. Whether in a first or second (or later acquired) language, a child needs oral language ability – i.e., the ability to speak and understand a language well – to be able to learn to read that language with fluency and comprehension. However, most language-of-instruction (LOI) decisions are highly political and are often made in the absence of contextually appropriate, empirical information. Although there are census data and other sources of information (e.g., Simons & Fenning, 2017) available on languages spoken in Mozambique, no data are available on children’s degree of oral language proficiency (OLP) in *all* the language(s) they report knowing, and how their measured OLP levels match (or don’t) with official LOI policy, practice, and existing census data.

To fill this gap, we conducted a language mapping (LM) study in Nampula and Zambézia provinces by measuring children’s OLP in each language they identified as knowing. We use these data to describe what language skills children bring to the classroom to help them learn to read. This information can help programs and policy makers determine the best choice of language for initial literacy instruction and support children who may not have the OLP required to learn in that language. We measured OLP using a semantic fluency measure, in which students looked at a picture and said as many words that came to their mind in a particular language within 60 seconds. We collected the semantic fluency data from a representative sample of Grade 1 and 3 students in Nampula and Zambézia. Through this task we obtained a snapshot of OLP in one or more languages per child.

AIR conducted the language mapping study within the **Vamos Ler!** (Let’s Read!) program, a 5-year program funded by the U.S. Agency for International Development (USAID), with the goal of strengthening the Mozambican government’s ability to ensure that students in two provinces, Nampula and Zambézia, can achieve grade-level fluency and comprehension in a local language in the first cycle of primary education (Grades 1–3). **Vamos Ler!** will provide evidence-based technical and material assistance to improve early grade literacy instruction in three local languages: Emakhuwa, Elomwe, and Echuwabo. The program will also provide second language acquisition support to prepare children for the transition to Portuguese as the language of instruction in Grade 4.

The **key findings from quantitative analyses** of the semantic fluency data from the language mapping study were as follows. **First**, there were roughly normal distributions of OLP scores in all languages which were classified as the students’ first language (L1), allowing us to identify the language(s) children *do* speak well (with normal variation), and therefore are likely to benefit from literacy instruction in those languages. **Second**, there were large mismatches between self-reports of linguistic ability and objectively measured linguistic ability. For example, nearly half the population reported OLP in two languages or more, but only about 8% were considered bilingual according to our empirically-based classification of bilingual ability from the semantic fluency data. **Third**, we provide geographic maps of where each language was the strongest, which generally corresponds with findings from the census and other research (Simons & Fenning, 2017). We found that Emakhuwa was most prevalent in the northern regions, Elomwe in the central regions, and Echuwabo in the southern regions and that relatively few Portuguese-prevalent schools were scattered throughout the two provinces. This finding makes the case for projects and policy to contextualize decisions about initial LOI choice. **Fourth**, a large fraction of the schools (approximately 62%) were linguistically heterogeneous, having students that have more than one L1 within each school. There was

significantly more linguistic heterogeneity in the urban areas than the rural areas. A **fifth** striking result was for the vast majority of students (73%), their LI – as measured by the OLP data – did not match the school’s official LOI. **Finally**, the degree to which there was a match between the OLP data we obtained and the census data varied by the language, with Elomwe and Emakhuwa matching the census well, and Echuwabo, Portuguese, and bilingual ability not matching the census well. Being able to provide insight into the OLP data match with census data and LOI policies, reflects the added value that can be obtained from empirically measuring language ability rather than relying on self-reports.

Our qualitative analysis showed that despite the official LOI policy, the majority of sampled teachers used both MT and Portuguese instruction in monolingual Portuguese LOI schools because their students simply did not understand enough Portuguese to learn exclusively in Portuguese. Furthermore, teachers believed that the impact on student learning in Portuguese was higher when they used both the MT and Portuguese in the classroom. This finding is important because although the quantitative data showed a significant mismatch between students’ OLP and the official LOI, it is likely that the schools’ LOI policies are not implemented uniformly. The vast majority of interviewed parents also stated that because of children’s limited Portuguese proficiency, it was necessary to use bilingual education in their communities.

Another major finding from the qualitative analysis was that the characteristics of the home environment and the school environment are important factors in perceived student success. In Nampula and Zambézia, teachers and parents faced many challenges in fostering the positive learning environments necessary for literacy acquisition. Parents, directors, and community leaders felt that, over time, education quality had declined, leading to poor Portuguese literacy outcomes. Within schools and homes, there was a lack of materials in either MT or Portuguese. In addition, few parents reported knowing where to access or purchase reading materials. A minority of parents supported their children’s reading acquisition in the home. Parents offered a number of reasons for not supporting their children’s learning, including their own lack of formal education, limited access to educational materials, and a lack of time. Parents also received minimal support from schools. A minority of teachers engaged with their students’ parents, and those who did reported that their primary interaction with parents involved discussing their children’s negative school performance.

Based on these findings we put forth the following recommendations:

1. Starting education and literacy instruction in a mother tongue (MT)¹ and then adding or transitioning to Portuguese. The timing of transitioning to Portuguese requires further research.
2. Stakeholders should determine the degree of mismatch they can tolerate between LOI and OLP in schools to determine the medium of instruction for each school.
3. Formalizing schools’ designations as “mother tongue-based bilingual” schools will allow them to get more formal support and materials to implement MT languages as a primary LOI.
4. Having more mother tongue-based bilingual schools in rural areas given the higher prevalence of MT language monolingualism in the rural areas.

¹ We refer to Mother Tongue interchangeably with LI, which is measured as the child’s strongest spoken language. Further details on how these are measured and classified are presented in the report.

5. Developing and utilizing a simple one-time screener to identify students who do not have sufficient OLP in the chosen LOI of the school, so teachers can provide remedial support to allow these students to “catch up” and benefit from literacy instruction in their new language.
6. Careful messaging to parents and community leaders about how MT-based bilingual education aligns with their own educational demands and desires.

INTRODUCTION

Vamos Ler! (Let’s Read!) is a 5-year program, funded by the U.S. Agency for International Development (USAID), with the goal of strengthening the Mozambican government’s ability to ensure that students in two provinces, Nampula and Zambézia, can achieve grade-level fluency and comprehension in a local language in the first cycle of primary education (Grades 1–3). **Vamos Ler!** will provide evidence-based technical and material assistance to improve early grade literacy instruction in three local languages: Emakhuwa, Elomwe, and Echuwabo. The program will also provide second language acquisition support to prepare children for the transition to Portuguese as the language of instruction (LOI) in Grade 4. Using a three-pronged, results-based approach, **Vamos Ler!** aims to simultaneously improve classroom instruction and at-home support for reading in the targeted provinces, while assisting the Ministry of Education and Human Development (MINEDH) in establishing national policies and systems that lay the foundation for sustaining and expanding early grade reading (EGR) bilingual education throughout the country.

Language ability is at the core of learning to read. Whether in a first or second (or later acquired) language, a child needs oral language ability (i.e., the ability to speak and understand) to be able to learn to read that language with fluency and comprehension. However, most LOI decisions are highly political and are often made in the absence of contextually appropriate, empirical information. Although there are census data and other sources of information (e.g., Simons & Fenning, 2017) available on languages spoken in Mozambique, no data are available on children’s degree of proficiency in *all* the language(s) they report knowing, and how their measured proficiency levels match (or don’t) with official LOI policy, practice, and existing census data. This research addresses this gap by conducting a language mapping (LM) study in Nampula and Zambézia provinces by measuring children’s oral language proficiency levels in each language they identified as knowing. This will help determine what language skills children have and can bring to the classroom, which in turn can help programs and policy makers determine the best choice of language for initial literacy instruction and support children who may not have the language proficiency required to learn in that language.

RESEARCH FRAMEWORK

BILINGUAL AND MULTILINGUAL EDUCATIONAL CONTEXTS

Decades of research and advocacy efforts in the international education community have confirmed that there are multiple benefits to mother tongue-based, multilingual education (UNESCO, 1953; UNESCO, 2003). Examples of these benefits include a higher likelihood of staying enrolled in school (Ball, 2010; Kosonen, 2005); more parental and community involvement in education (Benson, 2002); support for the most marginalized children, including children from rural areas (Hovens, 2002) and girls (Benson, 2002); cognitive benefits, such as abstract reasoning, working memory, selective attention etc., which are required for reading acquisition (Engel de Abreu, Cruz-Santos, Tourinho, Martin, & Bialystok, 2012); a higher likelihood of transferring first language (L1) reading and language skills to the second language (L2) (Koda & Reddy, 2008); and greater cost-effectiveness, when implemented with fidelity (Heugh, 2004).

However, several large-scale reviews have confirmed that language remains a significant obstacle to learning to read in many countries (Alidou et al., 2006; Kim, Boyle, Zuilkowski, & Nakamura, 2016; Nag, Chiat, Torgerson, & Snowling, 2014) because children are often required to begin school and literacy instruction in a language(s) they do not speak at home or in their communities (Arnold, Bartlett, Gowani, & Shallwani, 2008; Ouane & Glanz, 2010). The reasons for this are complex, but some of the main ones include a lack of teaching and learning resources in the MT; a lack of political will to implement education in a local MT; higher correlations between national or global languages and socioeconomic mobility (Azam, Chin, & Prakash, 2010; Coleman, 2011); multiple MTs in one area or school; and limited or no empirical basis for determining the language(s) in which children are proficient enough to be educated in.

There are various models for bilingual/multilingual education programs, which focus mostly on the timing of adding or transitioning to a new language (Genesee, Lindholm-Leary, Saunders, & Christian, 2005; Van Ginkel, 2014). The three primary models are:

- **Early exit**, where the child's MT/LI² is the LOI for up to 5 years (usually less), after which L2/Lx becomes the LOI
- **Late exit**, where the child's LI is the LOI for 6 years or longer, after which the L2/Lx becomes the LOI
- **Dual language**, where the LI and L2/Lx are both taught throughout a child's schooling period

Although some evidence shows more success in the late exit and dual language programs than in early exit programs (Collier & Thomas, 2004), issues such as linguistic social status, government will and policies, distance between the languages (orthographically and linguistically), and the availability of teachers and materials in local languages play very important roles in determining the likelihood

² The terms "mother tongue" and "LI" are generally used for the language of the child's home. Some children may have multiple MTs or LIs, and in some rare cases, LI may be used outside the home as a regional language.

of success for a bilingual/multilingual education program in varying contexts across the developing world.

Several studies have also confirmed the significant role oral language proficiency (OLP) plays in learning to read. In the well-established, simple view of reading, reading comprehension ability rests on both oral language ability³ and decoding ability (Gough & Tunmer, 1986; Hoover & Gough, 1990; Hoover & Tunmer, 2016). Additional studies on L2 reading have validated the importance of both oral language ability and decoding ability (Lervåg & Aukrust, 2010) across various orthographies, including transparent alphabetic orthographies (Florit & Cain, 2011), more opaque alphabetic orthographies (Megherbi, Seigneure, & Ehrlich, 2006), and morphosyllabaries (Joshi, Tao, Aaron, & Quiroz, 2012).

In sum, the research makes it clear that given the significant role of oral language skills in literacy development, children need to learn to read first in a language they can speak and understand well. After this, children can transition into learning to read one or more new languages. However, there are significant social and sometimes political barriers to this in many places around the world.

BILINGUAL EDUCATION IN MOZAMBIQUE

Mozambique is a multilingual country with more than 40 languages (Simons & Fennig, 2017). According to the Mozambican MINEDH, primary education will become fully bilingual, starting in 2017, and will include 16 Mozambican languages, followed by Portuguese as a foreign language. The timing of the introduction of Portuguese-only instruction is not uniformly implemented and is not yet finalized. For the past 12 years, some versions of bilingual education programming have been carried out in parts of Mozambique, which means that some materials development and teacher training has already been completed. Thus far, the program has been limited to about 16 languages (chosen through political processes, and due to the fact that those languages already had orthographies – although some of the orthographies are still under review for finalization) in around 700 schools, including 128 schools in Nampula and Zambezia provinces.

According to Mr. Vicente Bisqué from the Curriculum and Research branch of the MINEDH, there is considerable demand for LI education among local stakeholders, and use of LIs is growing in radio and in local politics. However, the current bilingual program faces major challenges in its ability to scale up due to the stress it puts on the education management systems, the need for the development of local language materials and teacher training for bilingual education, and high rates of student absenteeism.

The main structure of the current bilingual program is as follows:

³ Oral language ability is synonymous with oral language proficiency and language comprehension/linguistic comprehension and is not to be confused with oral reading fluency. This ability does not in any way include any script processing, decoding, or reading ability.

Grades 1–3:	Language of instruction in LI (reading and mathematics are taught in LI)
Grades 1–3:	Introduction to oral Portuguese, physical education classes in Portuguese (to increase oral vocabulary knowledge of verbs and other key words)
Grade 3:	Introduction to reading and writing in Portuguese
Grade 4:	Transition to LOI in Portuguese
Grades 4–7:	Continued teaching of LI as a subject

There has been some previous research to assess the impact of mother tongue-based bilingual education programs in Mozambique. For example, in 2006, Instituto Nacional de Desenvolvimento da Educação conducted a study on the previous bilingual education program, and in 2010, the vice minister called for additional research on the program. Benson (2000) showed that there were promising qualitative trends in the bilingual education program in terms of classroom participation, especially for girls; self-confidence; and teacher practices. This research also showed that LI and L2 (Portuguese) scores on mathematics and other subject tests were comparable to, if not better than, those in monolingual schools. Capra International’s evaluation of the bilingual education pilot, funded by the Canadian International Development Agency (CIDA), demonstrated that children in Grades 1–7 in bilingual education were on par in terms of Portuguese outcomes with students who were only educated in Portuguese (Capra, 2013). However, the study identified some issues with pre-service teacher training, including insufficiently trained teachers and a lack of learning materials. Stakeholders at the local (“bottom”) level, including teachers and community members, are demanding literacy outcomes in *both* the MT and Portuguese but, the allocation of resources to implement effective bilingual programming from higher (“top”) levels of the government, such as policy makers, is not consistent (Chimbutane & Benson, 2012).

Based on some of these findings, as well as the global literature on the effectiveness of teaching children to read in a language in which they are proficient, the proposed roll-out of the current bilingual education program will be more comprehensive, with the aim of becoming a “fully bilingual” program (Agencia de Informacao de Mocambique, 2015). However, given shifts in the current administration, and the problems mentioned above regarding the availability of trained teachers who speak and could teach in the Mozambican languages, the lack of materials, and the different perspectives among existing stakeholders, the roll-out of bilingual education has not been received positively across the board. Further, several challenges may persist, such as contradictory demands from various stakeholders (e.g., a desire to learn Portuguese quicker for socioeconomic mobility versus a need for lengthier instruction in LI to enable better transitioning to Portuguese); a fundamental lack of resources in the MT, including a lack of resources to sufficiently train teachers to teach a “full bilingual program,” and to expand and sustain the (costly) bilingual education program; and a lack of evidence on initial LI oral language skills and how to successfully transition to biliteracy.

LANGUAGE MAPPING STUDY

Drawing on the research framework above and the results of the situational analysis conducted in Mozambique in December 2016, this section describes the study in more detail and presents our research questions. In monolingual contexts, the LOI is usually the majority language, the official national language, or the de facto national language. In Mozambique, a country with more than 40 languages and many bilingual and multilingual speakers, it is difficult to determine which language(s) children speak and understand well when they start school (Simons & Fennig, 2017). Although it may seem likely that all children in a particular area speak a particular MT, given the widespread bi- and multi-lingualism it is unknown the extent to which all children do in fact speak that MT, and furthermore, how well they speak and understand each language they may have some proficiency in. However, it is clear that children are unlikely to succeed in school if they are forced to start in a language they do not speak or understand, necessitating a systematic investigation of children's baseline oral language skills.

The language mapping study aims to address this gap through the following objectives. **First**, we obtained sample-based data on oral language productivity and dominance in all languages that children in Grades 1 and 3 identified as speaking in order to identify their strongest language(s). Using a semantic fluency test in which children saw a picture and named all the words that came to mind in every language they reported being able to speak, we tested the “richness” of children's semantic networks in all of their spoken languages. This allowed us to determine how well a child functioned orally in a particular language, providing a basis for determining how likely they were to have the foundation required to begin learning to read in that language.

Furthermore, this test provided us with information on the skills children *do* have when they begin instruction, not only those they may be lacking. All typically developing children should have at least one language they speak and understand well. This language is often not the language of their school, which means that data on language or reading may not be collected in this language, leading to a large number of zero scores on tests. Although sufficient OLP does not necessarily translate into children being able to read a language, it does set the stage for which language(s) children are most likely to be able to learn to read most efficiently. This is because although it is possible to learn some letters and “decode” or sound out some words, it is impossible to comprehend a word, sentence, or story without enough OLP to *comprehend* a majority (over 90%) of the words in a particular story or text (Laufer, 1992; Hu & Nation, 2000).

Based on the results from our sample, we developed thresholds for high, medium, and low semantic fluency ability. We then mapped the geographic regions in which children had high, medium, and low scores; examined how these scores corresponded with the census data; and determined whether there was a match between OLP scores and the current LOI in schools. Program developers and policy makers can use this research to decide which initial LOI (LI) is likely to be effective for the greatest number of children, and to develop program options for remedying or “catching up” children who may be required to begin their education in a language they do not speak.

Second, the LM study aimed to determine language dominance in children who self-reported as bilingual or multilingual. Children were tested in all languages they said they could speak and understand, enabling us to provide information on students who may have “high” or “medium”

levels of proficiency in their L2 or third language (L3), and to be able to check validity and reliability of self-reported language data. This is especially useful in multilingual contexts, where there may be multiple L1's in a classroom, mismatches between LOI policy and linguistic proficiency of students, and where an L2 may be a viable option for the LOI, if enough students are highly proficient in it.

Third, we gathered qualitative data on the current perceptions, use, and context around languages and LOIs at the selected data collection sites to further understand language practices and uses in Nampula and Zambézia. This allowed us to document the current language situation for children in Grades 1–3 at the 13 qualitative data collection sites. These insights also helped us interpret the quantitative results from the language mapping study.

In sum, the LM study can help identify which languages may be most effective for initial literacy instruction; whether children can learn to read in a language other than their MT for their primary literacy; which languages should be used for early grade reading assessment (EGRA) administration; and what role language plays in interpreting the results of EGRAs and program impact evaluations. It also illuminates the extent to which current LOI choices match students' language skills.

RESEARCH QUESTIONS

In this section, we present our research questions (RQs). RQ1 was analyzed only quantitatively, RQ2 was analyzed quantitatively and qualitatively, and RQ3 and RQ4 were analyzed only qualitatively.

1. What language(s) do children speak and understand in Nampula and Zambézia?
 - a. In what language(s) do students have oral language proficiency (OLP)?
 - b. To what extent are there mixed-language groups in each school?
2. To what extent do the student OLP data (language mapping data) correspond to:
 - a. The current LOI policy?
 - b. The latest census data (from 2007)?
3. What are stakeholder perceptions of the relationship between language matching and school performance on literacy outcomes?
4. What are the political and social contexts within which LOI choices are being made?

METHODOLOGY

QUANTITATIVE APPROACH

PARTICIPANTS

To ensure that the language mapping covered Emakhuwa-, Elomwe-, and Echuwabo-dominant regions, we collected data from 4,177 students in 212 schools, with 2,078 students from Grade 1 and 2,099 students from Grade 3. Our calculations suggested that a sample of 204 schools was sufficient to estimate students' semantic fluency and decoding skills with a sampling variance/confidence interval of plus or minus 0.1 standard deviations. However, we recommended 216 schools to allow for a 6% oversampling precaution. The final sample consisted of 212 schools. The sample size enabled us to examine the language mapping data broken down by grade (Grades 1 and 3 only), urban/rural classification, sex, and language dominance across the three sampled languages. The results apply to the set of schools in which the program will be implemented (i.e., those in Nampula and Zambézia). To calculate this sample size, we assumed an intracluster correlation (i.e., the correlation between students within each school) of 0.25 and approximately 20 students per school (10 students from each Grades 1 and 3).

INSTRUMENT

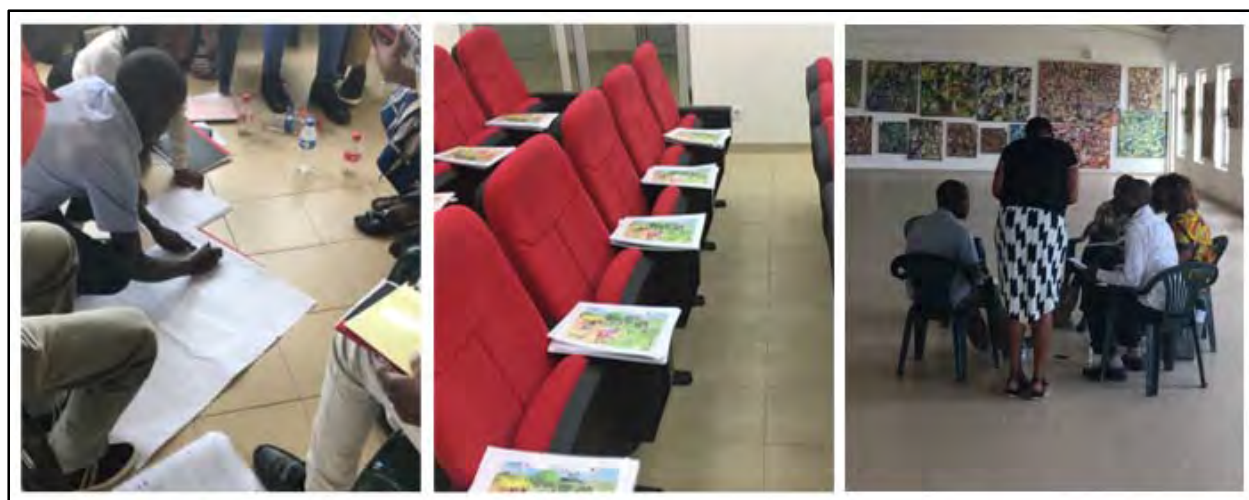
SEMANTIC FLUENCY TEST

Academic studies and members of the international EGR community have used semantic fluency measures as indicators of OLP (Korkman, Kirk, & Kemp, 1998; Nation & Snowling, 2004; Riva, Nichelli, & Devoti, 2000). Semantic fluency is usually measured in one of two ways. First, in category naming, children are given a category such as “vegetables” or “animals” and asked to say as many words as they can think of within that category. Second, in picture free association, children are shown a picture with a fairly complex (but very familiar) scene, such as an evening in the market, and asked to say as many words as they can. This free association task with a prompt necessitates access to semantic depth and breadth and is expressive in nature, and it therefore taps a significantly more complex aspect of language than a receptive oral vocabulary task, for example. It also has the advantage of not relying on established word counts or frequency lists, which may be required for the development of a valid vocabulary test. A third advantage is that the semantic fluency task is not as easily susceptible to domain specificity as a vocabulary test. In other words, children who may only know words related to a particular area of their life (such as school or the kitchen) can draw on those words as needed for the test, allowing us to get a sense of the richness of their semantic network, rather than focusing on preselected vocabulary items. Finally, a semantic fluency task requires relatively little test preparation for the amount of OLP data it yields.

Researchers from American Institutes for Research (AIR) and trainers from the **Vamos Ler!** program conducted a 3-day training and pilot for data collectors on the proposed data collection activities in Quelimane, Nampula. AIR and **Vamos Ler!** staff trained researchers on two tests: the semantic fluency test and the decoding test.⁴ For the semantic fluency test, data collectors used a

⁴ We do not report on the decoding test, as the data did not show enough variability in Portuguese (which was necessary for answering our research question) and the results showed floor effects.

picture prompt to elicit as many vocabulary items as possible. This activity is not a test of vocabulary matching accuracy to what is in the picture; rather, it tests *how many* words (richness of the semantic network) children know in each of their languages.



Training of data collectors in Quelimane

Data collectors began the tests by asking children what languages they spoke and understood. Each child was then tested in each of the languages they spoke with a relatively high degree of proficiency. Data collectors asked each child to look at the practice picture as a prompt and to list as many single words as they could during a 60-second period. The practice test ensured that the children were comfortable with what was being asked of them. Data collectors then clarified any questions and used a different picture card to implement the actual test. During the test, we

alternated the first testing language to ensure that the child wasn't scoring poorer on a particular language simply by virtue of being tested in that language second (or third) every time. In other words, in some children, the MT test was conducted first and then the Portuguese test, and for other children, the order was reversed.

FIGURE 1. EXAMPLE SEMANTIC FLUENCY IMAGE

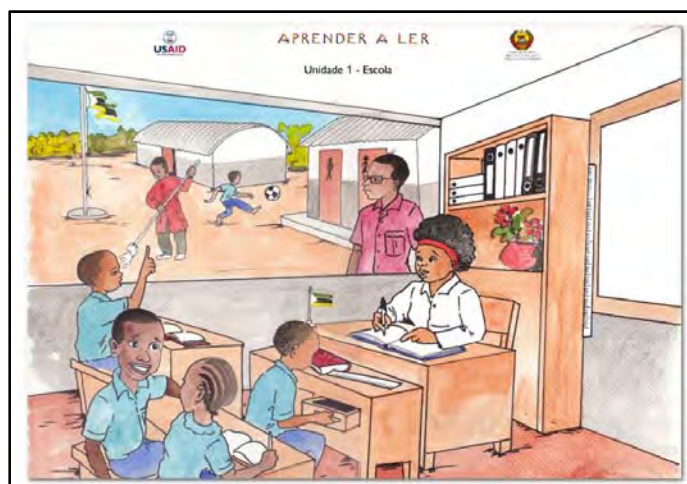


Figure 1 includes an example of the semantic fluency image, and Appendix B presents all the images. The images were taken from conversation posters created by the Aprender a Ler (ApaL) project in Mozambique.

