

Abstract Title Page
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Title: Multilingual Literacy Skill Development in Kenya: Results from Medium Scale Randomized Controlled Trials

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Abstract Body

Limit 4 pages single-spaced.

Background / Context:

Description of prior research and its intellectual context.

School fees were abolished in Kenya in 2003. Since then, gross primary enrollment rates have risen to above 100% (World Bank, 2011). This dramatic increase in enrollment over a short period put considerable strain on the government school system, which did not receive funding increases commensurate with the enrollment increases. In 1998, the national student–teacher ratio was 28 to 1. In 2011, it was 47 to 1 (World Bank, 2011). In addition to handling large classes, Kenyan teachers often deal with space and materials shortages that impair their ability to teach effectively (Sifuna, 2007; UNESCO, 2005).

Perhaps unsurprisingly, given the high student–teacher ratios, limited teacher training, and lack of sufficient text materials, reading outcomes for students attending Kenyan primary schools are generally poor, across languages (Piper, 2010). The results of a series of assessments conducted over the decade since fee abolition converge on a common finding: Kenyan children are not meeting the Ministry of Education’s benchmarks and on average read far below grade level (Mugo et al., 2011; National Assessment Centre, 2010; Onsomu et al., 2005; Piper, 2010; Piper & Mugenda, 2012; Wasanga, Ogle, & Wambua, 2010). For example, the 2011 national Uwezo study found that just 57% of third-graders could read basic sentences, and only 30% a second-grade-level story (Mugo et al., 2011).

In addition to a growing interest in improving these poor reading outcomes in Kenya, there is international focus on improving literacy, including through bilateral donors such as USAID and DFID. Regardless of the increased funding to the area, the research base, substantial in the developed world, remains quite modest in Sub-Saharan Africa. A recent DFID-funded review of literacy improvement programs in the developing world was silent as to whether the assumptions of multilingual literacy acquisition is similar in Sub-Saharan African language environments as was found in Western settings such as the US or Canada. While we know quite a bit about the rate of reading acquisition, and the rate of acquisition of reading skills for second language learners, that research base is geographically and linguistically limited. There is limited knowledge about how reading skills are acquired in multilingual environments in Sub-Saharan Africa. This paper presents the findings of three randomized controlled trials designed to improve student literacy outcomes in Kenya. Two of the studies have multiple data points, two assessments measure outcomes in two languages, and the other in four languages. Random selection and assignment methods were utilized to assign clusters of schools to treatment and control conditions in Kenya. The treatment groups varied, but in several of them, the interventions implemented a targeted literacy and numeracy instructional program with student books, teachers’ guides, ongoing teacher professional development and instructional supervision.

Purpose / Objective / Research Question / Focus of Study:

If children do not learn how to read in the first few years of primary school, they are at greater risk of dropping out. It is therefore crucial to identify and test interventions that have the potential of making a large impact, can be implemented quickly, and are affordable to be taken to scale by

the Kenyan government. The results from the PRIMR initiative, presented in this paper, have been scaled up by government starting in the beginning of the 2015 academic year. The results of these studies, then, have influenced instruction in Kenyan schools at national scale. The research design is essential to this contribution, as many pilot programs in the sector do not test the impacts of quality-improvement methods at a medium scale and with enough rigor to identify a causal impact. In this paper, we focus on early-grade literacy outcomes—reading fluency and comprehension—and how these literacy outcomes transfer between English and Kiswahili over time (in two studies), and across English, Kiswahili and one of two mother tongues in another study, and whether the effects differ in treatment and control schools. This presentation responds to the comments of participants at Spring 2015 SREE, as well as the studies published in 2015 (Piper, Jepkemei & Kibukho, 2015; Piper & Zuilkowski, 2015).

Setting:

The PRIMR study was conducted in 1483 government and nonformal slum schools in seven counties. The nonformal schools exist in peri-urban regions on the outskirts of urban areas—near enough that residents can commute to towns and cities via local transport, but still possessing many rural characteristics, such as agriculture being the predominant economic activity (Mandere, Ness, & Anderberg, 2010). In Nairobi, the largest city and capital of Kenya, more than half of the population lives in nonformal settlements, sometimes referred to as slums (United Nations Human Settlements Programme [UN-Habitat], 2013). Many of these settlements have no running water, access to electricity, or basic sanitation facilities. Low-cost, private nonformal schools are common alternatives to public government schools, particularly at the primary level. The nonformal schools participating in PRIMR generally are characterized by low tuition rates (less than US\$10 per month), substandard infrastructure (predominantly tin roofs and unfinished floors and walls), high student and teacher turnover, and lack of trained principals and teachers. The other setting for the PRIMR study was rural schools in seven counties, which were in quite different socioeconomic status settings.

Population / Participants / Subjects:

Each of the studies were externally valid to the counties they were implemented in. In one of the studies, during the January 2012 baseline, a clustered random selection of pupils resulted in a longitudinal sample of 1100 Grade 1 students in 117 total treatment and control schools. This is from a larger sample of more than 4300 students in more than 230 schools. At the October 2012 midterm, 827 longitudinal students remained in the schools they attended at the baseline, and at the endline, 657 students were present on the data collection day. The paper analyzes the characteristics of pupils that remained in the sample from those that were removed at baseline, to determine whether the results of the longitudinal study presented in this paper are sensitive to the substantial attrition from the longitudinal sample. Each pupil was assessed in 6 or more English and 6 or more Kiswahili literacy tasks, which slightly differed at each assessment period, as well as 7 mathematics subtasks. Student background information was collected, as were characteristics of the schools and the teachers that supported these teachers during the three data collection periods. To our knowledge, this is the largest longitudinal dataset investigating literacy outcomes at multiple points in time in Sub-