QUANTITATIVE DATA CHECK

To prepare the quantitative data for analysis, we undertook key data cleaning steps to ensure data quality. Of the 4,177 students tested for semantic fluency, 804 were tested in a language that they

did not claim to speak. The vast majority of these (769) were tested in Portuguese, even though they did not claim to speak it. In addition, 606 students claimed to speak a language in which they were not tested, primarily Portuguese (513 of these 606 students claimed to speak Portuguese but were not tested in it). Finally, 59 students were not tested in any language. For those students tested in languages they did not claim to speak, 671 out of the 804 had a zero score in that language. In these cases, we replaced the zero scores with missing values as we assumed that some data collectors may have believed that they had to test the student in the LOI, regardless of whether the student claimed to speak that language. This is because if you classify “missing” data as zero scores it will change (reduce) the mean in ways that misrepresent (lower) the actual mean score.



PHOTO BY KAITLIN CARSON

Data collector implementing semantic fluency test

We performed additional data checks to determine if there were any schools with constant responses (the same response consecutively for many questions in a row) for all students, and if data collector languages matched student languages. There were no schools with all constant scores, but there were 102 cases of data collector languages not matching the language in which they were testing the student. However, in cases where a data collector was not a native speaker of any of the student’s languages, the protocol was to work with the data collection supervisor to record the test and arrange for a native speaker of the language to review and fill out the student’s score sheet.

QUALITATIVE APPROACH

To respond to RQ3 and RQ4 and to support the interpretation of the results of RQ1 and RQ2, the research team gathered focus group discussion (FGD), in-depth interview (IDI), and observation data on LOI practices and the political and social contexts surrounding LOI choices across different language-dominant areas in urban and rural zones in Zambézia and Nampula.

SAMPLING

The qualitative data collection used a quota sampling approach to select 13 schools from Nampula and Zambézia for data collection activities (Bernard, 2011). Quota sampling approaches identify criteria of interest (i.e., urban or rural schools) and sampling proportions (how many of each group to include) to purposively sample locations or interview participants to understand different perspectives around research questions. This sampling approach allowed us to analyze and develop well-balanced findings around each of the following criteria of interest: public urban schools and public rural schools; Emakhuwa-, Elomwe-, and Echuwabo-speaking areas; and different roles within the community (mothers of children in Grades 1–3, fathers of children in Grades 1–3, community

leaders, directors, and teachers of Grades 1–3). Table 1 shows an outline of the qualitative study sampling.

TABLE 1. QUALITATIVE SAMPLING

LANGUAGE	FGD			IDI			OBSERVATION		GRAND TOTAL
	RURAL	URBAN	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN	
Echuwabo	7	3	10	8	5	13	4	1	28
Mother	2	1	3	3	2	5			8
Father	1	1	2	1	1	2			4
Teacher	2	1	3	2	1	3			6
Director	2		2	1	1	2			4
Leader				1		1			1
Observation							4	1	5
Elomwe	9	3	12	9	6	15	3	1	31
Mother	1	1	2	3	2	5			7
Father	2	1	3	2	1	3			6
Teacher	3	1	4	2	1	3			7
Director	3		3	1	1	2			5
Leader				1	1	2			2
Observation							3	1	4
Emakhuwa	6	4	10	7	7	14	2	2	28
Mother	1	1	2	3	3	6			8
Father	1	1	2		2	2			4
Teacher	2	1	3	2	1	3			6
Director	2	1	3	2		2			5
Leader					1	1			1
Observation							2	2	4
Grand Total	22	10	32	24	18	42	9	4	87

Abbreviations: FGD = focus group discussions; IDI = in-depth interviews.

We explain each qualitative methodology used with the above informants in greater detail below.

INSTRUMENTS

FOCUS GROUP DISCUSSIONS

Focus group discussions are guided discussions with a group of individuals that create a context in which participants feel comfortable and empowered to discuss research topics with their peers and carefully trained facilitators, and to react to each other's opinions and experiences with the program. The format enabled the team to understand the experiences of a greater number of program beneficiaries in a short period of time, and in a group environment where we could observe interactions among participants. We conducted FGDs with fathers, mothers, teachers, leaders, and school directors. FGDs with parents explored which languages people used in the

community and why, perspectives on the languages used in the areas surrounding the school, perspectives on LOI choices, and details on the home learning environment. We also conducted FGDs with teachers and directors to explore materials in the classroom, what languages they used within the classroom and how they used them, and which language(s) they used as the LOI. We include an example FGD instrument in Appendix A.

IN-DEPTH INTERVIEWS

In-depth interviews are one-on-one discussions designed to gather detailed information about a specific topic. For this research, we used a semistructured interview guide that explored the same topics as the FGDs but allowed participants to go into greater detail, while providing a secure environment in which to discuss any sensitive topics around language and language-use. We include an example IDI instrument in Appendix A.

CLASSROOM OBSERVATIONS

We complemented FGDs and IDIs with 30-minute classroom observations in each of the 13 schools, for a total of 13 classroom observations. Classroom observations were only done in Grade 1 and Grade 3 classrooms. During classroom observations, researchers used an observational tool to note the LOI practices they observed, as well as recording field notes on other LOI tendencies, reactions of students to language usage in the classroom, and print items around the classroom. We include the classroom observation tool in Appendix A.

DATA COLLECTION PROCEDURES

AIR, Overseas Strategic Consulting Ltd. (OSC), and a consultant from Eduardo Mondlane University prepared researchers for data collection during a 5-day qualitative data collection training and pilot in Quelimane, Nampula. For the data collection, three language teams consisting of two researchers and one supervisor implemented the FGDs, IDIs, and classroom observations. For FGDs and IDIs, one field researcher was responsible for interviewing and facilitating the discussions and interviews, while the second researcher assumed primary responsibility for recording responses. For observations, the two researchers worked together to take notes during and after the 30-minute observation period. The supervisor and two researchers were grouped by language (Emakhuwa, Elomwe, and Echuwabo) to ensure that they could facilitate interviews in either Portuguese or the MT. Data collectors were then given sites for data collection based on existing data on language use at those areas. During data collection, researchers recorded responses in notebooks and recorded all interviews on portable digital recorders. Researchers then downloaded the recordings to a field laptop each day, renamed the recording files using an anonymized code system, and then copied the files to external media for backup. Researchers then sent these files to Eduardo Mondlane University for transcription and translation.

ANALYSIS PROCEDURE

To analyze the qualitative data, the AIR research team developed a descriptive coding scheme linked to the evaluation questions, with specific references to themes of interest and research questions. The researchers then loaded the coding scheme and the transcripts into a qualitative data analysis software package (NVivo 11) to code. Coding in NVivo is a manual process based on careful reading of each piece of data (in this case, interview responses and other notes) and the

subsequent selection of appropriate codes to describe these data. Once properly coded, we analyzed the data using queries to compare and contrast the data by important characteristics prior to producing written outputs.

RESULTS

RESEARCH QUESTION (RQ) I: ORAL LANGUAGE PROFICIENCY LEVELS

- I. **What language(s) do children speak and understand in Nampula and Zambézia?**
 - a. **In what language(s) do students have oral language proficiency (OLP)?**
 - b. **To what extent are there mixed-language groups in each school?**
-

RQ I a: In what language(s) do students have oral language proficiency (OLP)?

The main purpose of RQ I was to determine which languages children had strong oral language proficiency in. In order to do this, we conducted a semantic fluency test in all languages each child reported being able to speak. The uniqueness of these data enabled us to identify the strongest language(s) for each child, rather than pre-selecting the language for data collection based on factors such as dominant ethnic group, LOI, or census data. Once we had identified the children's strongest language(s), we also identified the degree of proficiency in other languages that the children may speak as later acquired languages.

The first step was to determine each child's strongest language(s). We refer to this language(s) as the child's L1. In cases where two languages were self-selected, we allowed for the fact that a child may have two L1s. There was only one case where three languages were selected. In order to assign a language as an L1 or L2, we tested for a difference of five or more words between the two languages in which children took the test. In other words, if children were tested in two languages (due to self-reporting that they spoke more than one language) and the scores were more than five words apart from each other, the higher scoring language was deemed their L1 and the lower scoring language was deemed their L2. If children had two scores that were within five points of each other, they were called "bilingual" and given two L1 scores. Children with only one dominant language were referred to as "monolingual"⁵ and given only one L1 score, even if they had an L2. This range of +/-5 was chosen because the standard deviation from the mean for each language was approximately 5 (discussed further below).

Table 2 shows that nearly half of the students in the districts (about a third of all sampled students prior to sampling weight adjustment) self-reported being able to speak two languages. Data collectors did ask children to report any language they could speak at all, so it is possible that children chose language(s) they may not be able to speak well in addition to those that they do believe they speak well; however, with self-reports with "yes" or "no" answers it's hard to introspect and decide which language(s) you can speak well even as an adult. This is arguably even harder for a child. As part of this research question was to uncover the reliability of self-reported

⁵ Although some of these students may be better referred to as "emerging bilinguals" (because they are likely to learn new languages), we cannot be certain that all of them will in fact become bilingual (for example, Portuguese monolingual speakers may remain monolingual). For this reason, we refer to them as monolinguals.

language proficiency data, we compare this result with the results from the semantic fluency test. According to the semantic fluency test, the vast majority of children (both in terms of the sample and as weighted population percentages) were monolingual (Table 3). This discrepancy between the number of languages reported and actual language ability (classified by the semantic fluency score) indicated that almost all children were dominant in a single language, with second language scores that were substantially lower than their L1 scores. The bilingual portion of students was higher in urban schools, although it was still relatively small at only 14.4%. A test of the difference in bilingualism between urban and rural schools was only borderline statistically significant.⁶

TABLE 2. NUMBER OF LANGUAGES SPOKEN, AS REPORTED BY STUDENTS

	SAMPLED FREQ.	SAMPLED PERCENT	POPULATION PERCENT
1	2,707	64.8%	51.6%
2	1,415	33.9%	48.4%
Total	4,122	100.0%	100.0%

Abbreviation: Freq = frequency. "Sampled" refers to statistics based on raw sample data. "Population" refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

TABLE 3. BILINGUALISM BY GRADE LEVEL AND URBAN/RURAL SETTING

	RURAL			URBAN			TOTAL		
	SAMP. FREQ.	SAMP. %	POP. %	SAMP. FREQ.	SAMP. %	POP. %	SAMP. FREQ.	SAMP. %	POP. %
Grade 1	43	3.0%	4.9%	45	7.2%	9.0%	88	4.2%	5.2%
Grade 3	119	8.1%	13.3%	136	21.7%	21.6%	255	12.1%	14.2%
Total	162	5.5%	8.0%	181	14.4%	14.5%	343	8.2%	8.5%

Abbreviation: Freq = frequency. "Samp." refers to statistics based on raw sample data. "Pop." refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

In Table 4, we present the languages that were most often represented as L2 in cases where children reported being able to speak two languages, but where proficiency in the second language scored more than five points lower than the L1. Unsurprisingly, Portuguese was the most common L2, representing 85.1% of the sample, which corresponds to a weighted fraction of 93.3% of the population in the two districts.

⁶ The t-stat associated with the test of the difference was 1.89, indicating that the difference in bilingualism between urban and rural schools was only significant at the 10% significance level.

TABLE 4. L2 LANGUAGES

	SAMPLED FREQ.	SAMPLED PERCENT	POPULATION PERCENT
Portuguese	319	85.1%	93.3%
Elomwe	18	4.8%	3.2%
Emakhuwa	24	6.4%	1.6%
Echuwabo	14	3.7%	1.9%
Total	375	100.0%	100.0%

Abbreviation: Freq = frequency. “Sampled” refers to statistics based on raw sample data. “Population” refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

In Table 5, we present the data for the number of words spoken in each language, broken down by whether the language was the child’s L1 or L2. The table reports the population mean and standard deviation of the semantic fluency test (the number of words spoken) in the two provinces, along with the number of children who were tested in the various languages in the sample.

TABLE 5. SUMMARY STATISTICS OF NUMBER OF WORDS SPOKEN, BY LANGUAGE AND L1/L2 LEVEL

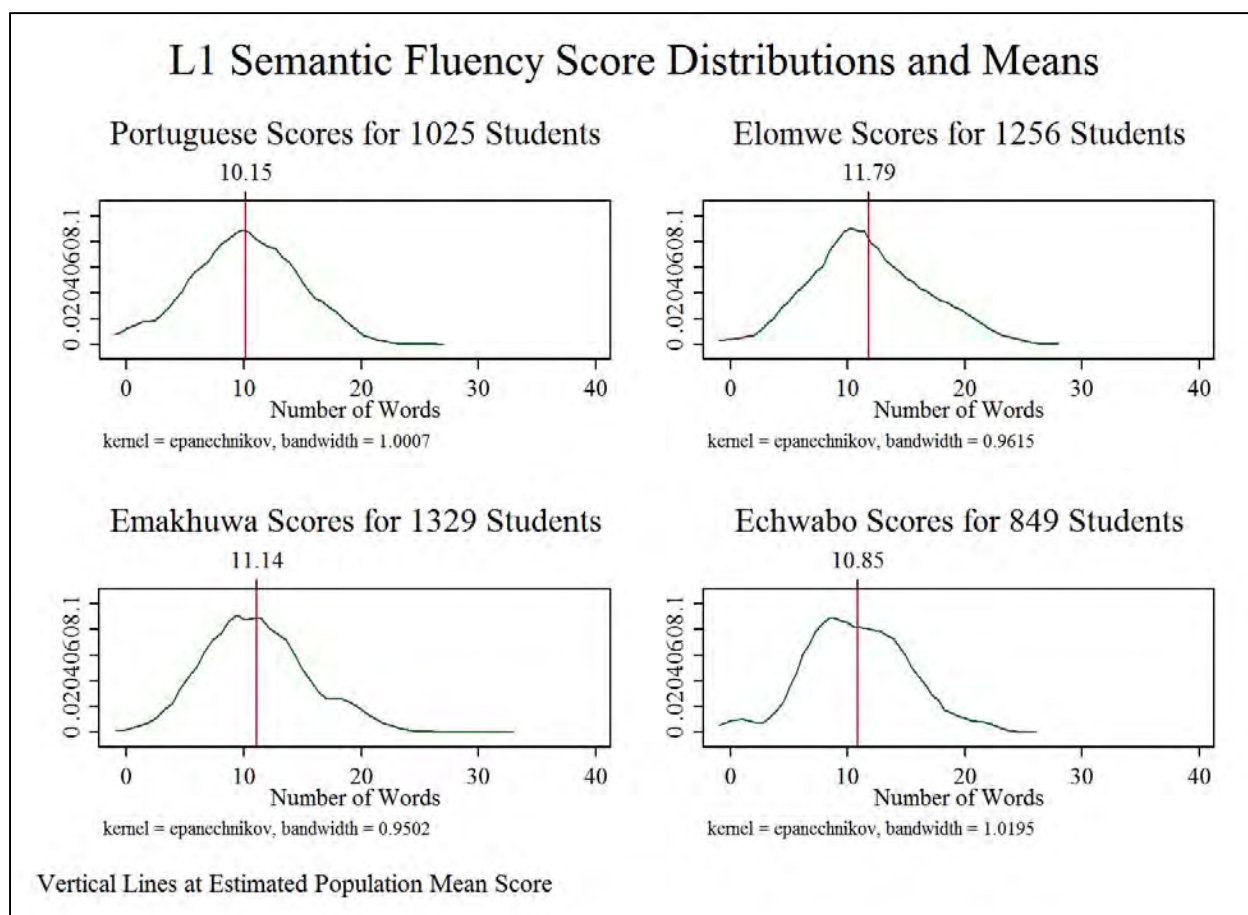
		POP. MEAN	POP. ST. DEV.	SAMPLED N
Portuguese	L1	10.2	5.6	1026
	L2	4.0	2.7	319
Elomwe	L1	11.8	5.6	1256
	L2	0.9	1.4	18
Emakhuwa	L1	11.1	3.8	1330
	L2	5.9	8.8	24
Echuwabo	L1	10.9	4.9	849
	L2	3.1	4.5	14

* N-values refer to the number of scores in each category. Abbreviations: L1 = first language; L2 = second language; St. Dev. = standard deviation. “Sampled” refers to statistics based on raw sample data. “Pop.” refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

The graphs in Exhibit 1 further display the distributions and means for the semantic fluency scores for all the L1s and L2s. We weighted the distributions by the sampling weights thus the graphs reflect the distributions across the population in the two provinces. The data highlight that the population mean scores for all L1s were very close to each other: 10.2 words in Portuguese, 11.8 words in Elomwe, 11.1 words in Emakhuwa, and 10.9 words in Echuwabo. This suggests that all children were nearly equally proficient in their L1, when given a choice of being tested in all the languages they spoke. The distribution of the data shows largely unimodal and symmetric distributions, with each language’s standard deviation being approximately 5 points. This type of distribution is expected for oral language abilities of typically developing children in any monolingual setting. This demonstrates that the test tapped into language abilities that children *do* have in this context, rather than ones they do not have (resulting in large numbers of zero scores). It therefore identifies a linguistic resource that can be drawn on for more effective

literacy instruction. In other words, it helps identify which language children are most likely to learn to read well if they are provided systematic reading instruction in that LI.

EXHIBIT 1. L1 SEMANTIC FLUENCY SCORE DISTRIBUTIONS AND MEANS



On the other hand, the population mean (estimated using the sampling weight) scores for L2 were skewed towards the lower scores. The mean scores for L2 words were 4.0 in Portuguese, 0.9 in Elomwe, 5.9 in Emakhuwa, and 3.1 in Echwabo. The graphs in Exhibit 2 correspond to the results presented in Table 5, which show that a vast majority of children in this sample were monolingual, and that their L2 scores were substantially lower than their L1 scores.

EXHIBIT 2. L2 SEMANTIC FLUENCY SCORE DISTRIBUTIONS AND MEANS

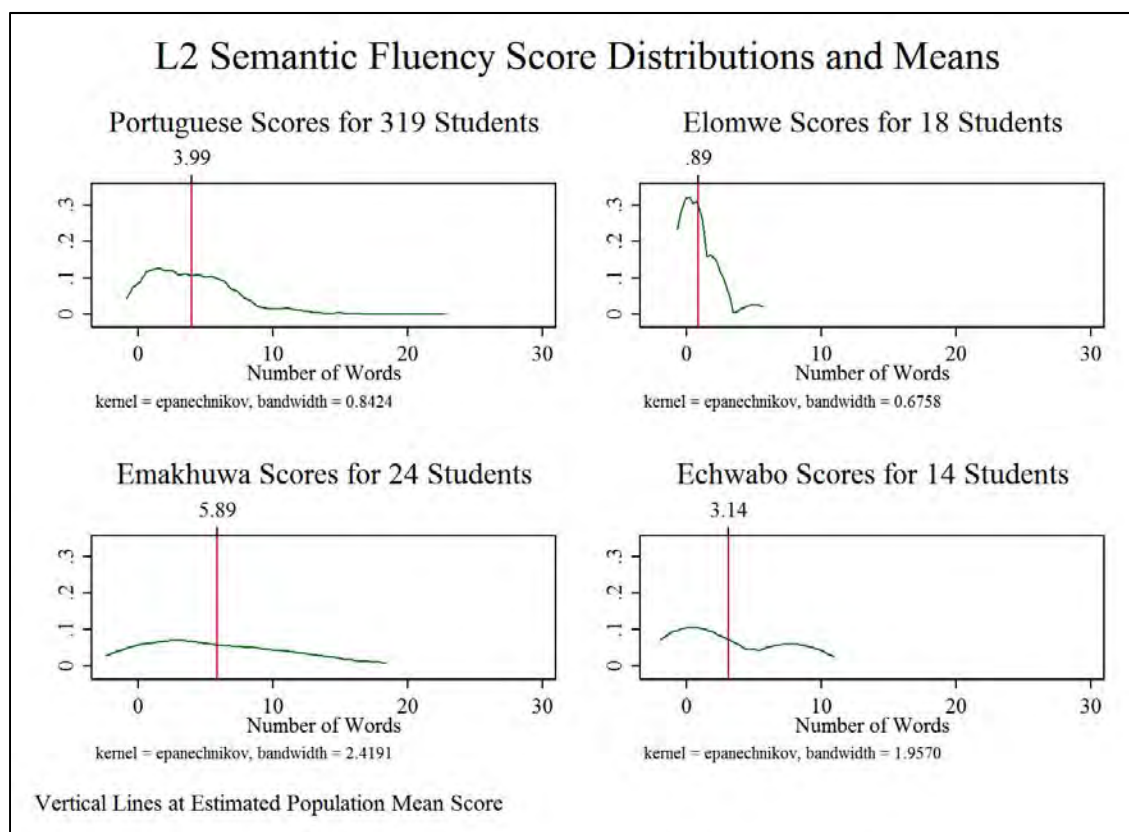


Table 6 displays means and standard deviations for all LI scores, broken down by gender, location, grade, bilingual or MT school (according to the formal LOI policy), and ApaL school or not. This provides an overall look at the results for various sub-groups of interest. Table 7 shows the results of tests for statistically significant differences in the scores for all LIs in terms of male versus female, urban versus rural, and Grade 3 versus Grade 1. Statistically significant positive differences in the male vs female comparison imply higher male means as compared to female. Statistically significant positive differences in the urban versus rural comparison imply higher urban means as compared to rural. Statistically significant positive differences in the Grade 3 versus Grade 1 comparison imply higher Grade 3 means as compared to Grade 1. Tables 8 and 9 contain the corresponding breakdown and statistical tests for the only L2, Portuguese.

Table 7 indicates that, as expected, students in Grade 3 had higher LI scores across all languages, although the difference was only weakly significant for Emakhuwa. The semantic fluency score for Portuguese LI was statistically significantly higher for urban students than rural students, which is to be expected given that Portuguese is more commonly spoken in urban settings. The reverse held for Elomwe, where the semantic fluency score for Elomwe LI was statistically significantly higher for rural students than urban students. While girls scored higher in Portuguese, boys scored higher in all other LIs, although the results were not statistically significantly different.

Table 9 shows that the only statistically significant difference was that children in Grade 3 had higher L2 Portuguese semantic fluency scores than children in Grade 1. There were no statistically significant differences in scores across gender or urban/rural classification. However, the sample size of L2 Portuguese speakers was smaller, which could explain the lack of significant results.

TABLE 6. SUMMARY STATISTICS FOR EACH LI

	LI PORTUGUESE			LI ELOMWE			LI EMAKHUWA			LI ECHUWABO		
	POP. MEAN	POP. ST. DEV.	SAMP. N	POP. MEAN	POP. ST. DEV.	SAMP. N	POP. MEAN	POP. ST. DEV.	SAMP. N	POP. MEAN	POP. ST. DEV.	SAMP. N
<i>Sex</i>												
Female	10.42	5.54	506	11.59	5.26	609	10.87	3.69	659	10.60	4.27	399
Male	9.98	5.57	519	11.99	5.74	642	11.39	3.88	669	11.18	5.66	450
<i>Location</i>												
Rural	9.79	4.14	227	11.88	5.36	704	11.16	2.97	706	10.89	4.67	570
Urban	11.55	7.22	799	9.72	6.87	552	10.94	10.07	624	9.64	7.88	279
<i>Grade Level</i>												
Grade 1	9.60	5.61	432	11.29	5.10	609	10.78	3.34	678	10.40	4.04	413
Grade 3	10.87	5.13	594	12.45	5.90	647	11.85	4.48	652	11.62	6.18	436
<i>Bilingual School</i>												
No	10.20	5.61	997	11.66	5.47	1,184	10.93	3.92	1,265	10.84	4.93	830
Yes	10.51	3.95	29	13.43	5.21	72	13.39	2.00	35	11.17	3.04	19
<i>Apal School</i>												
No	9.99	6.33	632	11.77	5.37	984	11.73	3.67	606	11.15	4.54	739
Yes	10.48	4.62	394	11.85	5.85	272	10.57	3.91	694	8.22	6.79	110

Abbreviations: LI = first language; St. Dev. = standard deviation. "Samp." refers to statistics based on raw sample data. "Pop." refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

TABLE 7. RESULTS OF STATISTICAL TESTS OF DIFFERENCES IN MEANS FOR EACH LI

DIFFERENCE BETWEEN	LI PORTUGUESE		LI ELOMWE		LI EMAKHUWA		LI ECHUWABO	
	DIFF	T-STAT	DIFF	T-STAT	DIFF	T-STAT	DIFF	T-STAT
Male – Female	-0.43	-0.86	0.40	1.32	0.52	1.11	0.58	1.29
Urban – Rural	1.76**	2.09	-2.16***	-4.00	-0.22	-0.39	-1.26	-1.61
Grade 3 – Grade 1	1.27**	2.39	1.16***	2.88	1.07*	1.70	1.22***	2.86

Results are reported at three levels: significance at the 10% level has one asterisk (*); significance at the 5% level has two asterisks; and significance at the 1% level has three asterisks (***). Results significant at the 1% or 5% level are bolded because significance levels of 5% or less are generally accepted as statistically significant. Difference is calculated as male minus female, urban minus rural, and Grade 3 minus Grade 1

TABLE 8. SUMMARY STATISTICS FOR L2 PORTUGUESE

	L2 PORTUGUESE		
	POP. MEAN	POP. ST. DEV.	SAMPLED N
<i>Sex</i>			
Female	3.57	2.97	153
Male	4.38	3.06	166
<i>Location</i>			
Rural	3.95	2.46	178
Urban	4.64	9.38	141
<i>Grade Level</i>			
Grade 1	3.49	2.07	122
Grade 3	4.75	4.34	197
<i>Bilingual School</i>			
No	3.77	3.61	291
Yes	4.70	1.20	26
<i>Apal School</i>			
No	4.22	2.88	143
Yes	3.77	3.19	174

Abbreviations: L2 = second language; St. Dev. = standard deviation. “Sampled” refers to statistics based on raw sample data. “Pop.” refers to statistics that account for the sampling weights and are representative of the overall population of the districts. Statistics in bold font tested statistically significantly higher than the comparison group at a 5% or 1% significance level. Significance testing was completed for sex, location, and grade level only, as determined by the sampling strategy.

TABLE 9. RESULTS OF STATISTICAL TESTS OF DIFFERENCES IN MEANS FOR L2 PORTUGUESE

DIFFERENCE BETWEEN	L2 PORTUGUESE	
	DIFF	T-STAT
Male – Female	0.81	1.24
Urban – Rural	0.68	0.88
Grade 3 – Grade 1	1.26**	2.19

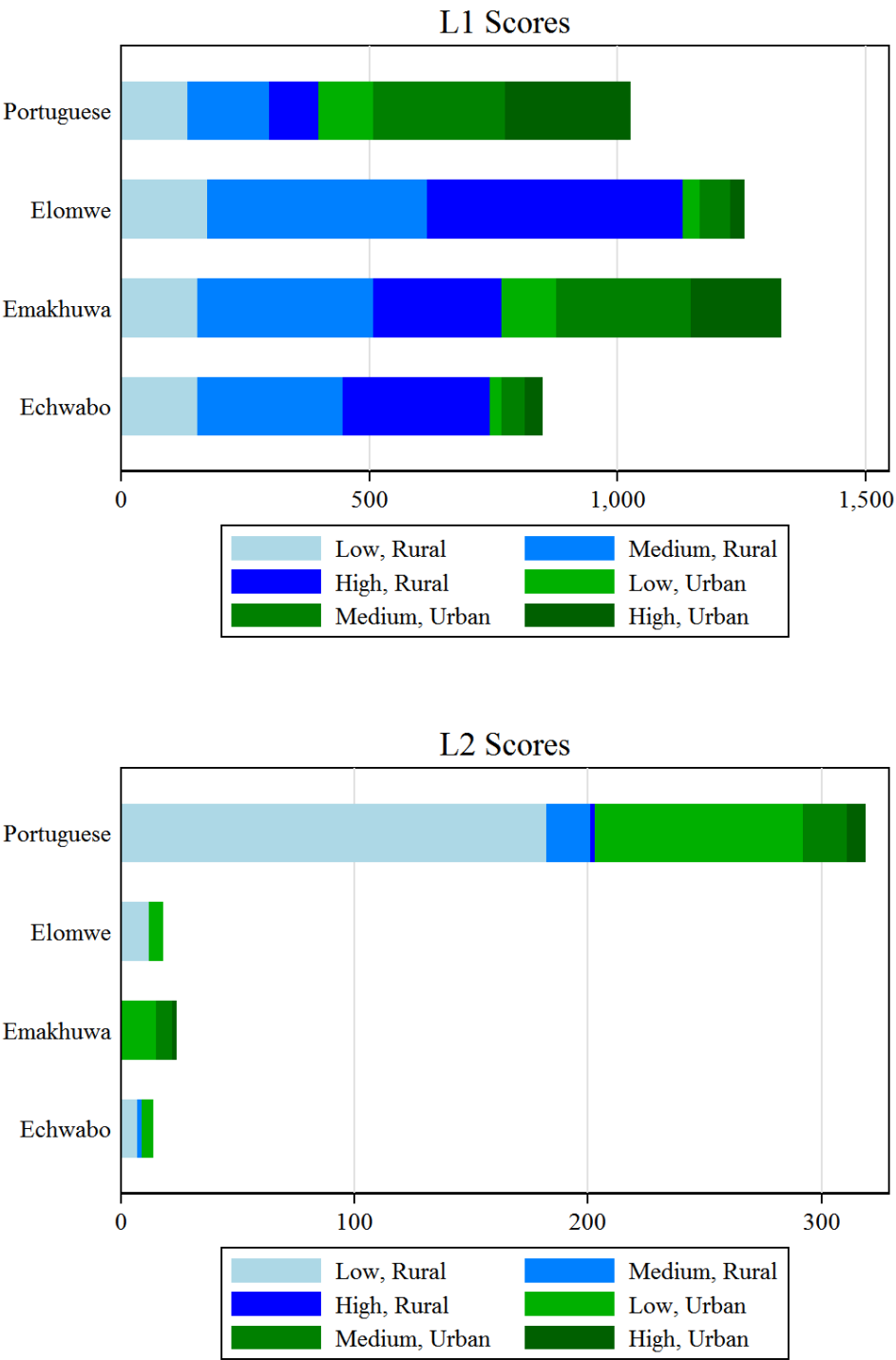
Results are reported at three levels: significance at the 10% level has one asterisk (*); significance at the 5% level has two asterisks; and significance at the 1% level has three asterisks (***). Results significant at the 1% or 5% level are bolded because significance levels of 5% or less are generally accepted as statistically significant. Difference is calculated as male minus female, urban minus rural, and Grade 3 minus Grade 1.

As a next step, we were interested in how many children achieved high, medium, or low proficiency scores in their L1s and their L2s in order to identify which language(s) may be the best choice for initial language of instruction in which areas. Given the unimodal, relatively normal distribution and the mean scores from this sample for L1 (as shown in Exhibit 1), we set the following benchmarks:

- 7 or fewer words = low oral language proficiency
- 8–12 words = medium oral language proficiency
- 13 words or more = high oral language proficiency.

Figure 2 displays the number of sampled students with low, medium, and high scores in an L1 and an L2, disaggregated by urban and rural.

FIGURE 2: NUMBER OF SAMPLED STUDENTS BY SCORE THRESHOLD CATEGORY AND URBAN/RURAL CLASSIFICATION



Of the Portuguese speakers, a higher fraction of students with high or medium proficiency scores came from urban settings. Students in urban settings represented 253 of the 353 (71.7%) highly proficient speakers of Portuguese, and 265 of the 429 (61.8%) medium proficiency speakers.

In addition to applying the high, medium, and low thresholds to the L1 and L2 scores separately, we also applied them to bilingual students' combinations of L1 scores. By classifying students as bilingual if their languages were +/- 5 points from one another, a bilingual student could score low in both L1s, low in one and medium in another, medium in both L1s, medium in one and high in another, or high in both L1s. Of the 343 students who were bilingual, 83 students—which corresponds to 24.2% of the sample of bilingual students, or 31.3% of the population of bilingual students in the two districts—had low levels of proficiency in both L1s; 95 students—which corresponds to 28% of both the sample and the population—had medium levels of proficiency in both L1s; and 30 students—which corresponds to 9% of both the sample and the population—had high levels of proficiency in both L1s. These data are represented in Table 10.

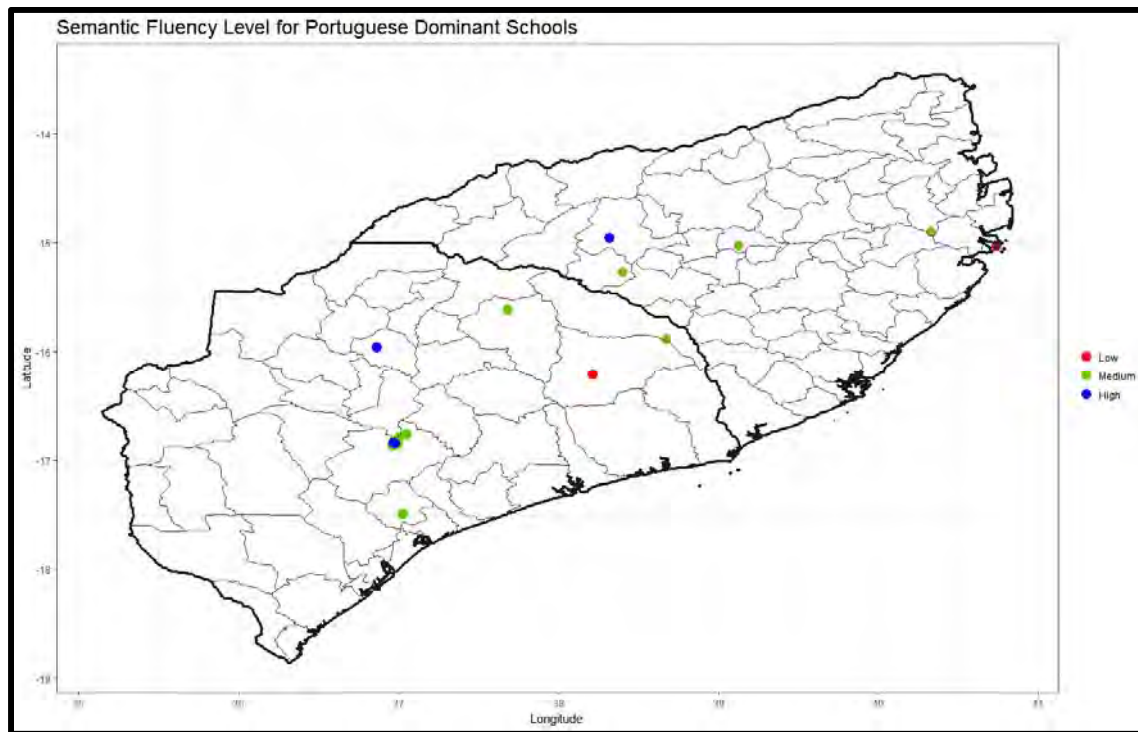
TABLE 10. LANGUAGE SCORE COMBINATIONS FOR BILINGUAL STUDENTS

LANGUAGE SCORE COMBINATIONS	# OF SAMPLED BILINGUAL STUDENTS	SAMPLED %	POPULATION %
Low and low	83	24.2%	31.3%
Medium and low	88	25.7%	29.6%
Medium and medium	95	27.7%	27.6%
High and medium	47	13.7%	13.0%
High and high	30	8.7%	8.5%
Total	343	100.0%	100.0%

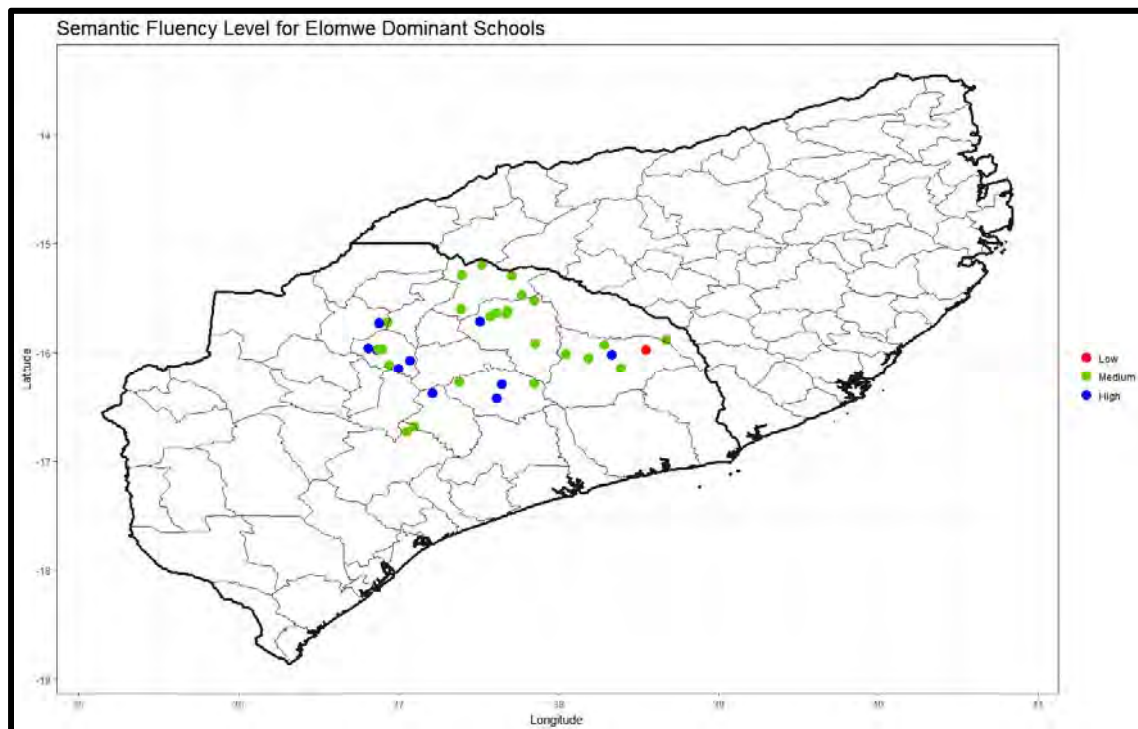
“Sampled” refers to statistics based on raw sample data. “Population” refers to statistics that account for the sampling weights and are representative of the overall population of the districts.

In order to further inform decision making around which LOI is likely to be the most effective as the L1/medium of instruction for initial literacy instruction in each geographic region, we mapped the locations of the schools based on their levels of proficiency. This mapping exercise indicated where the high-scoring students for each language were located. It is worthwhile reiterating here that this does not determine when or how children can transition into a new language (most likely Portuguese). Exhibits 3–6 show in which schools children scored high, medium, or low proficiency for each language. Note, by focusing the maps at the level of the school, Exhibits 3-6 map the raw sample data.

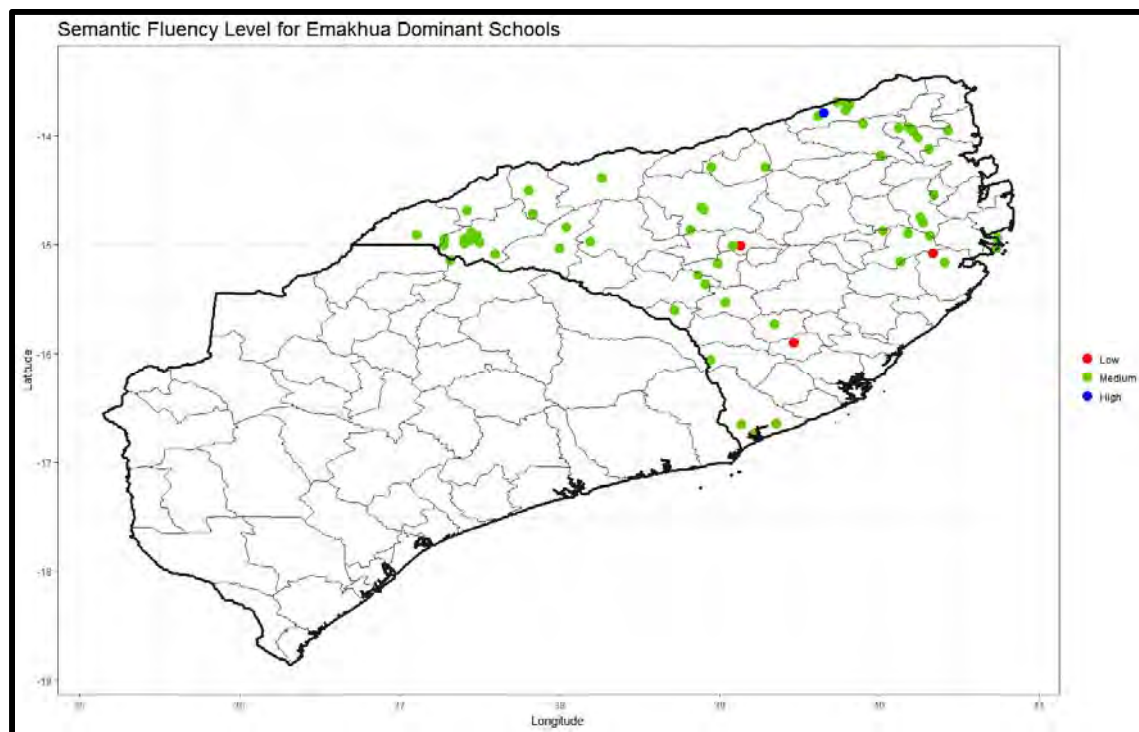
**EXHIBIT 3. LANGUAGE PROFICIENCY MAP FOR LI PORTUGUESE
(BASED ON UNWEIGHTED SAMPLED DATA AT THE SCHOOL LEVEL)**



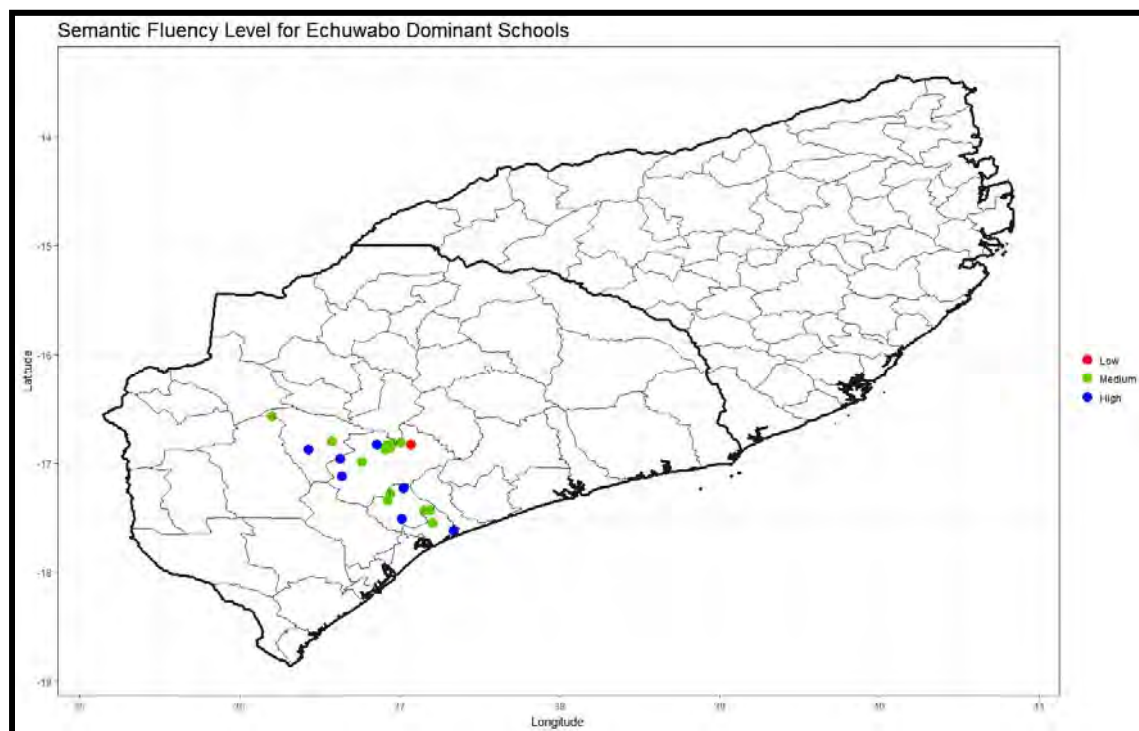
**EXHIBIT 4. LANGUAGE PROFICIENCY MAP FOR LI ELOMWE
(BASED ON UNWEIGHTED SAMPLED DATA AT THE SCHOOL LEVEL)**



**EXHIBIT 5. LANGUAGE PROFICIENCY MAP FOR LI EMAKHUWA
(BASED ON UNWEIGHTED SAMPLED DATA AT THE SCHOOL LEVEL)**

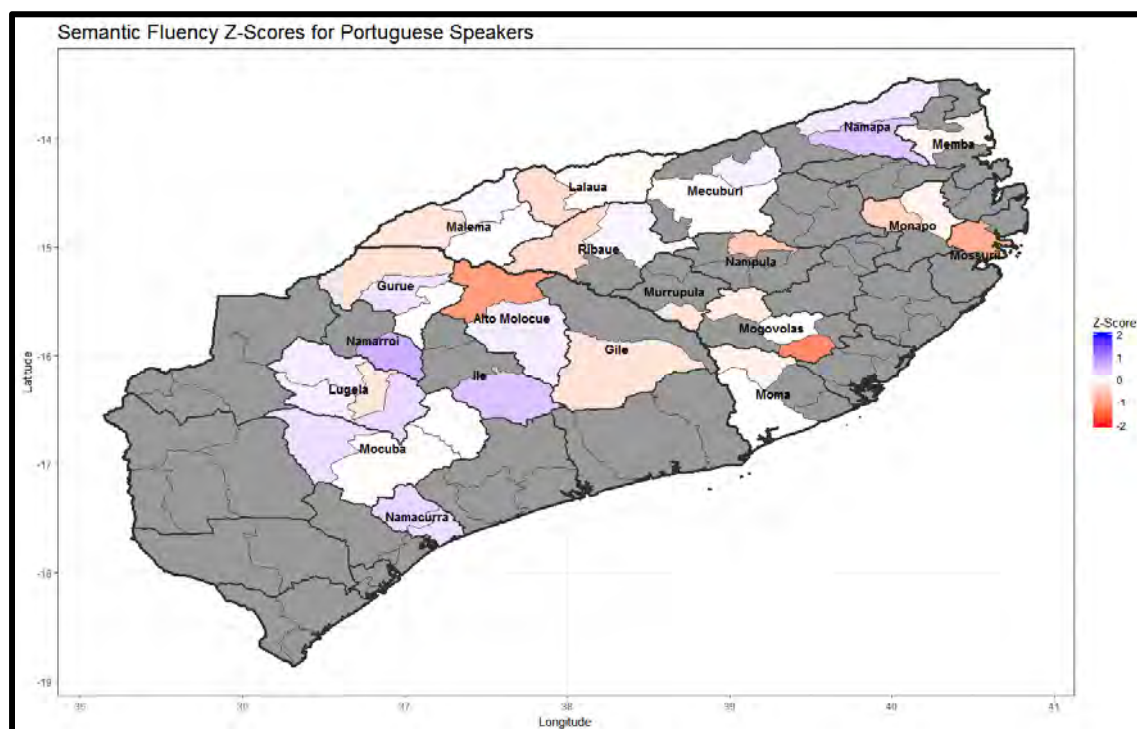


**EXHIBIT 6. LANGUAGE PROFICIENCY MAP FOR LI ECHUWABO
(BASED ON UNWEIGHTED SAMPLED DATA AT THE SCHOOL LEVEL)**

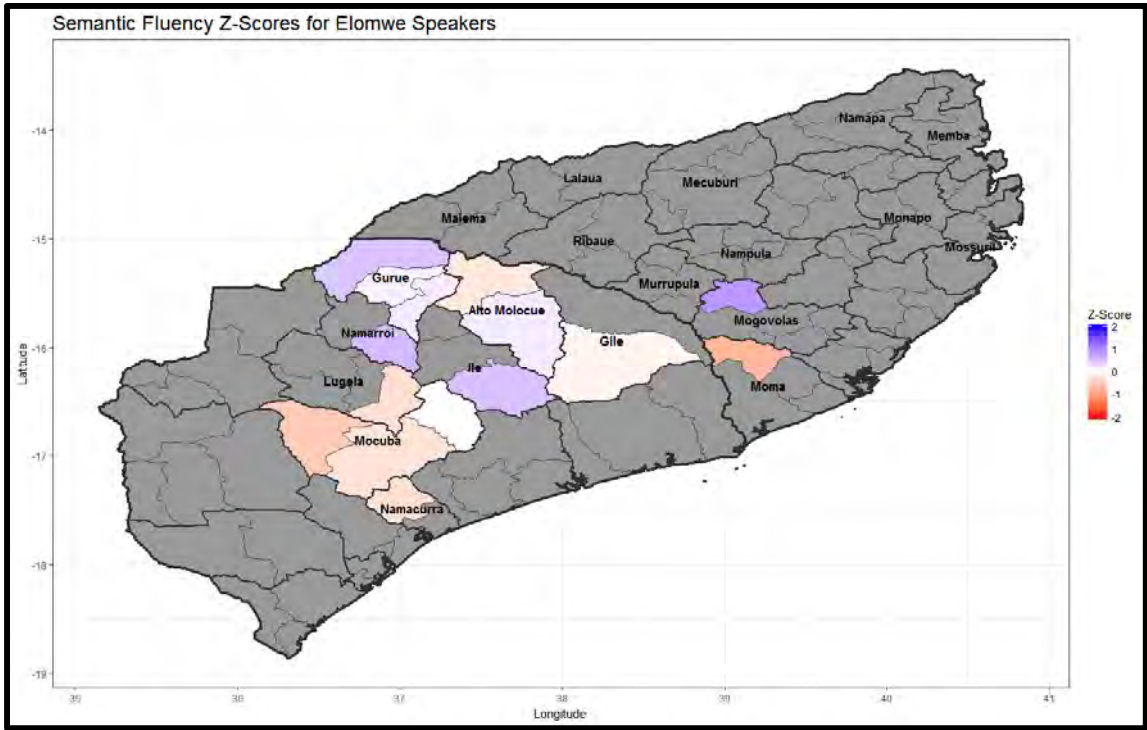


In Exhibits 7–10, we present this data aggregated to the post administrative level based on the sampling weights. We calculated standardized scores, or z-scores, of the semantic fluency data. Specifically, we calculated the z-score as $(\text{Semantic Fluency Score} - \text{Population Mean Score}) / (\text{Population Standard Deviation})$. Across all Semantic Fluency Scores, the z-scores have a mean of zero and a standard deviation of one. Because the maps are at the post administrative level, the colored shading represents the weighted average of the z-score for each post administration. Areas shaded in gradients of blue represent semantic fluency scores that are higher relative to the overall mean, with the darker blue shading representing post administrations where the semantic fluency scores are the highest compared to the overall mean. Areas shaded in the gradients of red represent semantic fluency scores that are lower relative to the overall mean, with the darker red shading representing post administrations where the semantic fluency scores are the lowest compared to the overall mean. In each map, 0 (white) corresponds to the overall mean score for all languages.

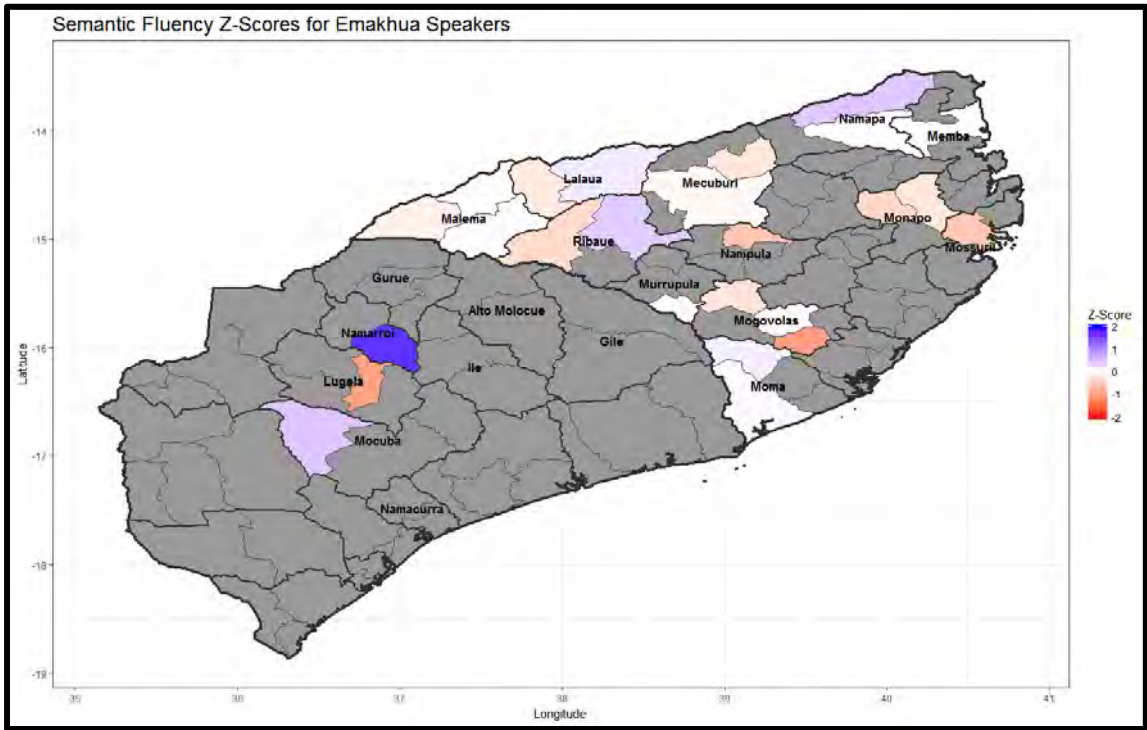
**EXHIBIT 7. LANGUAGE PROFICIENCY MAP FOR LI PORTUGUESE
(AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)**



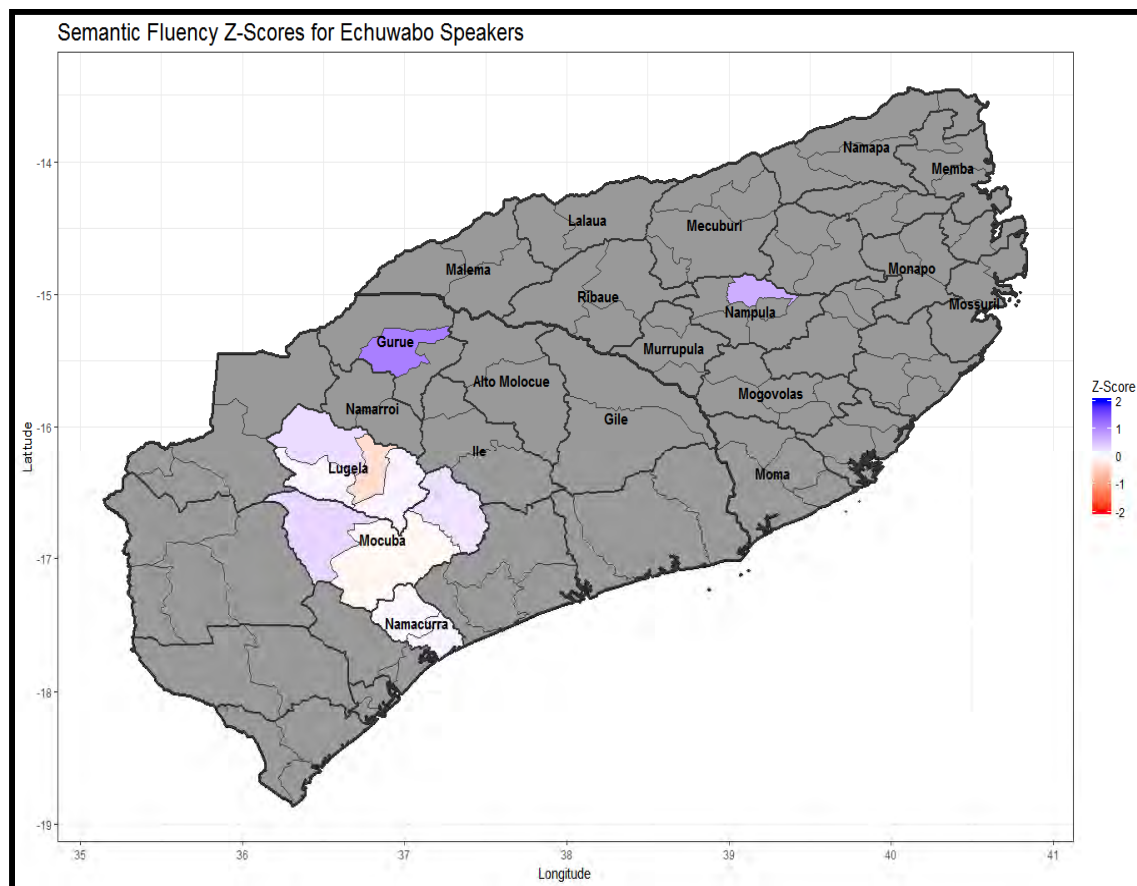
**EXHIBIT 8. LANGUAGE PROFICIENCY MAP FOR LI ELOMWE
(AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)**



**EXHIBIT 9. LANGUAGE PROFICIENCY MAP FOR LI EMAKHUWA
(AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)**

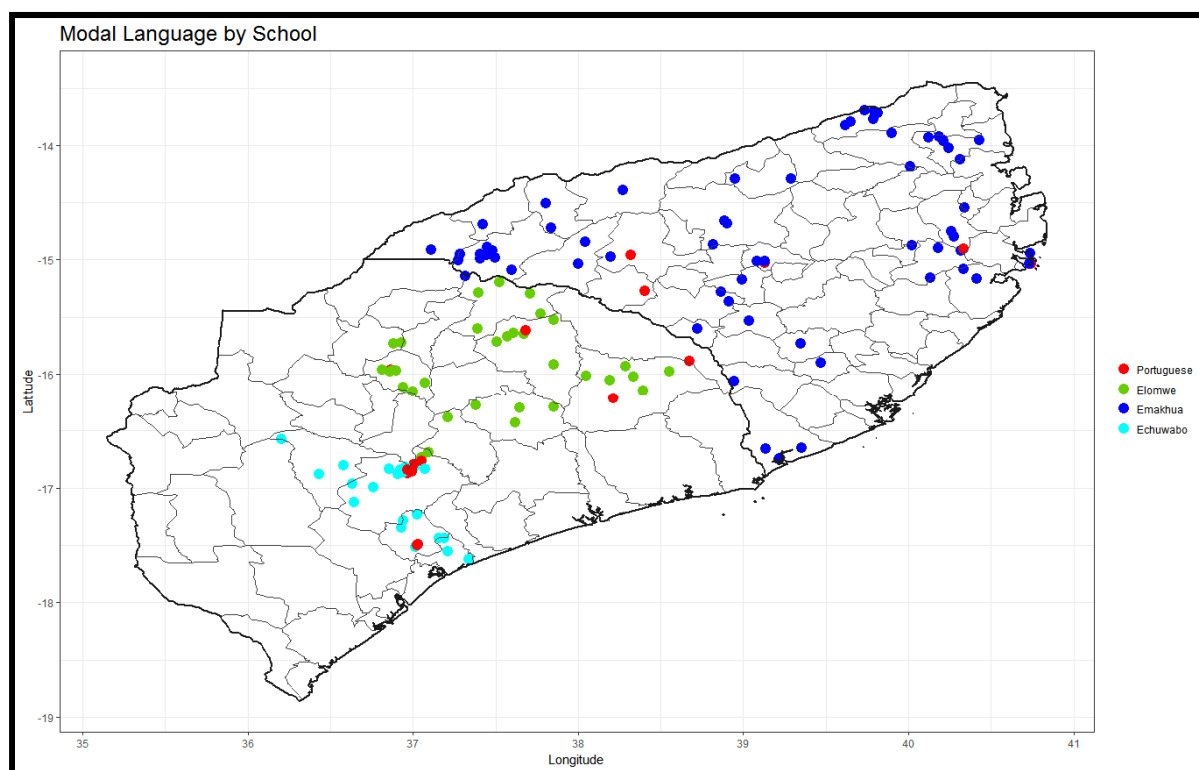


**EXHIBIT 10. LANGUAGE PROFICIENCY MAP FOR LI ECHUWABO
(AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)**



In the map shown in Exhibit 11, we present the modal LI language by school in Zambézia and Nampula. The modal language is the language for which most children in a school had high semantic fluency scores. Interestingly, language choice was fairly clearly demarcated by geographic region: Emakhuwa was the most commonly used LI in the north, Elomwe was the most commonly used LI in the central regions, and Echuwabo was the most commonly used LI in the south. Relatively few schools had mostly Portuguese speakers, and these were scattered throughout the region.

EXHIBIT 11. MODAL LANGUAGE (LI) BY SCHOOL (BASED ON SCHOOL LEVEL SAMPLE)



RQ 1 b: To what extent are there mixed-language groups in each school?

We now turn to the question of how many LIs were represented in each school. This information was used to investigate the degree of linguistic homogeneity at the school level. The findings for this question are presented in Tables 11–15, which report the sampled results across the various groupings of schools. About 60% of the schools in our sample were linguistically heterogeneous, with students speaking two or three LIs within each school. Whether these LIs were low, medium, or high, they were the strongest language(s) for that child. In these cases of linguistic heterogeneity, Portuguese was often the least common LI. There were 11 cases across grades 1 and 3, wherein there were 3 languages used. These were EPI de Thole, EPC 25 de Setembro-Cizam, EPC dos Caminhos de Ferro(CFM), EPC 12 De Fevereiro, Epc De Mucapata, EPC de Marques, EPC 25/ Setembro-Muandua, EPC do Posto Agrícola 2, EPC de Erua in Mocuba district; EP I Mugale in Lugela district; EPC de Namacurra Sede in Namacurra district.

Within linguistically homogenous schools where only one LI was present, Elomwe was the most common LI (in terms of number of schools), followed by Echuwabo, then Emakhuwa. There were only a handful of schools with Portuguese-only speakers. Specifically, there were Portuguese-only speakers in five schools in total, all of which were in urban settings in Zambézia province. Three of the schools were in Mocuba district: EPC Josina Machel, EPC Eduardo Mondlane, and EPC dos Antigos Combatentes. One school, EPC de Projecto, was in Gurue District, and one school, EPC de Altomolouque – Vila Sede, was in Alto Molocue District.

TABLE 11. NUMBER OF LANGUAGES WITHIN EACH SCHOOL—OVERALL

	N SCHOOLS	% OF SAMPLED STUDENTS				
		PORTUGUESE	ELOMWE	EMAKHUWA	ECHUWABO	BILINGUAL
Echuwabo only	21				100.0%	
Emakhuwa only	13			100.0%		
Elomwe only	41		100.0%			
Elomwe and Echuwabo	1		10.0%		90.0%	0.0%
Portuguese only	5	100.0%				
Portuguese and Echuwabo	29	37.6%			57.0%	5.3%
Portuguese and Emakhuwa	58	5.2%		71.6%		23.2%
Portuguese and Elomwe	33	28.7%	65.9%			5.4%
Portuguese, Elomwe, and Echuwabo	11	57.2%	8.8%		28.6%	5.5%
Total	212					

Tables 12 and 13 show the linguistic homogeneity data broken down by grade. These tables show a slightly higher number of bilingual speakers in Grade 3. This suggests that exposure to Portuguese in school is the reason for the increased Portuguese proficiency levels in Grade 3, since students in this grade have been exposed to Portuguese for a longer period of time. However, there were still substantial numbers of MT-only LI speakers, even at Grade 3, for all three MTs.

TABLE 12. NUMBER OF LANGUAGES WITHIN EACH SCHOOL—ALL GRADE 1

	N SCHOOLS	% OF SAMPLED STUDENTS				
		PORTUGUESE	ELOMWE	EMAKHUWA	ECHUWABO	BILINGUAL
Echuwabo only	29				100.0%	
Emakhuwa only	41			100.0%		
Elomwe only	44		100.0%			
Portuguese only	11	100.0%				
Elomwe and Echuwabo	1		30.0%		70.0%	0.0%
Portuguese and Echuwabo	21	43.0%			53.3%	3.7%
Portuguese and Emakhuwa	30	7.3%		71.5%		21.1%
Portuguese and Elomwe	28	35.0%	59.6%			5.4%
Portuguese, Elomwe, and Echuwabo	5	57.1%	12.2%		24.7%	6.0%
Total	210					

TABLE 13. NUMBER OF LANGUAGES WITHIN EACH SCHOOL—ALL GRADE 3

	N SCHOOLS	% OF SAMPLED STUDENTS				
		PORTUGUESE	ELOMWE	EMAKHUWA	ECHUWABO	BILINGUAL
Echuwabo only	22				100.0%	
Emakhuwa only	17			100.0%		
Elomwe only	48		100.0%			
Portuguese only	6	100.0%				
Elomwe and Echuwabo	1		20.0%		80.0%	0.0%
Portuguese and Echuwabo	32	39.1%			52.4%	8.5%
Portuguese and Emakhuwa	54	7.1%		54.6%		38.3%
Portuguese and Elomwe	26	34.6%	57.7%			7.7%
Portuguese, Elomwe, and Echuwabo	6	51.7%	15.0%		25.0%	8.3%
Total	212					

Tables 14 and 15 show the linguistic homogeneity data broken down by location (rural or urban). These data clearly indicate that there was greater linguistic homogeneity of MT in rural areas and greater linguistic heterogeneity in urban areas. All Portuguese-only schools were in urban areas.

TABLE 14. NUMBER OF LANGUAGES WITHIN EACH SCHOOL—RURAL

	N SCHOOLS	% OF SAMPLED STUDENTS				
		PORTUGUESE	ELOMWE	EMAKHUWA	ECHUWABO	BILINGUAL
Echuwabo only	17				100.0%	
Emakhuwa only	10			100.0%		
Elomwe only	27		100.0%			
Portuguese and Echuwabo	12	9.3%			83.7%	7.0%
Portuguese and Emakhuwa	27	1.9%		79.7%		18.4%
Portuguese and Elomwe	12	17.0%	74.2%			8.8%
Portuguese, Elomwe, and Echuwabo	3	31.7%	15.0%		50.0%	3.3%
Total	108					

TABLE 15. NUMBER OF LANGUAGES WITHIN EACH SCHOOL—URBAN

	N SCHOOLS	% OF SAMPLED STUDENTS				
		PORTUGUESE	ELOMWE	EMAKHUWA	ECHUWABO	BILINGUAL
Echuwabo only	4				100.0%	
Emakhuwa only	3			100.0%		
Elomwe only	14		100.0%			
Portuguese only	5	100.0%				
Elomwe and Echuwabo	1		10.0%		90.0%	0.0%
Portuguese and Echuwabo	17	57.6%			38.2%	4.1%
Portuguese and Emakhuwa	31	8.1%		64.4%		27.5%
Portuguese and Elomwe	21	35.4%	61.1%			3.4%
Portuguese, Elomwe, and Echuwabo	8	66.8%	6.4%		20.5%	6.3%
Total	104					

RQ2: ORAL LANGUAGE PROFICIENCY MATCHED TO AND LOI POLICY AND CENSUS DATA

2. To what extent do the student OLP data (language mapping data) correspond to:

- a. The current LOI policy?
- b. The latest census data (from 2007)?

In this section, we examine the degree to which there was a match between children's oral language proficiency, the official LOI policy, and the LOI used in the classroom. Additionally, we discuss the degree to which census data corresponds to children's oral language proficiency, in order to determine what – if any – additional program and policy information can be obtained by measuring OLP data, rather than relying only on self-reported language data.

RQ 2 a: To what extent do the student OLP data (language mapping data) correspond to the current LOI policy?

In this section, we discuss the degree to which there was a match between children's oral language proficiency, as measured by the semantic fluency test data; the official LOI policy, which is primarily monolingual with Portuguese only instruction, although some schools were officially implementing a MT-based bilingual program; and the LOI used in the classroom. In order to understand the degree to which children's OLP matched the official LOI, we compared OLP data from students in Grade 1 and Grade 3 to the official ministry policy. Of the 212 schools in our sample, only seven schools were officially classified as bilingual. The remaining 205 schools were classified as monolingual and used Portuguese as the official language of instruction. We provide both quantitative and qualitative evidence on how this policy matched (or mismatched) with children's language abilities, and we explain which language(s) teachers reported using as an LOI in the classroom.

Both qualitative and quantitative analyses found a high degree of mismatch between the official LOI and the OLP of students. For 73% of the quantitative sample and the population, the students' LI OLP scores did not match the official LOI. Table 16 presents the breakdown of the percentage of children whose OLP scores matched the official LOI. For each student, we defined a variable that equals 1 if the student's OLP scores matched the official LOI, and equals zero if not. Table 17 shows the results of tests for statistically significant differences in the match percentages in terms of male versus female, urban versus rural, and Grade 3 versus Grade 1. The differences reported in Table 17 are percentage point differences. Statistically significant positive percentage point differences in the male versus female comparison imply higher male match rates as compared to female. Statistically significant positive percentage point differences in the urban versus rural comparison imply higher urban match rates as compared to rural. Statistically significant positive percentage point differences in the Grade 3 versus Grade 1 comparison imply higher Grade 3 match rates as compared to Grade 1. Table 17 shows that the match rate was statistically significantly higher in urban areas and in Grade 3, and that there appeared to be no gender differences in the matching rate. Portuguese-only monolingual schools appeared to have a lower match rate, although the sample size was not sufficient to test for statistically significant differences.

TABLE 16. PERCENTAGE OF CHILDREN WITH ANY LI THAT MATCHES THE LANGUAGE OF INSTRUCTION

	ANY LI MATCHES LANGUAGE OF INSTRUCTION						TOTAL
	NO			YES			
	SAMP. N	SAMP. %	POP. %	SAMP. N	SAMP. %	POP. %	
Location							
Rural	2,402	83.03%	76.01%	491	16.97%	23.99%	2,893
Urban	622	49.60%	42.60%	632	50.40%	57.40%	1,254
Sex							
Female	1,472	72.80%	72.09%	550	27.20%	27.91%	2,022
Male	1,546	73.00%	74.00%	571	27.00%	26.00%	2,117
Grade Level							
Grade 1	1,589	77.00%	75.97%	474	23.00%	24.03%	2,063
Grade 3	1,435	68.90%	67.99%	649	31.10%	32.01%	2,084
Bilingual School							
No	3,010	75.10%	77.99%	997	24.90%	22.01%	4,007
Yes	14	10.00%	2.95%	126	90.00%	97.05%	140
Total	3,024	72.90%	73.02%	1,123	27.10%	26.98%	4,147

Abbreviation: LI = first language. Statistics in bold font tested statistically significantly higher than the comparison group at a 5% or 1% significance level. Significance testing was completed for sex, location, and grade level only, as determined by the sampling strategy.

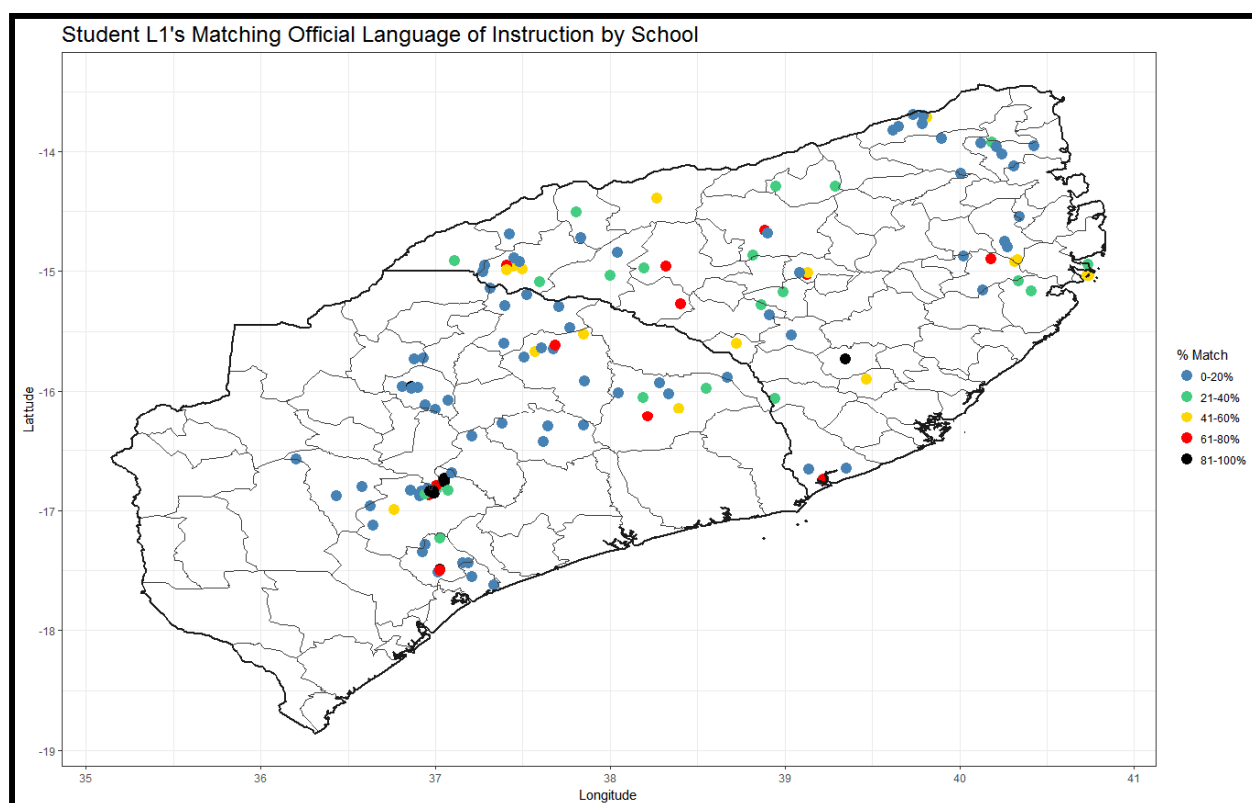
TABLE 17. RESULTS OF STATISTICAL TESTS OF DIFFERENCES FOR PERCENTAGE OF CHILDREN WITH ANY LI THAT MATCHES THE LANGUAGE OF INSTRUCTION

DIFFERENCE BETWEEN	ANY LI MATCHES LANGUAGE OF INSTRUCTION	
	DIFF	T-STAT
Male – Female	-0.02	-1.08
Urban – Rural	0.33***	5.15
Grade 3 – Grade 1	0.08***	2.66

Results are reported at three levels: significance at the 10% level has one asterisk (*); significance at the 5% level has two asterisks; and significance at the 1% level has three asterisks (***). Results significant at the 1% or 5% level are bolded because significance levels of 5% or less are generally accepted as statistically significant. Difference is calculated as male minus female, urban minus rural, and Grade 3 minus Grade 1.

In Exhibit 12, we present a map of the percentage of students in each school whose OLP matched the official LOI in that school. It is clear that in the vast majority of schools, fewer than 20% of the students had OLP in the school's official LOI. Only a handful of schools had matches in the 61–80% or 81–100% ranges for students' OLP and the official LOI.

EXHIBIT 12. PERCENTAGE OF STUDENTS IN EACH SCHOOL WITH LI MATCHING LANGUAGE OF INSTRUCTION



LOI IMPLEMENTATION

Qualitative research revealed that due to students' lack of OLP in Portuguese, the vast majority of teachers taught in a mixture of MTs and Portuguese, despite the official LOI policy, in order to facilitate students' understanding. Specifically, the vast majority of teachers used the dominant MT as a supplementary LOI. The dominant MT was often a language that was the majority of students' MT or a language the majority of students spoke and understood. The majority of teachers interviewed (29 references in interviews and reported in 50% of classroom observations) used MT instruction when children had difficulty understanding a topic or word. Teachers from both rural and urban areas stated that they had children, often from rural areas, who came into the classroom without any oral Portuguese skill. A teacher from Pavala School explained, "It is not easy for a child aged 5 or 6 years, coming from their mother's house, with local habits on the way of expressing themselves, I mean habits from almost their entire life, since they were born." Teachers noted that trying to teach children who did not speak Portuguese in that language required "a lot of intense work." When teachers saw students having difficulty understanding words or concepts, they employed MT instruction to help bridge this gap. A teacher from Marrocanne stated, "It can be used at any part of the class, as soon as a difficulty appears the LI goes into action." Teachers did note that they used less MT instruction in higher grades, or when the teacher did not speak the dominant MT.

Across schools, the amount of Portuguese versus MTs that teachers used in the classroom varied. Certain teachers maintained that they only used MTs to translate problematic words or to help engage students. In contrast to this, however, one teacher from Txola stated that in Grade 1, they typically used 80% MT and 20% Portuguese. Despite this variance, nearly all teachers described using a combination of both Portuguese and MTs. The only exception to this was EPC Josina Machel, where observations and self-reports show teachers and students typically only used Portuguese in the classroom. The reported LOI for selected schools and summary quotes can be found in Appendix C (Columns 4 and 5). A smaller subset of teachers (six) used both MT and Portuguese instruction throughout the lesson. These teachers explained that due to students' lack of Portuguese, they had to rely on a higher percentage of teaching time in MTs. A Txolo teacher described the moments when they used MTs in a normal school day:

"Looking at moments in class, we have the introduction, mediation and assimilation, monitoring and evaluation and domain and consolidation, so, we mostly use the mother tongue in mediation and assimilation, which is the moment where the teacher is providing content, it is at this stage where the teacher explains a part in Portuguese and the other part in Elomwe. So this is the stage where the teacher joins Portuguese and the local language to help the students [to] understand."

Despite these differences in implementation, 12 of the 13 selected schools used a combination of both MTs and Portuguese as the LOI.

The exact amount of MT instruction used in the classroom was also difficult to fully ascertain due to reporting bias. When qualitative researchers asked teachers about the amount of MT they used in the classroom, teachers often stated that they could face negative repercussions if they were found to be using MTs. Many teachers stated that the official language was Portuguese, and they framed their use of MTs as a medium of instruction in the classroom as an illegal act, because MTs

are only permitted as a “resource” to facilitate understanding. One teacher in Marrocanne explained this in the following way:

“First, if we use the Emakhuwa language that would be stealing because we haven’t yet been authorized 100% to use the Emakhuwa language in the teaching and learning process so we do not use it constantly. We use it only to pull the student from where he is and understand the subject.”

Teachers also reported fearing surprise visits from education inspection teams that would put them “in a bad situation” if they were discovered using both MTs and Portuguese. Taking this into consideration, reports on the level of MTs used in the classroom should be read with a critical eye.

RQ 2 b: To what extent do the student OLP data (language mapping data) correspond to the latest census data (from 2007)?

In this section, we discuss the degree to which the census data corresponds to children’s oral language proficiency. We examined aggregated census data that project staff provided as well as sampled Mozambique 2007 census data compiled through Minnesota Population Center’s Integrated Public Use Microdata Series (IPUMS). To ensure that the IPUMS data corresponded to the OLP data we collected from students in Grades 1 and 3, we restricted the IPUMS data to children between the ages of 5 and 11, inclusive.

For each language and each post administration, we calculated the proportion of children who speak that language in the IPUMS 2007 census and the proportion of children who speak that language according to our OLP data. For the OLP proportion we included all speakers, those with high, medium, or low scores. In order to understand the degree to which the IPUMS 2007 census data corresponds to children’s OLP scores, we compared these proportions. Specifically, we subtracted the OLP proportion from the IPUMS 2007 census data proportion. The resulting statistic represents the percentage point difference between the IPUMS 2007 census data proportion and the OLP data proportion.

For example, according to the IPUMS 2007 census data, 49% of children spoke Portuguese in post administration Gurue-Sede in 2007⁷. According to the OLP data 47% of children spoke Portuguese in the same post administration⁸. The difference in proportions between the IPUMS 2007 census data and the OLP data is +2 percentage points, which is the value that the maps contained in Exhibits 12 – 15 display. Areas shaded in gradients of blue represent IPUMS 2007 census proportions of language speakers that are higher than the OLP proportions, with the darker blue shading representing post administrations with the greatest percentage point difference in proportions. Areas shaded in gradients of red represent IPUMS 2007 census proportions of

⁷ We coded a speaker from the IPUMS data as anyone who said a language was the “First Language Learned.” We cross-checked whether the data from this question overlapped with the second question – “What is the language spoken most frequently” – and it did not only 9% of the time, making these questions redundant. We also cross-checked whether there were any other languages that may have been captured with the question “Do you speak any other language?” and only 3% of the respondents had a different language listed here. For Portuguese, we coded a speaker as anyone who said “Yes” for the question “Do you speak Portuguese?”

⁸ We coded a speaker in the OLP data as anyone who tested in a language, whether they got a high, medium, or low score.

language speakers that are lower than the OLP proportions, with the darker red shading representing post administrations with the smallest (most negative) percentage point difference in proportions. In other words, the deeper red gradients suggest that there are more children who were considered a speaker in the language mapping OLP data (high, medium or low scoring) than those who were considered a speaker in the IPUMS 2007 census data. In each map, 0 (white) corresponds to areas where the proportions are the same.

We interpret the results for each language separately in Exhibits 13 - 16. As can be seen in Exhibit 13, which is the map of the percentage point difference in proportions of children speaking Portuguese, there is more prevalence of pink or red on the maps, although blue is also represented. One possible explanation for this result is students were unlikely to report being able to speak Portuguese with any level confidence when the answer choices are binary (only yes or no) as is the case with the data collected in the Census, but when tested in that language as they were with the OLP data, they are in fact able to produce words (within a normal distribution as can be seen in Exhibit 1) in Portuguese. In terms of Elomwe and Emakhuwa, which correspond to Exhibits 14 and 15, respectively, most regions are light pink or light blue or white, suggesting that with these two mother tongues there was a relatively good match between self-reports in the IPUMS 2007 census data and the OLP data. With Echuwabo, the results are somewhat surprising as there is a larger proportion of speakers in the OLP data than the IPUMS 2007 census data, suggesting that speakers did not report Echuwabo as their MT in the census, but were in fact able to speak it (with normal variation). This is indicated by the red gradients in the Echuwabo map.

Exhibit 17 contains a similar analysis, mapping the percentage point difference in proportion of bi/multi-lingual speakers in the IPUMS 2007 census data⁹ compared to the OLP data. That is areas shaded in gradients of blue represent IPUMS 2007 census proportions of bi/multi-lingual speakers that are higher than the OLP proportions, with the darker blue shading representing post administrations with the greatest percentage point difference in proportions. Areas shaded in gradients of red represent IPUMS 2007 census proportions of bi/multi-lingual speakers that are lower than the OLP proportions, with the darker red shading representing post administrations with the smallest (most negative) percentage point difference in proportions. In Zambézia province, there are more blue gradients; whereas in Nampula there are more pink gradients. The areas where there are blue gradients imply that there are more speakers who reported being able to speak two or more language in the IPUMS 2007 census data questions compared to our language mapping OLP data, which is a finding that could relate to our definition of bilingualism. Because we consider students to be bilingual if they have scores for two languages that are close (± 5 points from one another) to one another, it could be that students in Zambézia who self-report (according to IPUMS 2007 census data) as being bilingual have scores that are not close enough to each other to be considered “bilingual” in the OLP data. In the areas where there are red or pink gradients, we can assume that there are more children who can in fact speak two or more languages (in any

⁹ We coded bi/multi-lingualism in the IPUMS 2007 census data based on responses to the IPUMS 2007 census questions of “Speaks Portuguese” (Yes/No), “First language learned”, “Language spoken most frequently”, and “Any other language spoken”. Bi/multi-lingualism is classified in any of three ways:

1. “Any other language spoken” is not missing and not equal to “First language learned”
2. “Language spoken most frequently” is different from “First language learned” (assumes no one forgets their mother tongue)
3. “Speaks Portuguese” is yes and none of the other variables are equal to Portuguese.

combination) than they reported in the IPUMS 2007 census data since the higher proportion of speakers came from the OLP data that reflects the actual language testing as opposed to the self-reports. There could be many explanations for this, including cultural or regional differences in reporting, the 10 year gap in data between the IPUMS data (collected in 2007) and the OLP data (collected in 2017), and definitions of languages versus dialects in the various areas.

EXHIBIT 13. PERCENTAGE POINT DIFFERENCE IN PROPORTIONS OF CHILDREN SPEAKING PORTUGUESE (AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)

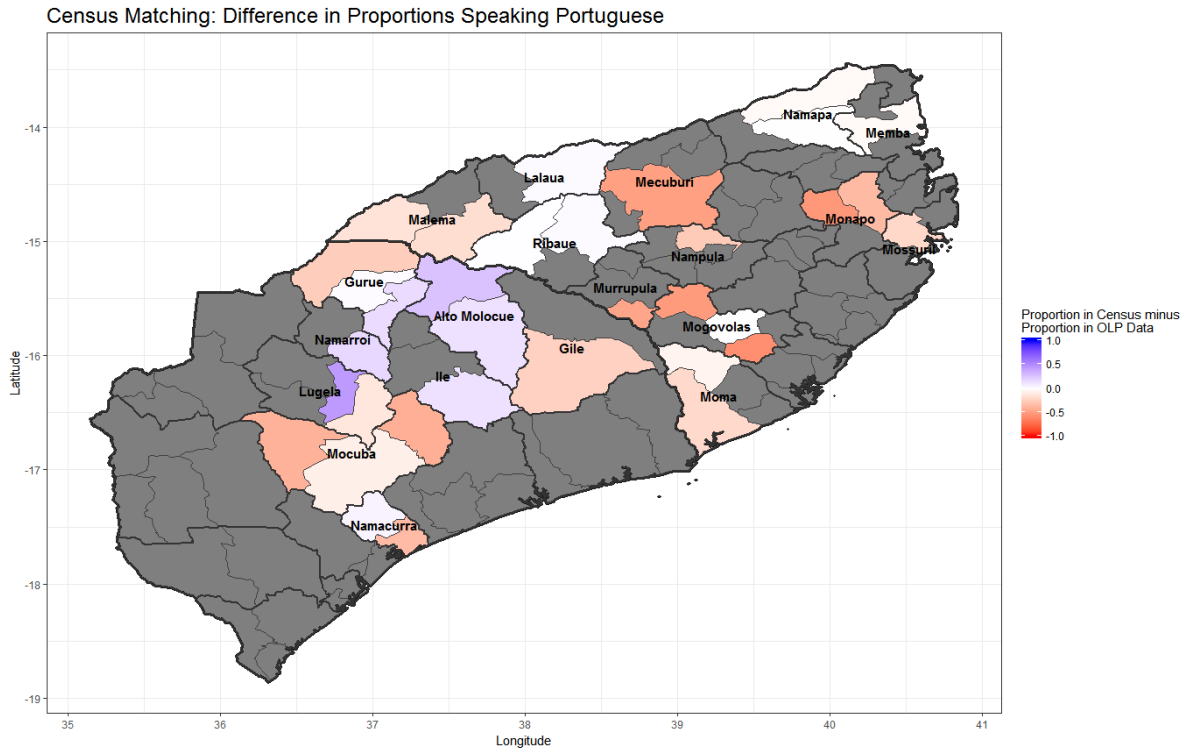


EXHIBIT 14. PERCENTAGE POINT DIFFERENCE IN PROPORTIONS OF CHILDREN SPEAKING ELOMWE (AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)

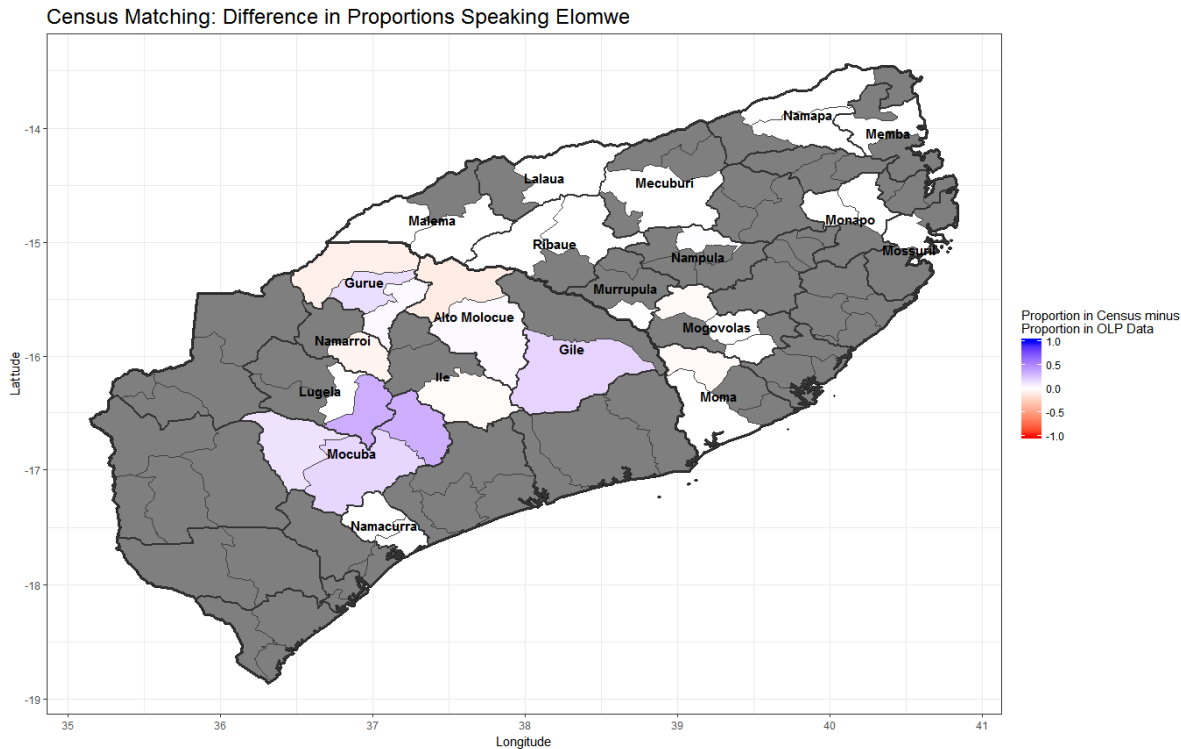


EXHIBIT 15. PERCENTAGE POINT DIFFERENCE IN PROPORTIONS OF CHILDREN SPEAKING EMAKHUWA (AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)

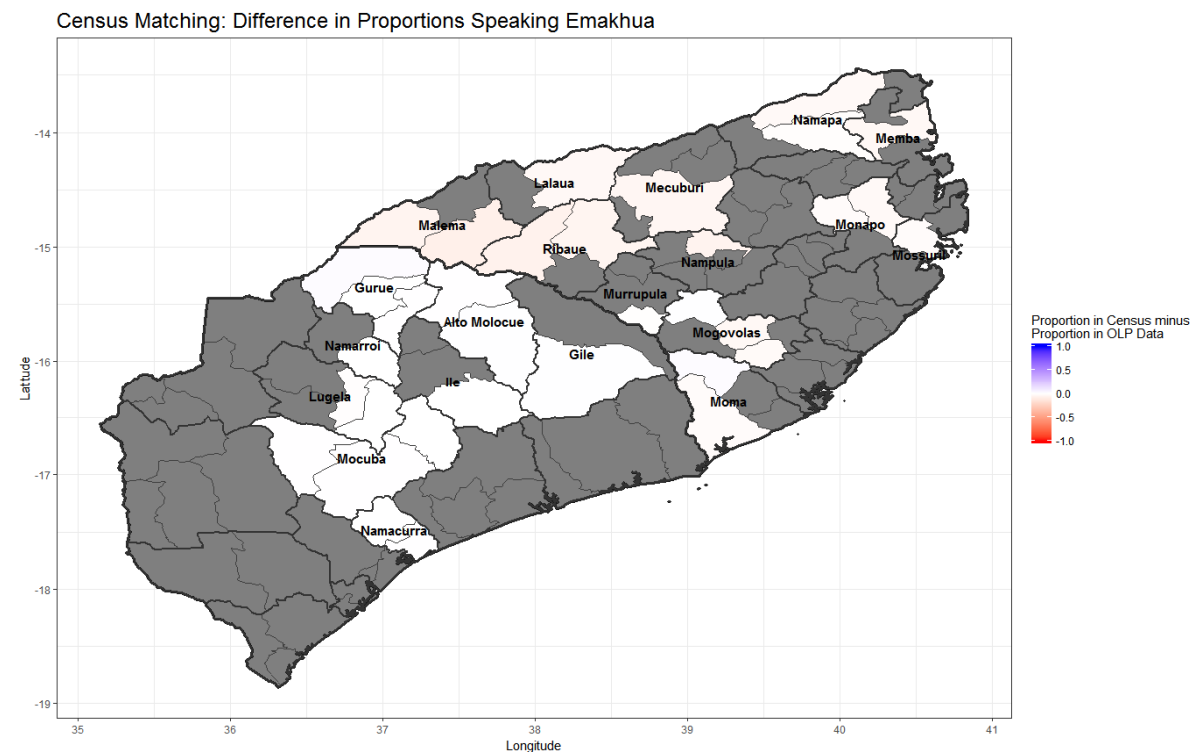


EXHIBIT 16. PERCENTAGE POINT DIFFERENCE IN PROPORTIONS OF CHILDREN SPEAKING ECHUWABO (AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)

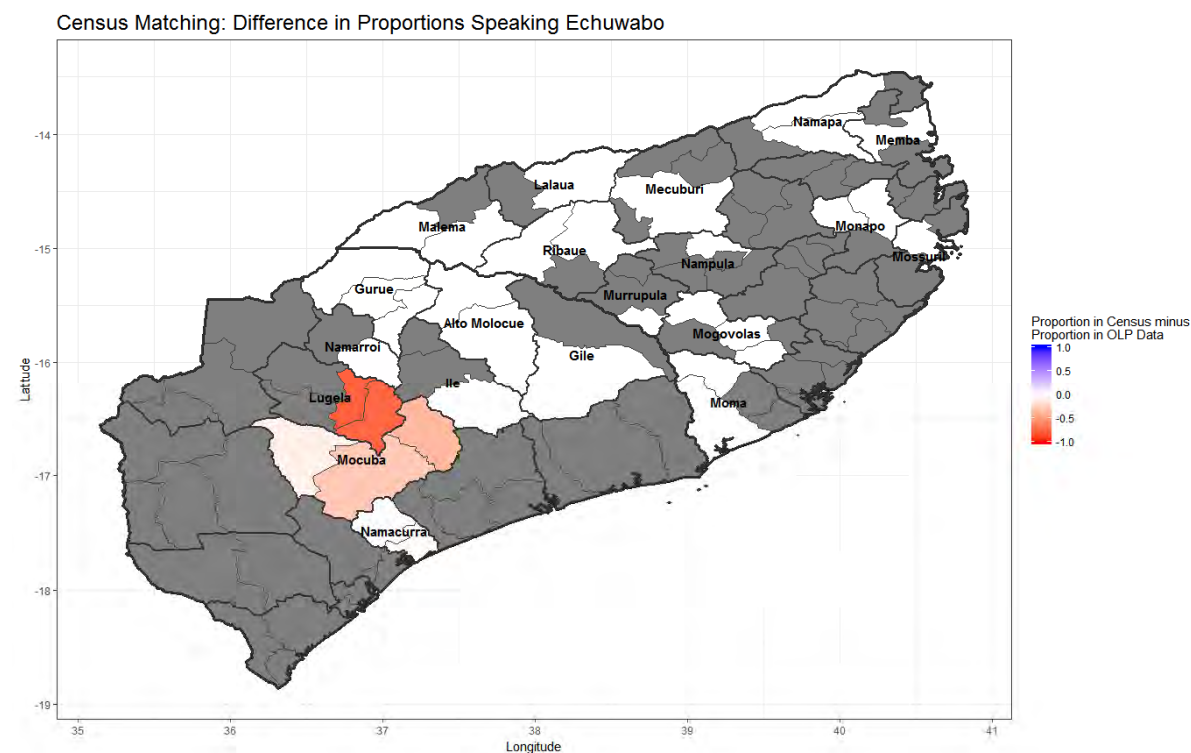
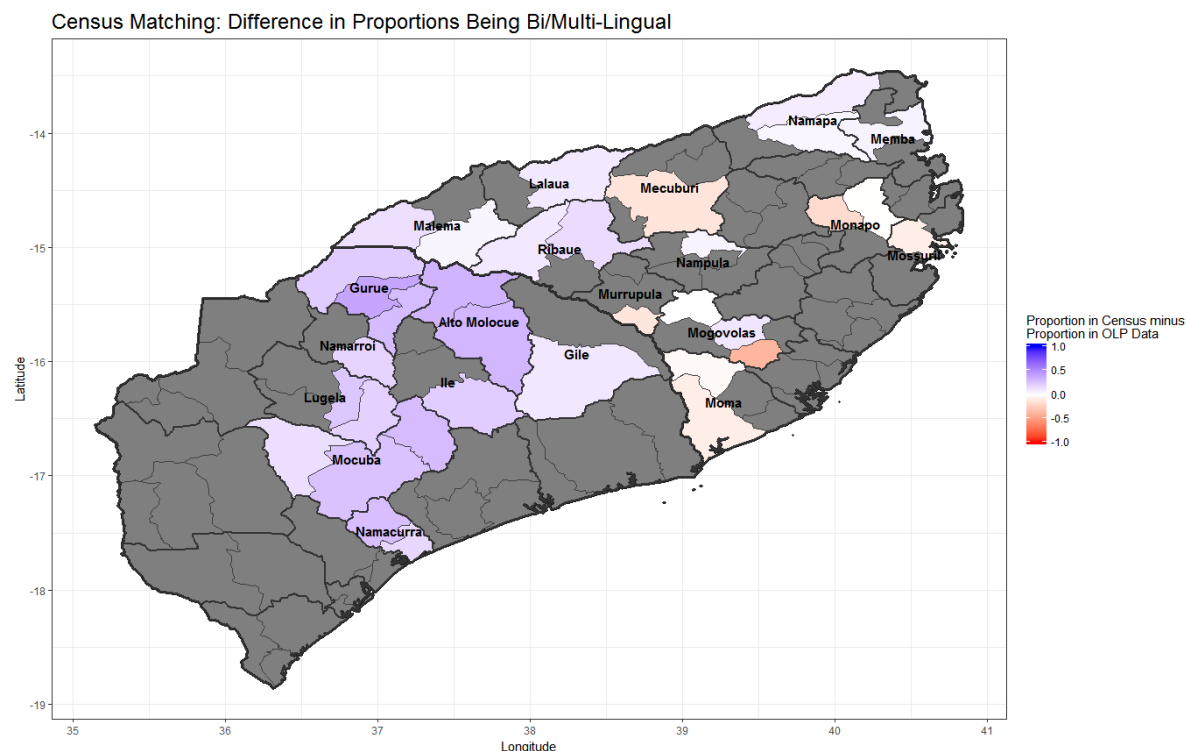


EXHIBIT 17. PERCENTAGE POINT DIFFERENCE IN PROPORTIONS OF BI/MULTI-LINGUAL CHILDREN (AGGREGATED TO POST ADMINISTRATIVE LEVEL WITH SAMPLING WEIGHTS)



RQ3: LANGUAGE OF INSTRUCTION POLICY AND SCHOOL PERFORMANCE

3. What are stakeholder perceptions of the relationship between language matching and school performance on literacy outcomes?

In this section, we discuss the perceived link between LOI policy and school performance through a qualitative-only lens. First, we discuss the perceived challenges associated with implementing LOIs in the classroom. Then we discuss the perceived links between the LOI and school performance, and finally how teachers provide support to children struggling with the official LOI.

LANGUAGE OF INSTRUCTION CHALLENGES

Teachers and directors stated that the most prevalent concerns regarding the LOI were mismatches between the languages students or teachers spoke and the dominant MT. Given that the majority of teachers used a combination of MTs and Portuguese as languages of instruction to facilitate understanding (despite the official LOI policy), it is critical that teachers and students share a common MT. In rural areas, 11 teachers and directors stated that they faced difficulty teaching because they did not speak the same MT as students. Challenges teachers and directors associated with not being able to speak the primary MT of the class included the inability to clarify concepts to students and not being able to foster relationships with the community. Teachers described a variety of methods for coping with this language barrier, ranging from having students who spoke the teacher's MT translate for them, asking fellow teachers to translate, or learning some of the

dominant MT. One teacher from Cabaia who chose to learn the dominant MT described the challenges and successes of this process:

"I can say in the first year it was difficult communicating with children and I did not know how to speak well Echuwabo. I spoke Emakhuwa it's my language and Portuguese. It was very difficult for the children to learn. To assimilate was also difficult. I sang, well ... I used every method, but this year we are with Machuabos, we are with Mapebanes and I am now speaking Echuwabo and I'm also speaking Epebane. So, I am very happy, especially this year, I am very happy when I teach, the children collaborate very well. They get to know what I'm saying. I can speak a bit of Echuwabo with them and they learn very well. I'm glad for it."

Similarly, students who do not speak the dominant MT struggled to learn in the classroom. In urban areas, teachers noted that this was typically the case with students who had moved to the urban area from rural areas. Teachers and directors noted that these students typically had lower levels of Portuguese proficiency than students from the surrounding urban area. In addition, teachers explained that having multiple language speakers in the classroom who do not share a common language makes it harder for the teacher to teach. Teachers' strategies for dealing with this challenge included having other students translate or using multiple MTs to explain lessons. One teacher of a multilingual classroom described teaching in multiple MTs in the following way:

Interviewer (I) - Teacher what have you done for these students to understand the material in the classroom?
Participant (P) - OK. There it is hard. You first explain in Munyiga of soothing Epebane.
I - Teacher do you dominate [speak] this language?
P - Yes. And I also speak Echuwabo and Portuguese.
I - It means that during the lesson you use these three languages for every children? First you speak Echuwabo, and if the child does not understand Echuwabo, back to Portuguese, if he does not understand Portuguese, you use the local language of Epebane.
P - Yes.

However, due to the number of languages in urban classrooms, teachers noted that it would be challenging to select just one MT for bilingual instruction.

Although teachers employed a variety of strategies to address problems stemming from multilingualism in the classroom, challenges including linguistically heterogeneous classrooms, mismatches between students' MTs and the teacher's MT, and the low Portuguese proficiency level of students continued to be a concern for both teachers and directors.

PERCEIVED EFFECT OF THE IMPLEMENTED LANGUAGES OF INSTRUCTION ON STUDENTS

In the majority of rural areas and in many urban areas, teachers and directors stated that MT instruction was critical because of students' limited Portuguese oral fluency when they entered the classroom. Twelve teachers and directors noted that an exclusively Portuguese LOI policy led to issues with students' understanding of the curriculum. Teachers explained that when they used Portuguese in the classroom, students simply did not understand, limiting in-class discussions between students and overall participation. This problem is most challenging in Grade I, where

teachers reported children speak the least Portuguese. A director from Txolo explained this process as follows:

*“We have children who do not speak Portuguese language and in our classes we use Portuguese language which makes it a bit difficult to know if the child understood what I’ve just said or not and I also do not even realize if the child agrees with what I am saying, and everything really gets a bit complicated. **The key language of communication is the mother tongue that we have in our communities.**”*

This is more straightforward in rural areas, where most children speak one MT. In urban areas, however, informants noted that children often speak different MTs.

The majority of teachers and parents recognized that the use of both MT and Portuguese in the classroom improved the school environment and increased understanding of classroom concepts. In the classroom, teachers stated that using MT as well as Portuguese also made teaching easier because students were able to understand what the teacher was saying. Teachers state that students were more comfortable approaching teachers, knowing they could speak to the teacher in a MT. Finally, teachers noted that using both languages helped to facilitate students’ acquisition of Portuguese. A teacher from Cabaia stated, “It is beneficial, because it is a way for them to get to Portuguese, which is the education policy. Since the parents send students to school in order to learn Portuguese. So this language, serves them as a way to reach, or help them learn Portuguese.” Although many parents still stressed the overall importance of their children learning Portuguese, parents and teachers both noted the necessity of using both MT and Portuguese for student instruction.

PROVIDING HELP FOR STRUGGLING STUDENTS

While the majority of teachers supported students struggling with Portuguese instruction by alternating between MT and Portuguese, a small number of teachers were able to describe other methodologies they used in the classroom to support students struggling with the LOI. Two teachers from rural areas described using songs, stories, or fables in MTs and Portuguese to help engage struggling students. A teacher from Txolo explained, “We can sing a song in Portuguese, after that we sing in the local language, there are stories and fables that are more suitable in local language than in Portuguese then when you tell in local language the students are all cheerful and pick up that message which they then take it home.” This is supported by observational data which found that 5 out of the 11 teachers used songs to promote oral language development. Another teacher from Josina Machel, an urban school, stated that they positioned students who were unable to read or write in the middle of students who were able to read and write in order to help them observe these skills, which they said improved the struggling students’ literacy and numeracy. Other strategies teachers mentioned using to help struggling learners included orally correcting students’ Portuguese, reading aloud to students in Portuguese, and dividing up the classroom by different language backgrounds/skills. However, the vast majority of teachers stated that the method they used most to help students was increasing the amount of time they spent teaching in MTs.

RQ4: SOCIOPOLITICAL CONTEXTS OF LANGUAGE

4. What are the political and social contexts within which LOI choices are being made?

In this section, we discuss the larger sociopolitical contexts in which both LOI and language transitioning take place. First, we describe the perceived challenges facing literacy development in the home and at school. Both the home environment and the school environment are critical to children’s educational outcomes and must be understood in order to situate the aforementioned findings of the study. We then describe parents’ preferences regarding their children’s language of instruction at school. Information on students’ home and school environments is drawn from FGDs and IDIs with parents, leaders, directors, and teachers as well as classroom observations.

SOCIOPOLITICAL CHALLENGES FACING LITERACY DEVELOPMENT

LOW PERCEIVED QUALITY OF PRIMARY EDUCATION

Thirty-eight parents reported concerns about the quality of the current education system. Specifically, many parents expressed concern that children who attended school did not learn to read or write until later grades. Parents were most concerned about students’ Portuguese skills. Table 18 includes quotes from parents from three different locations expressing similar concerns about students’ Portuguese literacy skills.

TABLE 18. PERCEPTIONS OF SCHOOL QUALITY

ROLE	LOCATION	QUOTE
Mother	Mugongola	<i>Children get to Grade 4 or even Grade 6 without knowing how to read.</i>
Father	Josina Machel	<i>Grade 2 cannot write a letter in Portuguese.</i>
Father	Josina Machel	<i>Even Grade 10, 11, and 12 students cannot spell their names correctly.</i>
Father	Mugongola	<i>A child passes to the second grade without knowing how to read, write, sign, basically, he knows nothing and can happen even in fifth grade.</i>
Father	Tandane	<i>There are students here that do not know what the letter A is after a year of studying.</i>

Several parents and directors stated that a decline in the quality of education was tied to a decline in teacher quality. One parent from Gurue explained, “For us to observe an education of quality we need to have well-trained teachers, because if you are not well trained to sustain your work your teaching will not be effective for a Grade 1 child who needs a great effort from the teacher.” One director suggested that in order to improve the quality of teachers, the teacher qualification program and policy would need to be revised. The director noted, “We can find Grade 5 students who still do not know how to read or write. They should revise the teacher qualification policy.” This perspective aligned with parents’ belief that poor education quality was often tied to poor teacher quality. Parents also tied this lack of quality to a shift in how students are promoted from one grade to the next. Several parents stated that regardless of a student’s skill, they are promoted to the next grade at the end of the year. Overall, parents worried that even though their children attended school, quality issues within the education system were inhibiting children from actually learning.

LIMITED ACCESS TO MATERIALS AT HOME AND IN SCHOOL

Observations and interviews with teachers showed that very few teachers had learning or teaching materials in their classrooms. Observations found that in 45% of sampled schools students did not have textbooks and in another 45% less than half of students had textbooks. In four of the 12

schools, researchers report that students' work was hung up on the wall. Furthermore, in 11 out of the 12 observation schools, there were no educational posters, charts, or other writing teaching materials on the walls. The majority of teachers who had teaching materials report only having a standard syllabic chart. Eleven teachers—nine rural and two urban—stated that they had a syllabic chart in their classroom that they used to teach. However, two of the teachers that reported having and using a syllabic chart also added that they shared this chart or did not always have access to the chart. A teacher from Cabaia stated, “We only have one syllabic table and if the Director doesn’t come, we will not have [the] syllabic table, as we still have not received the material of the first grade students.” A minority of teachers reported having access to other materials, such as boards for words and letters (one), CDs (two), ApaL Flyers (one), and an alphabet chart (one). Nearly all of the materials found in school classrooms were in Portuguese. Teachers in Cabaia, who were implementing the bilingual education curriculum in two classrooms, were the exception. They stated that they received teaching materials in Echuwabo, but they also noted that they had not received teaching or learning materials in Portuguese or in both Portuguese and Echuwabo.

Across sampled schools, teachers and directors also noted challenges with receiving new instructional materials for the revised curriculum. Specifically, 10 rural teachers, two rural directors, and one urban teacher indicated that because of the change in curriculum, schools were waiting on updated Grade 1 books and instructional materials. Due to this delay, teachers were teaching without any materials into the middle of the 2017 school year (when data collection occurred). Teachers explained that without books, teaching and learning had become frustrating activities for both teachers and students. One teacher described the ways in which teachers have had to adjust their teaching methodologies to deal with the absence of books:

“This year, there were changes in the curriculum and up to now we don’t have any didactic materials; the teacher only speaks to the children in front of the blackboard teaching them what s/he has planned and the children do not have any materials and that causes problems between the child and the teacher.”

Several other Grade 3 teachers also noted a lack of books, and one teacher described receiving books with all of the covers missing. This lack of materials created additional work for teachers as they tried to teach children in an environment almost completely devoid of learning materials in either Portuguese or MTs.

Within the home, parents also struggled with a lack of reading materials in any language. Parents from sampled communities reported extremely limited access to reading materials to support their children’s literacy. Of the selected communities, only one location reported access to a library, and only one parent reported knowing where books could be purchased locally for children. The majority of parents (eight) who reported having access to reading materials used their children’s school books to practice with them at night or went to the school and used the books on site. One mother from Pavala stated, “Since the school is open, during free times, we sometimes go and read the existing books.” A few parents (three) reported having reading materials in their homes, including magazines, pamphlets, the bible, books on HIV/AIDS, and other unspecified books. All of the materials parents mentioned having access to were in Portuguese. As a result, children from selected communities had extremely limited exposure and/or access to print materials in Portuguese in the home, and no reported exposure or access to print materials in MTs. We summarize information on parents’ access to reading materials in Table 19.

TABLE 19. PARENTAL ACCESS TO READING MATERIALS

TYPE OF USE	NUMBER OF REFERENCES	TYPE OF ACCESS
Temporary Use	8	Can use school books at school or temporarily at home at night
	3	Community library, but books cannot be taken home
Borrowing	1	Books from Medium Professional Teaching Institution
	3	Reading materials from neighbors
	1	Reading materials from fellow students
	1	Reading clubs at the cultural house and Peni
Purchasing/Ownership	3	Church books at home
	3	Books and magazines at home

LIMITED TEACHER ENGAGEMENT WITH THE HOME

Qualitative interviews showed that a limited number of teachers and schools engaged with students' parents. A minority of teachers (nine) reported in FGDs and IDIs that they actively engaged with parents in the community to improve the home learning environment. The majority of teachers who reported working with parents in the community typically did so by reporting students' negative outcomes back to parents. This included informing parents about high levels of absenteeism, students not completing homework, or students' poor performance in the classroom. For example, the most common engagement between teachers and parents was through homework monitoring, with teachers asking parents to monitor and help students who were not completing homework in order to improve their overall performance. Only two teachers and one director stated that they tried to actively go out into the community or in public spaces to sensitize parents about the importance of working with children at home. A director explained engagement with the community in the following way:

“Saturdays, after the school activities, we are doing a walk in the communities and then when we find a child holding a notebook, we feel touched and ask the parent and guardian with the intention to make them understand that as you see the child has a notebook and it means that he’s interested in studying and he has to help this child, since the child shows interest.”

Of all the teachers who mentioned engaging parents outside of the classroom, only two described implementing skill-building activities with parents. One teacher in a rural school provided a parent with an alphabetic table and explained how to use it with their child, and an urban teacher described helping parents to become literate so they could support their children's education at home. This shows that parents, who already faced many challenges in supporting their children's education, received limited outside help in supporting students' literacy within the home environment.

PARENTS' LACK OF FORMAL EDUCATION

The majority of parents who did not help their children with school work at home stated that they were unable to do so because of their limited formal education. One parent from Tandane explained:

“It is difficult to help the children with their homework because most of the parents and the caretakers of the school did not study and do not even know 1 + 1, nor do they know what lemon is in Portuguese so there is no way to help the children.”

Parental interviews showed that the majority of parents with limited formal education, and in particular nonliterate parents, did not know how to help their children with their studies without literacy skills in the MT or Portuguese. Two nonliterate parents described strategies they used to help their children, despite this obstacle. The first parent supported their child by monitoring their homework and discussing their work together. The second parent had their child read their work aloud while the parent listened for perceived errors in Portuguese. Despite these examples, parents with limited formal education generally lacked strategies to help their children in the home, and the majority of parents did not provide educational support as a result.

A smaller group of parents stated that they did not help their children with their homework because of competing time demands. Typically, parents who described being too busy to help their children were too busy because of other work. Several fathers stated that working on the farm claimed the majority of their time, leaving them unable to support their children in their studies when they returned home at night, or after blocks of time working away from the home. Two mothers also described a preference for teaching children vocational skills, rather than helping them with homework. One mother explained:

“The parents that didn’t study are always busy working, making sieves for example. And they even call their children to help them manufacturing sieves they say “son come and learn how to make sieves, so that when I die you takeover” and that’s why they don’t help with the homework.”

Mothers highlighted not only the time constraints they faced, but also the tension between teaching their children formal education skills and focusing on vocational skills that may be necessary for their children’s livelihoods. Due to these time constraints and competing demands, working parents often chose not to help their children with homework, instead favoring other work activities that were perceived to be more crucial to the home environment.

LANGUAGE OF INSTRUCTION PREFERENCES

In this section, we describe parents’ LOI preferences using information gathered from FGDs and IDIs. This information is also summarized in Appendix C.

The majority of parents believed that Portuguese was the most important language for their children to learn to read and write, both for ease of communication and for employment reasons. Parents consistently referred to Portuguese as a language of unity because it is a lingua franca in Mozambique. Parents would like their children to learn Portuguese so they can communicate across various ethnolinguistic groups, and with foreigners. For example, a mother from Cabaia stated:

“They should learn the local language, but Portuguese fortifies them. What we wanted the most is Portuguese, because the child can be in the middle of five people, one from Molocue, other from Milange, another from somewhere else ... each may speak their language, but if you have a single official language, they will understand each other. They might have different languages but knowing Portuguese they will get along easily.”

In addition, parents highlighted the importance of Portuguese and other foreign languages (English and French) in terms of children’s future employability. A father from Milela explained, “Elomwe is the language of birth, to be taught Portuguese is a sign of growth, and then English, French, etc., that he studies until 12th grade.” Parents supported the use of Portuguese in the classroom because of the barriers children face if they do not become proficient in Portuguese, as well as the social mobility that proficiency in a foreign language can provide.

Although parents stated that Portuguese was the most important language for children to learn, when asked if they would support a bilingual education program, the majority also stated that bilingual education was necessary because of children’s low Portuguese proficiency in early grades. A majority of parents supported using both MT and Portuguese instruction in the classroom, as long as students developed literacy and numeracy in Portuguese. Parents stated that schools should use both languages to improve students’ performance if they have a limited understanding of Portuguese when they enter the classroom. A mother from Namicutxane explained her support of bilingual education in the following way:

“It’s because we are used to Elomwe, it is the language we speak the most. So when a teacher uses it to teach we are comfortable with it because sometimes it’s hard for our students to learn in Portuguese.”

Parents, particularly those from rural areas, realized that even if their overarching goal was for their children to master Portuguese, the teacher must also use MT instruction in order for students to learn. In other words the MT was seen as a means to an end with fluency in Portuguese as the ultimate goal.

However, a minority of parents maintained concerns that using an additional language in the classroom could have negative effects on children’s Portuguese outcomes. Parents stated that if the school shifted part of the class time into MT that it would take teachers additional time to teach students and would provide students less exposure to Portuguese, causing them to learn Portuguese at a slower pace. One father from Josina Machel School stated,

“It will bring disadvantages right from the start. Children will take some time to adapt and that means there must be reduced or delayed some subjects. The teacher will also have to capacitate and learn the local maternal language, and it will take more time. Anyway it would cause more confusion in the children’s minds.”

No parental responses referenced learning to read in a MT first as a way to strengthen children’s skill in an L2.

A minority of parents also expressed support and interest in their children becoming literate in their MT in order to communicate with older generations and uphold ethnolinguistic identity.

Several mothers noted that many children’s grandparents did not speak Portuguese, and that students needed to be able to speak in their MT to communicate with these family members. Parents also described the importance of MTs to identity. Parents explained how language is tied to location, and if a child does not know the language of their ethnolinguistic group, “it seems you’re not from there, while you are from there.” The adoption of Portuguese and the absence of children who are literate in their MT can, as one mother stated, “put your language into crisis.” In order to uphold identity, many parents wanted their children to learn how to read and write in local languages. One father from Josine Machel summarized, “Actually, we do not want our kids to forget their culture. Our culture should be preserved so that our kids can tell stories [to] their future kids.”

LIMITATIONS

In this section, we outline limitations to the quantitative and qualitative analyses. These limitations should be taken into consideration when examining the study's results.

QUANTITATIVE

Quantitative analyses have important limitations that need to be considered when interpreting results. First, in this study all relationships were examined through correlations and descriptive statistics, and therefore do not imply causality. Thus, the findings should not be used to make any causal claims. Second, we tested for statistical significance across factors used in the sampling frame (Grade, Gender, Urban/Rural status), but were not powered for detecting statistical significance across the dimensions of Bilingual/Monolingual schools and APal/Not APal schools. Third, our examination of the data correspondence to the census data is limited by the 10 year gap between the census and OLP data. Finally, as with most data collection efforts, there were some cases in which children did report speaking a language, but data was not collected from them in that language, leading to missing scores.

QUALITATIVE

Overall, the qualitative data are constrained by the nature of qualitative analysis itself. Qualitative data tend to be discursive and descriptive, and qualitative analysis privileges explanation and interpretation over quantification. In general, qualitative approaches allow researchers to explore and understand the experiences, opinions, and perspectives of their informants in greater depth than that offered by quantitative approaches. However, the use of qualitative approaches entails sacrifices in terms of generalizability and comparability—areas in which quantitative methods excel because of their use of large and probabilistic samples (Atieno, 2009). Samples chosen for qualitative studies are always smaller and often non-randomized (Patton, 1999). Specific limitations associated with the collected data are outlined below.

Researchers collected qualitative data for the LM study from parents, teachers, directors, and community leaders. While researchers collected data from multiple sources and in multiple interview formats (observations, IDIs, and FGDs), it is important to note the sources that we were unable to access in this data collection activity. The data presented in this report reflect information from parents of students in Grade 1 and Grade 3 but do not represent the parents of G2 children or out-of-school children who would typically be enrolled in Grade 1 or Grade 3. Furthermore, while we were able to conduct observations of language use in classrooms, we did not conduct observations within communities or the home to triangulate self-reports on language use in these contexts.

DISCUSSION AND PRELIMINARY CONCLUSIONS

Our primary goal in this report was to empirically examine language proficiency levels in a representative sample of schools in Nampula and Zambézia in order to determine which language(s) may be most effective for instruction and assessment. We approached this goal from quantitative and qualitative perspectives and found several key results.

From the quantitative analysis, the first key result was that the average OLP scores were similar in all languages, demonstrating that no one region is doing particularly better or worse than the others. Furthermore, the LI OLP scores had roughly normal distributions in all languages, suggesting that the semantic fluency test did in fact capture a skill that all children had (with normal variation). This testing approach therefore allowed us to identify which languages children *can* speak and understand, and therefore the languages that can be effectively used for instruction and assessment.

A **second** important finding was that the language(s) children reported being able to speak was sometimes different from the language in which they scored well on the OLP test, raising an important issue regarding the quality of self-reported language proficiency data. Approximately 50% of the population reported that they could speak two languages with any level of proficiency, but only about 8% were “bilingual” or proficient in two languages, according to the semantic fluency test results. This suggests that programs and policies that rely solely on language self-report data may be making ineffective LOI choices.

Third, we were able to provide geographic maps detailing where children had high, medium, and low OLP scores. These maps can help decision makers determine the best language for initial instruction for a specific geographic area. For example, Emakhuwa was the most commonly used LI in the north, Elomwe was the most commonly used LI in the central regions, and Echuwabo was the most commonly used LI in the south. A relatively small number of schools had mostly Portuguese speakers, and they were scattered throughout Nampula and Zambézia. This provides a strong empirical basis upon which program designers and policy makers can make initial LOI decisions.

A **fourth** key result was that there was substantial linguistic heterogeneity within schools, with approximately 62% of the sample having mixed-language classrooms. Mixed-language classrooms are those where students speak various LIs within the same classroom. There was more linguistic homogeneity (in the MT) in rural areas than urban areas. At the student level, our data showed that there were more bilingual students (in MT and Portuguese) in Grade 3 than in Grade 1, but there were still a large number of monolinguals (in MT) in Grade 3. This suggests that although exposure to instruction in Portuguese does improve Portuguese OLP levels, this is the case for only a minority of students.

A **fifth** important finding was that there was a mismatch between LOI and OLP scores for approximately 73% of the sample, with a higher mismatch rate for rural areas, Grade 1, and Portuguese-only monolingual schools. We also found that at the school level, there were very few schools in which 80% or more of the students spoke the same language as the LOI. Overall, these data show that there is a significant mismatch between the official LOI policy and children’s OLP skills. This is likely to result in significant difficulties in literacy acquisition—or further biliteracy or

multilingual literacy acquisition—because children cannot learn to read with fluency and comprehension in a language they do not speak and understand well.

A **final** quantitative result highlights the added value of a language mapping activity above and beyond data collected from a census for policy and practice decision making. Even with multiple questions in the census on language, it is difficult to capture actual linguistic ability from self-reported, yes/no questions. Language is a progressive, multi-faceted skill, and it is important to objectively measure the relative proficiencies children have in one – or more – languages to determine how likely they are to benefit from literacy instruction in that language. In general, our findings indicated that there was a good match for two of the mother tongues – Elomwe and Emakhuwa – but less match for Echuwabo and for L2 Portuguese. This may indicate that children are better at self-reporting their MT language ability, but not their Portuguese/L2 ability. This inability to accurately represent Portuguese ability may also be reflected in the lack of match between census data and OLP data for bilingualism as well. The lack of a match in Echuwabo is more difficult to interpret, but may be due to classification of “language” versus “dialect” and regional differences in what is defined as a “word” or a “language.”

Moving beyond the quantitative results, our qualitative analyses shed light on the fact that despite official LOI policy, the majority of sampled teachers used both MT and Portuguese instruction in monolingual Portuguese LOI schools because their students simply did not understand enough Portuguese to learn exclusively in that language. Furthermore, they believed that the impact on student learning in Portuguese was higher when both the MT and Portuguese were used in the classroom. Although the quantitative data showed a significant mismatch between OLP and LOI, it is important to acknowledge that several of these schools’ LOI policies are likely not implemented uniformly.

Second, the vast majority of selected parents believed that Portuguese was the most important language for their children to learn. Parents cited the importance of Portuguese for employment and social mobility, and as a way of connecting people within multilingual Mozambique. The majority of parents also stated that because of children’s limited Portuguese proficiency, it was necessary to use bilingual education in their communities. However, despite this support, the majority of parents viewed learning in an MT as a mechanism for learning Portuguese, rather than a chance for children to also become literate in their MT. A minority of parents supported their children becoming literate in their MTs so that they could communicate with older generations and uphold ethnolinguistic identity.

Third, the characteristics of the home environment and the school environment are important factors in perceived student success. In Nampula and Zambézia, teachers and parents faced a number of challenges in fostering the positive learning environments necessary for literacy acquisition. Parents, directors, and community leaders felt that, over time, education quality had declined, leading to poor Portuguese literacy outcomes. Within schools and homes, there was a lack of materials in either MT or Portuguese. In addition, few parents reported knowing where to access or purchase reading materials. A minority of parents supported their children’s reading acquisition in the home. Parents offered a number of reasons for not supporting their children’s learning, including their own lack of formal education, limited access to educational materials, a lack of time, and difficulties paying for education. Parents also received minimal support from schools. A

minority of teachers engaged with their students' parents, and those who did reported that their primary interaction with parents involved discussing their children's negative school performance.

In conclusion, this language mapping study addressed some key issues regarding language ability in Nampula and Zambézia provinces in Mozambique. Recognizing the fundamental role of language ability in literacy acquisition, the study provides empirical evidence of children's OLP levels and unpacks some of the contextual issues around language usage and perceptions. This will allow EGR programs and policy makers to make more effective decisions around language choices for instruction and assessment.

RECOMMENDATIONS

Based on our findings from the language mapping study, we put forth the following recommendations to MINEDH and other education stakeholders developing LOI practice and policy in Nampula and Zambézia:

1. Starting education and literacy instruction in a MT, and then adding or transitioning to Portuguese, will be associated with better literacy acquisition success rates than starting education in Portuguese. We recommend that the stakeholders determine the degree of mismatch they can tolerate between LOI and OLP to determine which schools can be Portuguese-only instruction. Based on previous literature (August & Shanahan, 2006; Koda, 2008; Nakamura & de Hoop, 2014 etc.), success on MT literacy acquisition can be expected to support acquisition of Portuguese literacy due to the transfer of skills from the MT to Portuguese. How and when to transition to Portuguese is outside the scope of this study, but we recommend that stakeholders consider the multiple, existing, evidence-based strategies when structuring the program to increase the likelihood of success.
2. In addition, formalizing schools' designations as "bilingual schools" could allow them greater support in terms of a formalized bilingual curriculum, MT materials, and training, as well as increasing uniformity in how teachers use MTs in the classroom. Qualitative research suggests that many schools with high rates of mismatch between students' OLP scores and the official LOI are already implementing some form of ad-hoc bilingual education in the classroom to allow students with limited Portuguese exposure to understand classroom content. It also sends the message to teachers that using both languages is allowed and encouraged and will reduce the hesitancy some teachers expressed in not strictly using Portuguese.
3. We recommend having more bilingual schools in rural areas due to the higher rates of mismatch in rural areas between Portuguese-only LOI and LI of Portuguese determined by OLP scores.
4. Given that approximately 60% of the classrooms have multiple LI's in them, we recommend having a simple screener the teacher can use to measure students OLP in multiple languages at the start of schooling and conduct special, short remedial activities in cases where there is a mismatch between a chosen LOI and particular students' OLP in that language.
5. The importance of utilizing MTs as languages of instruction in bilingual education should be carefully messaged to parents. Qualitative interviews with parents highlighted that they ultimately wanted their children to attain Portuguese literacy and numeracy. A portion of parents were hesitant about using MTs as LOIs because they feared this would slow students' progress toward learning literacy and numeracy in Portuguese, when there is already a perceived decline in education quality. If schools adopt bilingual education, this shift should be framed as a decision aimed at improving children's Portuguese skills, by leveraging the skills children already have in their MT when they enter Grade 1. It should be framed as not an either/or situation (i.e. either MT or Portuguese) but instead as using MT as a bridge to support better learning of Portuguese. Other positive messages parents linked to learning MTs included upholding ethnolinguistic identity, reinforcing children's relationship to the location where they live, preventing a decline of speakers of a particular MT, and facilitating communication between children and older generations who may not speak Portuguese. Qualitative research showed that utilizing these messages could help garner further support for bilingual education among parents.

6. If schools transition from Portuguese-only instruction to bilingual education, strategies should also be developed for teachers and students who may not speak the MT that will be used in the bilingual education program. Teachers and directors stated that when teachers do not speak the dominant MT of students, or when students in the classroom do not speak the dominant MT of the class, this creates challenges for both teachers and students. The challenges associated with these language mismatches will only be exacerbated by a transition to bilingual education. Methods for how to remedy these language mismatches should be provided to all bilingual schools to help support students and teachers who are speakers of a minority language. Some potential strategies are using LI speakers from the community to serve as teaching assistants or classroom volunteers, or organizing classrooms by languages instead of grade level. Future research should also examine teachers' OLP to determine their ability to effectively teach in the language(s) they are assigned to teach.
7. A number of challenges outlined by teachers, directors, and parents could be overcome by providing evidence-based strategies for overcoming them to parents and teachers. Parents noted that obstacles to supporting their children's reading at home included limited access to materials and a lack of formal education. Providing parents information on how and where to access reading materials, expanding mobile library programs, and encouraging schools to allow students to come and use reading materials during their free time could improve parents' and students' access to reading materials. In addition, providing parents with activities specifically designed for caregivers who are nonliterate or have limited formal education could help them improve the support they give their children in the home. Lastly, providing both parents and teachers ideas for learning materials they could create locally could become a low-cost solution to securing additional school materials in lieu of government or community funding.
8. All changes in LOI policy should be accompanied by system-levels support for such changes, including training for teachers in the languages they are expected to teach, teaching and learning materials in the appropriate languages developed, examinations and assessments developed in the right languages, and a comprehensive advocacy campaign that signals values of the new policy in ways that align with values of the stakeholders, especially at the community level.

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APPENDIX A. QUALITATIVE TOOLS

EXAMPLE FOCUS GROUP DISCUSSION INSTRUMENT

GUIÃO DOS GRUPOS FOCAIS PARA PROFESSORES

Tempo: Aproximadamente 1.5 - 2 horas

Respondentes: Professores

Objetivo: Conhecer melhor as atitudes, perspetivas, comportamentos e normas sociais em relação ao:

- Atendimento à escola primária,
- Envolvimento dos pais com a escola,
- Apoio dos pais em casa no processo de aprendizagem dos filhos,
- Contexto político e social em torno das escolhas sobre a língua de ensino.

Introdução e Consentimento:

O Supervisor deve ler o Formulário de Consentimento para cada um dos entrevistados e pedir-lhes para assinar/rubricar no fim do mesmo. Explicar o propósito do estudo, o tipo de questões, o facto de que as respostas serão estritamente confidenciais, embora os procedimentos sejam gravados, e que a participação seja voluntária. Ele também contém algumas informações básicas sobre o entrevistado e a escola. Termina com um "Código Entrevistado para Respondente", que deve ser atribuído a cada participante. A partir desse momento, os pesquisadores devem dirigir-se ao respondente por esse número, em vez de seu nome.

TIPO DE QUESTÃO	PERGUNTAS
A. Abertura/ Introdução	Vá ao redor da sala e peça a cada participante para dizer os seus nomes e a quanto tempo eles são Professores da escola?
B. Quebra-gelo e estímulos emocionais	Contornando a sala, pergunte a cada participante: Qual foi a melhor coisa que aconteceu recentemente consigo no trabalho? Algo que o fez particularmente feliz ou orgulhoso? (Incentive-os a contar detalhes da história) Novamente rodando a sala, pergunte: O que foi que aconteceu recentemente no trabalho que causou frustração ou foi um desafio ou uma dificuldade particular? (Incentive-os a contar detalhes da história, embora sem mencionar nomes).
C. Línguas faladas na comunidade e na escola	I. Poderiam descrever quais os línguas faladas nesta área onde está a escola? a. Qual é a língua mais falada na comunidade? b. Qual é a principal língua de comunicação usada no mercado ou na igreja entre grupos étnicos?

TIPO DE QUESTÃO	PERGUNTAS
	2. Poderiam descrever quais as línguas que os alunos da 1ª à 3ª classes falam nesta escola? a. Qual é a principal língua da comunicação usada na escola? 3. Quais são os desafios para o fornecimento de serviços de educação para as classes da 1ª a 3ª nesta escola em torno das línguas que as crianças falam e compreendem?
D. Língua de ensino	4. Quantos alunos estão na escola? 5. Quantos alunos estão matriculados na turma? 6. Em média, quantos alunos frequentam as vossas turmas? 7. Têm algum material de leitura nas vossa salas de aulas? Se sim, que tipos de materiais de leitura você tem disponíveis na sala de aula? a. Em que língua(s) estão esses materiais? 8. Poderiam descrever a política actual de língua de ensino na vossa escola? a. Que línguas(s) é/são suposto/as ser usado/as para ensinar as classes da 1ª à 3ª? b. Estas línguas são sempre usadas na prática? i. Porquê ou porque não? c. Além da(s) língua(s) de ensino, existem outras línguas ensinadas na sua escola? d. Quando é que cada língua deve ser introduzida na sala de aula? 9. Os professores são apoiados ou formados para ensinar na língua X? Se sim, como? a. Esta formação prepara adequadamente os professores para implementar a política de língua de ensino? i. Têm alguma recomendação sobre como essa formação pode ser melhorada? 10. Alguém aplica esta política de língua de ensino? a. Quem? Como? 11. Os professores da sua escola concordam com esta política de língua de ensino? a. Porquê ou porque não? 12. Houve alguma dificuldade na implementação desta política de língua de ensino? 13. Acham que esta política de língua de ensino é benéfica para os alunos em termos de resultados de aprendizagem? a. Porquê ou porque não? 14. Alguns estudantes têm dificuldades para aprender na(s) língua(s) XX? 15. Têm fornecido algum apoio especial aos alunos para aprenderem na língua XX? 16. Que tipo de apoio fornecem aos alunos que têm dificuldades para aprender nas língua(s) XX?

TIPO DE QUESTÃO	PERGUNTAS
E. Conhecimento e crenças sobre Ensino Bilingue (EB)	17. Quando ouvem a frase "ensino bilingue" o que lhe vem em mente? Já ouviram alguma coisa sobre isso? - Se sim, quais são as vantagens e desvantagens da EB? O quê mais? - Já leram pesquisas ou receberam alguma formação formal ou orientação sobre ensino bilingue? Em caso afirmativo, descreva-o. Que livros / pesquisa e / ou quando foi formado? Por qual instituição ou organização? (Se não) A EB é uma nova abordagem a ser considerada para ensinar as crianças a ler. Começa primeiro com o início do ensino do alfabeto e da leitura em língua materna, e depois gradualmente a transição para o Português nos primeiros 3 anos. O que você pensa dessa ideia? - Que vantagens ou benefícios isso poderiam ter? - Que desvantagens isso pode ter? 18. Têm alguma questão específica ou dúvidas sobre EB que gostariam de ver respondida? Algo mais? 19. O que acham que os pais na vossa comunidade sabem sobre EB, se é que sabem? Onde eles poderiam ter aprendido sobre isso? 20. Qual é a percepção que os pais têm sobre EB? Porquê? (Por favor sejam específicos)
F. Assiduidade escolar	21. A nível nacional, é um grande desafio garantir a assiduidade dos alunos. - Quais são algumas das razões pelas quais as crianças, especialmente aquelas nos primeiros 3 anos da escola primária, faltam às aulas? O quê mais? (Explorar os "porquês", por exemplo, se têm que trabalhar, cuidar dos irmãos, vender coisas no mercado, ou outras atividades?) 22. Várias escolas têm experimentado diferentes estratégias para aumentar a assiduidade ao longo dos anos. - Que estratégias já tentarem ou ouviram sobre o que parece ser mais eficaz? Qual parece funcionar melhor? O quê mais? - Por que razão você acham que isso funciona? 23. Existem estratégias que foram tentadas e que não conseguiram aumentar a assiduidade? Quais são? Por que acham que falhou? - Todas concordam? Alguém tem outras experiências?

TIPO DE QUESTÃO	PERGUNTAS
G. Envolvimento dos pais/mães (encarregados de educação)	24. O que vos vem em mente quando ouvem o termo "envolvimento dos pais"? O que vocês entendem com isso? (pergunta todos) 25. Consideram isso como uma parte de vosso trabalho? Porquê? (Todas concordam?) 26. Se fossem convidados a começar a encorajar os pais a envolverem-se mais com suas escolas, como fariam isso? O que diriam para motivá-los? O que mais (SEJAM ESPECÍFICOS)? 27. Houve esforços anteriores para envolver mais os pais/encarregados de educação com a escola? Até que ponto estes esforços tiveram bons resultados? Existem algumas atividades que funcionam nalgumas comunidades, mas não noutras? 28. Por que acham que os pais/encarregados de educação não participam em actividades ou eventos escolares? Que barreiras ou desafios enfrentam a esse respeito? O quê mais? Por favor, sejam o mais específicos possível e deem exemplos (sem nomes), caso possam pensar em casos específicos.
H. Apoio à aprendizagem em casa	29. Até que ponto acham que os pais nas suas comunidades apoiam a aprendizagem dos seus filhos fora da escola, especialmente aprendendo a ler? é comum? Existe alguma diferença em como eles fazem isso com as meninas em comparação com meninos? Algo mais? a. O que os pais/encarregados de educação costumam fazer, (Deem exemplos) 30. Já ouviram falar de programas ou actividades especiais que as escolas tentaram incentivar ou apoiar aos pais no apoio à aprendizagem dos seus filhos? Por favor, sejam específicos? (Quando? Onde? Como?) 31. Já tentaram incentivar os pais a apoiar a aprendizagem fora da escola? Como fizeram isso, especificamente? Algo mais? 32. Têm tidobons resultados? Porquê/porque não? (PERGUNTE A TODOS, INCENTIVAR O DEBATE)
I. Percepção Ensino bilingue (EB)	33. Quando pensam em "ensino bilingue" o que vos vem à mente? 34. Quais são as vantagens e desvantagens da EB? O quê mais? Todos concordam? Alguma opinião diferente? 35. Conhecem alguma evidência que mostre como isso afecta a alfabetização em Português? Já ouviram falar sobre isso? De onde? 36. Quais são alguns dos constrangimentos que poderiam prever na implementação da EB nas vossas escolas? O quê mais? 37. Acham que os pais sabem algo sobre EB? a. Onde eles teriam aprendido? b. Qual é a percepção dos pais sobre EB? Porquê?
J. Canais de Comunicação	38. Como normalmente obtêm conhecimento sobre os novos programas e políticas do Ministério de Educação e Desenvolvimento Humano? Onde mais? 39. Onde obtêm informação sobre oportunidades profissionais ou novas ideias relacionadas à educação em geral? 40. Qual é a regularidade da vossa participação em formações? Algum de vocês está em formação académica? Que tipo e que nível?

TIPO DE QUESTÃO	PERGUNTAS
	41. Conhecem a existência de boletins informativos, <i>blogs</i> de listas de discussão, grupos do <i>WhatsApp</i> ou publicações relacionadas à educação? Por favor listem? 42. E quanto a organizações ou reuniões profissionais? Quais são as mais importantes para se envolverem a fim de manterem-se atualizados? 43. Existem professores ou especialistas em educação individual que vocês particularmente admiram e consultem para obter conselhos ou seguir em redes sociais? Então, quem são eles? 44. Açam que a maioria dos professores têm todos telemóveis? Algem tem <i>smartphones</i>? E comum as pessoas aqui usaram?
K. Conclusão	Tem alguma observação, sugestão ou a acrescentar alguma coisa?

OBRIGADO!

EXAMPLE IN-DEPTH INTERVIEW INSTRUMENT

GUIÃO DE ENTREVISTA EM PROFUNDIDADE DO PROFESSOR (IDI)

Tempo: Aproximadamente 1 hora

Respondente: Professores

Objetivo: Conhecer melhor as atitudes, perspectivas, comportamentos e normas sociais em relação ao:

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TIPO DE QUESTÃO	PERGUNTAS
A. Abertura	1. Qual é a sua posição actual na escola? Que classes e disciplina ensina? 2. Há quanto tempo ensina? E há quanto tempo está nesta escola?
B. Introdução (estímulo emocional)	3. Quando foi a última vez que teve um ÓPTIMO dia de trabalho? Por favor, descreva o dia. a. Por que foi tão gratificante? O quê especificamente o fez sentir-se tão bem? 4. Qual foi o seu maior sucesso ou realização como professor nesta escola? Por quê? 5. Qual foi o seu maior desafio? Por quê?
C. Língua falada na comunidade e na escola	6. Poderia descrever quais idiomas são falados nesta área de captação de escolas? a. Poderia estimar quantas pessoas falam cada língua nesta, comunidade? b. Existe uma linguagem comum que as pessoas usam para se comunicar entre grupos étnicos ou no mercado? 7. Poderia descrever quais as línguas que os alunos da 1ª a 3ª classe falam nesta escola? a. Poderia estimar aproximadamente a percentagem de alunos que falam cada idioma? 8. Quais são os desafios para a prestação de serviços de educação para 1ª a 3ª classe nesta escola em torno das línguas que os alunos falam e compreendem?

TIPO DE QUESTÃO	PERGUNTAS
D. Língua de ensino	9. Quantos alunos tem a sua escola? 10. Quantos alunos estão matriculados em sua turma? 11. Em média, quantos alunos frequentam a sua turma? 12. Tem algum material de leitura na sua sala de aula? Se sim, que tipos de materiais de leitura tem disponíveis na sua sala de aula? a. Em que língua(s) estão esses materiais? 13. Poderia descrever a actual política de língua-de-ensino na sua escola? e. Que língua (s) é suposto ser usada para ensinar da 1^a a 3^a classes? f. Na prática, estas línguas são sempre usadas? i. Justifique? g. Além da(s) língua(s)-de-ensino, existem outras línguas ensinadas em sua escola? h. Quando é suposto que cada língua deve ser introduzida na sala de aula? 14. Os professores são apoiados ou treinados para ensinar na língua? Se sim, como? b. Esta formação prepara adequadamente os professores para implementar esta política de língua-de-ensino? ii. Você tem alguma recomendação sobre como essa formação pode ser melhorada? 15. Alguém aplica essa política de língua-de-ensino? b. Quem? Como? 16. Os professores de sua escola concordam com esta política de língua-de-ensino? a. Justifique? 17. Houve algum constrangimento na implementação desta política de língua-de-ensino? 18. Você acha que esta política de língua-de-ensino é benéfica para os alunos em termos de resultados de aprendizagem? a. Justifique? 19. Alguns alunos têm dificuldades para aprender na (s) língua (s) XX? 20. Fornece algum apoio especial aos alunos para aprenderem em linguagem XX? a. Que tipo de apoio fornece aos alunos que têm dificuldades para aprender na(s) língua(s) XX?
E. Conhecimento sobre o Ensino Bilingue (EB)	21. Quando ouve a frase "ensino bilingue" o que lhe vem à mente? já ouviu alguma coisa sobre isso? a. (Se sim) Quais são as vantagens da EB? O quê mais? i. E suas desvantagens, quais são? O quê mais? ii. Já leu pesquisas sobre ou recebeu alguma formação formal ou orientação sobre ensino bilingue? Em caso afirmativo,

	descreva-o. Que livros / pesquisa e / ou quando foi formado? Por qual agência ou organização? b. (Se não) A EB é uma nova abordagem a ser considerada para ensinar os alunos a ler. Começa primeiro com o início do ensino do alfabeto e da leitura em língua materna, e depois gradualmente a transição para o Português nos primeiros 3 anos. O que você pensa dessa ideia? c. i. Que vantagens ou benefícios isso poderia ter? ii. Que desvantagens isso pode ter? 22. Tem alguma questão específica ou dúvida sobre EB que gostaria de ter resposta? Algo mais? 23. O que acha que os pais na sua comunidade sabem sobre EB, se é que sabem alguma coisa? Onde eles poderiam ter aprendido sobre isso? 24. Qual será a percepção que os pais têm sobre EB? Por quê? (Por favor seja específico, continue perguntando para revelar as causas subjacentes.)
F. Assiduidade Escolar	25. A nível nacional, sabemos que conseguir com que as crianças frequentem a escola consistentemente é um desafio. Como está na sua escola? Você acha que é melhor ou pior do que noutros lugares? Por quê? Que factores tornam diferente? 26. Quais são as razões mais comuns que levam as crianças a faltarem as aulas na sua escola? Isso é diferente ou similar noutras partes do país? 27. Acha que a assiduidade varia de acordo com o sexo? Porquê ou porque não? 28. A sua escola já tomou alguma acção específica para melhorar a assiduidade escolar? a. (Se sim) O que foi? Foi eficaz? Porquê/porque não? 29. Já alguma vez tomou alguma acção específica para motivar os seus alunos a serem assíduos a escola? a. (Se sim) O que fez? Foi eficaz? Porquê / porque não?
G. Envolvimento da Comunidade	30. Quando pensa sobre os termos "engajamento da comunidade" ou "envolvimento da comunidade", o que lhe vem à mente? 31. Como acha que é o nível do envolvimento/participação da comunidade ou o dos pais encarregados de educação com sua escola? a. Quais são os mecanismos usados para incentivar a participação? b. Até que ponto esses esforços são bem-sucedidos em envolver os pais no que está a acontecer na escola? (De Exemplos.) 32. Como costuma obter o feedback dos pais? Quais são os tipos de problemas que os pais falam? O quê mais? Como é que eles geralmente comunicam essas questões ou preocupações? 33. Como tenta envolver os pais? O quê mais?

	34. Existem reuniões ou eventos que os pais podem participar para aprender sobre o que está a acontecer e para expressar os seus desejos ou preocupações? 35. E sobre o Conselho de Escola, muitos pais frequentam? Porquê ou porque não? 36. Em que medida esses esforços são bem-sucedidos em envolver os pais/encarregados de educação para considerarem a escola como prioridade? 37. Para aqueles pais que não se envolvem com a escola, porque acha que acontece? Quais são as barreiras ou os desafios que enfrentam para inibi-los a terem uma maior participação? O quê mais?
H. Apoiar a aprendizagem / leitura em casa	38. Até que ponto você acha que os pais na sua comunidade apoiam a aprendizagem dos seus filhos, especialmente aprendendo a ler fora da escola? a. Como eles fazem isso? O quê mais? Pode dar-me um exemplo de um pai ou grupo de pais que fizeram isso bem? 39. É comum que os pais da sua escola ajudem os seus filhos nos trabalhos de casa, leiam ou façam outros tipos de atividades educacionais com seus filhos em casa? Porquê? Porque não? 40. Acha que o gênero pode afectar até que ponto os pais apoiam a aprendizagem dos seus filhos em casa? Como? Porquê / porque não? 41. Alguma vez já encorajou os pais a apoiarem a aprendizagem dos seus filhos em casa, de uma maneira concreta? Como fez isso? Por favor, seja específico? (Quando? Onde? Como?) 42. Esse esforço foi bem-sucedido? Porquê / porque não? 43. Se fosse solicitado a começar a fazer isso, como iria fazê-lo? a. Quais seriam os desafios? b. Como iria superar esses desafios?
I. Canais de Comunicação	44. Como costuma saber sobre novos programas e políticas governamentais? Onde mais? 45. E quanto a oportunidades profissionais ou novas ideias relacionadas à educação? Onde aprende sobre isso? 46. Qual e a regularidade de da vossa participam na formações? Está informação académica? Que tipo e que nível? 47. Está inscrito em algum boletim informativo, serviços de notícias ou publicações relacionadas à educação? Quais? (Por favor mencione) 48. É membro de alguma organização profissional? Se sim, qual? 49. Assiste a qualquer reunião profissional onde aprende sobre novos programas ou metodologias? 50. Está atualmente a fazer alguma formação formal ou educação (faculdade, programa de mestrado, cursos on-line, etc.) Por favor, mencione quais.

TIPO DE QUESTÃO	PERGUNTAS
	51. Segue ou tem um estimado/queridocolega fora, um professor ou um especialista técnico a quem vai obter conselho em matérias pedagógicas técnicas? Quais são os tipos de questões que tem procurado aconselhamento? (Peça-lhes que enumerem as vezes que eles estenderam a mão ou buscaram conselhos.) Pode nos dizer quem são, como se comunica com eles? 52. Você possui um <i>smartphone</i> ou <i>tablet</i>? Está inscrito em algum serviço profissional nas redes sociais ou blogs? Quais?
J. Conclusão	53. Tem alguma observação, sugestão ou a acrescentar alguma coisa?

OBSERVATION GUIDE

GUIA DE OBSERVAÇÃO EM SALA DE AULA

Tempo: Aproximadamente 45 minutos

Objectivo: Compreender as práticas de língua de ensino nas diferentes áreas linguísticas dominantes em zonas urbanas e rurais na Zambézia e em Nampula

Dados do Observador:

1. Nome do Observador: _____
2. Data da observação: _____ Hora de início: _____ Hora de fim: _____
3. Local da observação: _____

Dados Base:

4. Classes: ☐ 1 ☐ 3
5. Disciplina _____ Turnos: ☐ Manhã ☐ Meio ☐ Tarde

Dados do Professor:

6. Sexo: ☐ Mulher ☐ Homem
7. Número de alunos presentes na sala de aula: _____ Total _____ Homem
_____ Mulher

Material didáctico:

8. Alunos com livros: ☐ Nenhum ☐ Menos de metade ☐ Mais de metade
☐ Todos
9. Há cartazes ilustrativos, mapas e outras linguagens escritas presentes na sala de aula (nas paredes, etc.) ☐ Nenhum ☐ Algum ☐ Suficiente
10. Há materiais produzidos localmente (por exemplo, registos feitos pelos professores) presentes na sala de aula. ☐ Nenhum ☐ Algum ☐ Suficiente
11. O trabalho dos alunos é apresentado na sala de aula. ☐ Sim ☐ Não
12. Qual é / são a (s) língua (s) usada (s) para os materiais afixados na sala de aula? Comente.

13. Qual a percentagem (aproximada) do material de ensino na sala de aula (texto no quadro, materiais nas paredes, livros, etc.) estão em línguas locais vs. idioma oficial? Comente.

14. Existe alguma diferença entre as línguas usadas para materiais impressos (livros, cartazes) e materiais produzidos localmente / trabalhos de alunos?

15. Pode identificar alguns momentos e formas de como certas línguas são usadas? Descreva em detalhe.

Língua Usada:

16. Primeira língua de ensino observada: ☐ Língua Local ☐ Português ☐ Mista ☐ Outra

17. Explique em detalhes quando o professor usa cada língua na sala de aula. Qual é a percentagem do tempo em que cada língua é usada?

18. Línguas usadas oralmente pelos alunos: ☐ Língua Local ☐ Português ☐ Mista ☐ Outra

19. Explique em detalhe quando os alunos usam cada língua na sala de aula. Qual é a percentagem do tempo em que cada língua é usada?

20. Você pode identificar momentos e formas em que os professores ou os alunos (as) usam uma ou outra língua (por exemplo, quando os professores disciplinam ou elogiam crianças, ensino versus gestão da aula, quando os alunos falam entre eles, etc.)?

21. O professor faz alguma actividade voltada para o desenvolvimento da língua oral em português (qualquer coisa que encoraja ouvir e falar a língua como canções, histórias, dramatizações etc.)?

☐ Sim ☐ Não ☐ As vezes

Se sim, por favor descreva:

22. Notas adicionais sobre o uso da língua na sala de aula por professores e alunos:

APPENDIX B. QUANTITATIVE TOOLS

SEMANTIC FLUENCY INSTRUCTIONS

TESTE DE FLUÊNCIA SEMÂNTICA

INTRODUÇÃO:

Por favor, apresente-se indicando o seu nome, bem como algo interessante sobre si mesmo (o entrevistador). Em seguida, explique o objetivo da pesquisa e obtenha o consentimento verbal do entrevistado.

TESTE DE DESCODIFICAÇÃO EM ECHWABO: PSEUDO PALAVRAS

Lista de Pseudo Palavras
Exemplo 1: Obi
Exemplo 2: Eba
Opu
Aswu
Aswe
Obwa
Wowa
Owowa
Moni
Kattu
Kutta
Wobo
Molume
Miluma
Mekani
Mukene
Muthipi

INSTRUÇÕES DE TESTE:

Para iniciar o teste, pergunte o seguinte em **NEGRITO (BOLD)**.

- I. A fim de determinar a(s) língua(s) de teste, pergunte às crianças que idioma(s) elas falam e ofereça-lhes a oportunidade de fazer o teste em todas as línguas que dizem que falam dentro do alvo 3 LI (Emakhuwa, Elomwe e Echwabo). Diga: **Que línguas você fala?** Se as crianças

ficarem bloqueadas, sinta-se à vontade para orientá-las com as línguas. Além disso, por favor, faça o teste em Português para todas as crianças. Se as crianças listarem uma língua diferente destas 3 LI, por favor note na folha de contagem quais são as línguas, mas não há necessidade de realizar o teste em quaisquer outras línguas.

2. Lembre-se de dar este teste a um aluno de cada vez. Comece com as cenas cobertas ou viradas para baixo enquanto você explica as instruções. Você vai fazer uma sessão de prática com o aluno, e de seguida, o teste.
23. Diga o seguinte: **Agora vou lhe mostrar uma foto com muitas coisas diferentes. Quando eu disser "começar", eu quero que você diga em voz alta tantas palavras quanto você poder imaginar a partir da imagem ou quaisquer palavras que lhe vêm à mente ao olhar para a imagem. As palavras não precisam de estar na foto. Tente não dizer frases completas como "a menina está a sorrir", mas apenas tentar listar as palavras que vêm à sua mente como "maçã" ou "casa". Você terá 60 segundos para dizer tantas palavras quanto puder em _____ [língua]. Você entende o que deve fazer? Agora, vamos primeiro tentar com uma imagem para prática na língua XX** (sugere-se uso de uma língua em que a criança se sinta confortável).
24. Vire a folha para que a criança possa ver a imagem e diga **"começar"** enquanto ao mesmo tempo que começa a gravar com o gravador. Use o gravador para cronometrar o tempo em 60 segundos e, de seguida, pedir-lhes para parar, enquanto também para a gravação. Então diga, **Ótimo trabalho! Você tem alguma pergunta?** Responda a quaisquer perguntas que o aluno possa ter e certifique-se de que compreendem.
25. De seguida, use a segunda imagem para iniciar o teste. Diga, **"Pronto? Vamos começar o jogo novamente na linguagem XX"**. Vire a folha para que a criança possa ver a imagem e diga **"Começar"**, enquanto ao mesmo tempo inicia o gravador. Use o gravador para cronometrar o tempo em 60 segundos e, de seguida, pedir-lhes para parar, enquanto também para a gravação.
26. Tendo o teste começado, use as folhas de teste para anotar para cada palavra que a criança diz no idioma correto que corresponde à cena. Quando os 60 segundos terminarem, diga à criança para parar. Adicione o número de cortes e grave-os na folha de pontuação.
27. Você pode terminar o teste após 10 a 12 segundos de silêncio completo e incapacidade de pensar em quaisquer palavras novas. Não há necessidade de manter a criança durante os 60 segundos por linguagem, se eles não conseguirem pensar em mais palavras.
28. Faça este teste para todos os alunos em todas as línguas que eles falam. Faça uma breve pausa se o estudante parecer entediado ou cansado.

FIGURE 3. SEMANTIC FLUENCY IMAGE I

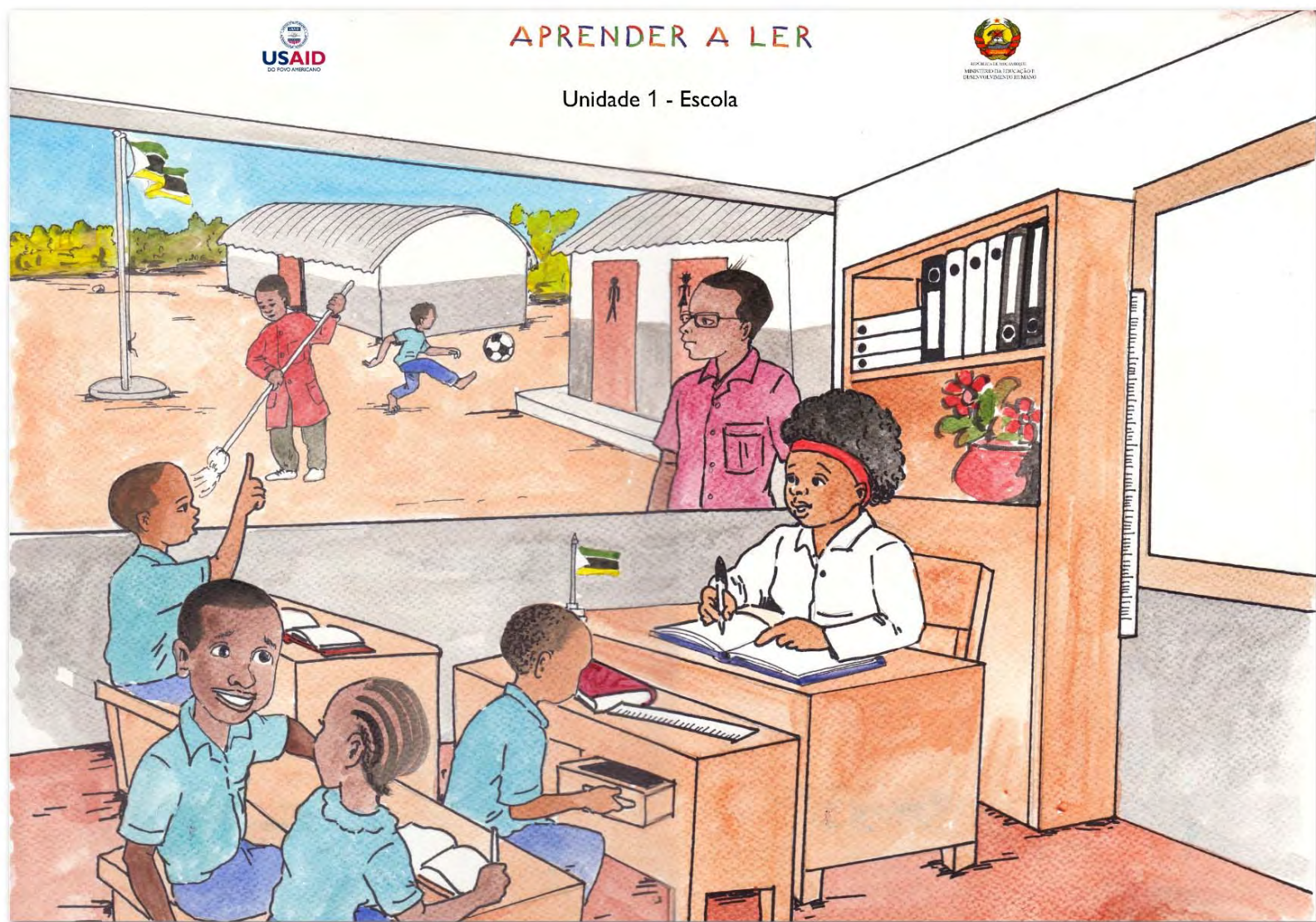
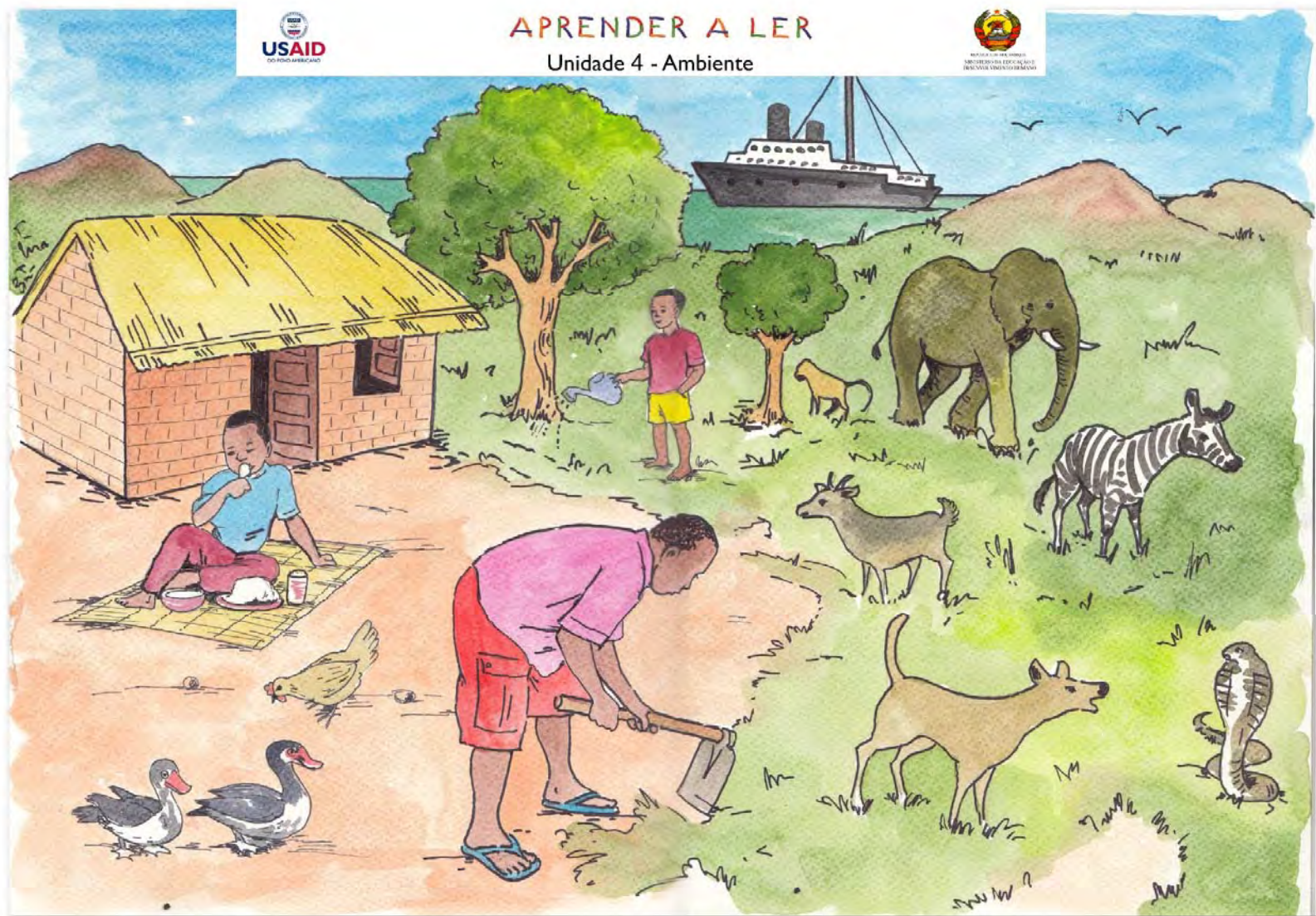


FIGURE 4. SEMANTIC FLUENCY IMAGE 2



DECODING TEST INSTRUCTIONS

TESTE DE DESCODIFICAÇÃO

INSTRUÇÕES DE TESTE:

Para iniciar o teste, pergunte o seguinte em **NEGRITO (BOLD)**.

1. **Qual é a sua primeira língua?** (Ou seja, que língua usou durante o seu crescimento? Que língua você fala em casa?)
2. **Obrigado por me dizer isso. Vou pedir-lhe para ler as palavras em voz alta na língua XX (a sua língua materna) e na língua Portuguesa** [Não soletrar as palavras, basta lê-las]. **Eu vou lhe mostrar uma palavra de cada vez e pedir que você diga para mim em voz alta. Vou pedir-lhe para ler tanto palavras reais como palavras falsas que não são reais e não significam nada. Primeiro, vou pedir-lhe para ler palavras reais em Português.** Vamos praticar primeiro.
3. Por exemplo, a palavra real é "XX". [Aponte para "Exemplo 1"]
4. **Agora, tente:** [Aponte para a próxima palavra "Exemplo 2" e diga] **Por favor, leia esta palavra.**
5. [Se correcto]: **Muito bem:** "XX."
6. [Se incorrecto]: **A palavra real é** "XX."
7. **Você entende o que deve fazer? Agora, leia as palavras o melhor que puder. Eu vou ficar quieto e só a ouvir, a menos que você precise de ajuda.**
8. **Mostre ao aluno cada palavra uma de cada vez e diga o seguinte: Soe cada palavra tão claro quanto possível.**
9. Dê ao aluno 10 segundos para responder.
10. Anote a pontuação na folha de pontuação.
11. Continue para próxima palavra.

Depois continue para as pseudo-palavras:

12. Ótimo, agora vou pedir-lhe para ler palavras falsas que não são reais e não significam nada.
13. Por exemplo, a palavra é "XX". [Aponte para "Exemplo 1"]
14. **Agora, tente:** [Aponte para a próxima palavra "Exemplo 2" e diga] **Por favor, leia esta palavra.**
15. [Se correcto]: **Muito bem:** "XX."

16. [Se incorrecto]: **A** palavra é “XX.”
17. **Você entende o que deve fazer? Agora, leia as palavras o melhor que puder. Eu vou ficar quieto e só a ouvir, a menos que você precise de ajuda.**
18. Mostre ao aluno cada palavra uma de cada vez e diga o seguinte: **Soe cada palavra tão claro quanto possível.**
19. Dê ao aluno 10 segundos para responder.
20. Anote a pontuação na folha de pontuação.
21. Continue para próxima palavra.

TESTE DE DESCODIFICAÇÃO EM PORTUGUÊS: PALAVRAS REAIS

Lista de Palavras Reais
Exemplo 1: Giz
Exemplo 2: Mãos
Mãe
Pés
Pão
Mesa
Livro
Bola
Alto
Nome
Boca
Olhos
Caderno
Comprido
Mercado
Árvores
Camião

TESTE DE DESCODIFICAÇÃO EM PORTUGUÊS: PSEUDO-PALAVRAS

Lista de Pseudo-Palavras
Exemplo 1: Apo
Exemplo 2: Hono
Nois

Lista de Pseudo-Palavras
Cez
Dete
Dego
Hono
Binto
Kuiro
Anusa
Elanho
Quengo
Falque
Gorrima
Iguato
Japela
Mincala

TESTE DE DESCODIFICAÇÃO EM EMAKHUWA: PALAVRAS REAIS

Lista de Palavras Reais
Exemplo 1: Meesa
Exemplo 2: Nsina
Ovela
Cinka
Taata
Muru
Metto

Empa
Esaala
Nvelo
Ehopa
Olowa
Etthaya
Otteela
Puneka
Ekuco
Ekatthi

TESTE DE DESCODIFICAÇÃO EM EMAKHUWA: PSEUDO PALAVRAS

Lista de Pseudo Palavras

Exemplo 1: Utto
Exemplo 2: Wi
Aci
Ece
Went
Pha
Okwi
Wonu
Campa
Mwasa
Tinyu
Phenca
Eyopha

Malomu

Haperi

Sawasa

Erakulu

TESTE DE DESCODIFICAÇÃO EM ELOMWE: PALAVRAS REAIS

Lista de Palavras Reais

Exemplo 1: Eyano

Exemplo 2: Nsele

Muno

Empa

Naaru

Muru

Maahi

Tiithi

Nsima

Nchaco

Mpaco

Oveka

Epantera

Sawiima

Ohiyu

Kirimi

Nceke

TESTE DE DESCODIFICAÇÃO EM ELOMWE: PSEUDO PALAVRAS

Lista de Pseudo Palavras

Exemplo 1: Aca

Exemplo 2: Ece

Eci

Eco

Orwi

Okwi

Mpi

Rathwa

Cipi

Kwaphi

Thaaki

Xalu

Phere

Hunkusi

Ehalapo

Alanasi

Mulakusi

TESTE DE DECODIFICAÇÃO EM ECHWABO: PALAVRAS REAIS

Lista de Palavras Reais

Exemplo 1: Mukwaga

Exemplo 2: Baanko

Puno

Kove

Manje

Jaru

Kuni

Nzina

Olivo

Oyeva

Mpali

Kalisa

Musuvo

Basiya

Elabo

Milima

Parinya

APPENDIX C. SUMMARY OF IMPLEMENTED LANGUAGE OF INSTRUCTION AND LANGUAGE OF INSTRUCTION PREFERENCES

SCHOOL NAME	ZIP/VILLA	MAIN LANGUAGE	IMPLEMENTED LANGUAGE OF INSTRUCTION	EXEMPLARY QUOTE ON IMPLEMENTED LANGUAGE OF INSTRUCTION (FROM TEACHER OR DIRECTOR)	LANGUAGE OF INSTRUCTION PREFERENCES	EXEMPLARY QUOTE ON LANGUAGE OF INSTRUCTION PREFERENCES
EPC 16 de Junho	Ilha Mocambique	Emakhuwa	Portuguese and Emakhuwa	Well ... The policy is to speak Portuguese as we are working with children from Grades 1 to 3, where those children cannot speak the language which comes in the books, that is why we resort to other languages, including the mother tongue.	Divided. Parents want to see their children learning Portuguese. Some parents understand the necessity of using local languages to do this.	I think that there are parents who agree and parents who do not. As the director said, there are parents who want to see their children prospering and able to speak Portuguese. The children who only learn the local language will suffer in the future because they will be very limited. The teacher must know when to introduce the second language. What should be done is, for example, if a student does not understand a certain aspect in Portuguese, the teacher should explain them in Emakhuwa and get back to Portuguese. That is not happening. What is happening is that the 90% or 100% of the lesson is given in Emakhuwa. – Director
EPC Josina Machel	Marmanelo	Manhawa/Portuguese	Portuguese	Teacher: For me it's Portuguese. Interviewer: Portuguese. Teacher: Because it is the official language. Interviewer: Is this language always used in practice? Teacher: Yes, it is always used.	Portuguese. A few parents support also using some mother tongue.	I do not think that this would be a good idea, because teaching another language would disturb the children in the process of teaching and learning. Here in our town, the majority speaks Portuguese. Another language would maybe be used in rural areas where most of the people speak local languages. – Father
Escola Primária Completa de Marrocane	Marrocane, Namina	Emakhuwa	Portuguese and Emakhuwa as a resource	I use Portuguese and Emakhuwa as resource, if you don't use the local language as resource, you will not have good results, and you will be talking to yourself.	Parents want children to learn Portuguese. Some parents support using both mother tongue and Portuguese, others just want the focus to be on Portuguese and no mother tongue.	Some parents and caregivers agree. Others do not. Why I say this, some have said: you are learning Emakhuwa while here at home we teach. We are best teachers of the Emakhuwa language. We took our child to school to learn the official language, the Portuguese language, but now is learning Emakhuwa, how? Also, some parents and caregivers agree because they already know that the teacher is using the local language to make understand, to interconnect with the official language so my child can understand better. – Director
EPI de Milela	Milala	Elomwe	Portuguese and Elomwe as a resource	We use Portuguese and use the local language to clarify on issues that the child may not have understood. We do 80% of Portuguese and 20% of the local language.	Strong preference for Portuguese proficiency.	What we want is for our children is for them to be taught in Portuguese first, then English / French. – Father

SCHOOL NAME	ZIP/VILLA	MAIN LANGUAGE	IMPLEMENTED LANGUAGE OF INSTRUCTION	EXEMPLARY QUOTE ON IMPLEMENTED LANGUAGE OF INSTRUCTION (FROM TEACHER OR DIRECTOR)	LANGUAGE OF INSTRUCTION PREFERENCES	EXEMPLARY QUOTE ON LANGUAGE OF INSTRUCTION PREFERENCES
EPC de Cabaia	Muceliua	Echuwabo	Portuguese and Echuwabo as a resource; two classrooms implementing bilingual education	From first to second grade, we teach them in Portuguese, but if they do not understand the content, we have to go back to the local language. Sometimes we try to explain them in Portuguese but it does not work most of the times. So the local language plays an important role. This bilingual education system is welcome.	Most parents support and are excited about using both mother tongue and Portuguese, but Portuguese should be learned.	The child must be fortified in Portuguese; I always say that. Everywhere where you go they only speak Portuguese. We are not saying that we prohibit local language, no; here we are assessing the relevance of each language. We do not prohibit, but Portuguese is very important. – Mother
EPC de Tandane	Munhamade	Manhawa	Portuguese and Manhawa as a resource	They are taught in Portuguese, but also should be taught in Manhawa to be able to understand better, because everything at home is learnt in Manhawa.	Mother tongue and Portuguese. Importance placed on Portuguese proficiency.	Yes, we have but if the government has another method to implement in schools that can facilitate the understanding of the subjects by our children, they can implement. I see the following: so that children can read, should use both languages, Portuguese and Manhawa, for example, saying their name both in Portuguese and in Manhawa. If that were the case, they would know it and by 4th grade would be able to read and write. – Father
EPC de Mugongola	Murracua	Manhawa/Emaganja	Portuguese and Manhawa (and others) as a resource	Students from Grade 1 to 3 usually speak the local language, they understand things better when you speak the local language. For example, when the teacher explains in Portuguese then they must repeat the same thing in the local language, Manhawa, so that students can understand.	Mother tongue and Portuguese. Importance placed both on Portuguese and mother tongue proficiency.	That's why it was said that children can learn their mother tongue because they only learn Portuguese and their heads are full of Portuguese; when they get home they do not know how to speak their mother tongue anymore, because they have forgotten. They will only look at you because they do not know how to speak. They should not forget to speak their mother tongue. When a white person is born, he learns in his language, grows up speaking his language, he is taught in his language until ... because it is his mother tongue. – Father
Escola Primária Completa 7 de Setembro	Nametil	Emakhuwa	Portuguese and Emakhuwa as a resource	At school, from Grade 1 to 3 Portuguese is spoken, but at Grade 1 both.	Mother tongue and Portuguese. Importance placed on Portuguese proficiency.	The advantages are that children learn through the bilingual education and then make the transition to Portuguese. Though it takes a while for a monolingual student to learn, bilingual teaching allows students to use both languages at the same time and understand the teacher when he speaks Portuguese. – Mother

SCHOOL NAME	ZIP/VILLA	MAIN LANGUAGE	IMPLEMENTED LANGUAGE OF INSTRUCTION	EXEMPLARY QUOTE ON IMPLEMENTED LANGUAGE OF INSTRUCTION (FROM TEACHER OR DIRECTOR)	LANGUAGE OF INSTRUCTION PREFERENCES	EXEMPLARY QUOTE ON LANGUAGE OF INSTRUCTION PREFERENCES
Escola Primaria Completa de Pavala	Pavala, Alua	Emakhuwa	Portuguese and Emakhuwa	Well, they know, once in some cases we are forced to use this mother tongue in our lessons, for the understanding of certain subject ...we are forced to use the mother tongue so they may understand a certain subject.	Most parents support using both mother tongue and Portuguese; one mother only wanted Portuguese instruction.	They agree because they already see that using only one language in the teaching children will be in disadvantage in the case of learning, so when we use both languages the advantages are greater. – Director
EPC Projecto	Projecto	Elomwe	Portuguese and Elomwe as a resource	Portuguese, when the student doesn't understand, I switch to the mother tongue which is Elomwe. Because if you say something and the child did not understand it in Portuguese, you should speak Elomwe.	Mother tongue and Portuguese. Importance placed on Portuguese proficiency.	They do agree. There was never a situation of disagreement. Many agree with it because it was the system's guidance: it should be the Portuguese language and everyone should keep up with their own child though knowing that at home they communicate in the local language: Elomwe, which must submit so that the learning process in togetherness may occur and that their academic training may advance. – Director
EPC de Namicutxane	Txola	Elomwe	Portuguese and Elomwe as a resource	It is Portuguese and the mother tongue. We use Elomwe as an alternative in the earlier grades.	Mother tongue and Portuguese. Importance placed on Portuguese proficiency.	Mother: Yes we do, we want our children to pass into the next grade, we don't want them to stop speaking Elomwe neither Portuguese, but to speak Elomwe, Portuguese and even Elomwe. Interviewer: What about the other Mothers, what is your say? Do you like when your children learn in Portuguese and Elomwe? Mother: Yes we do, because they all learn. – Mother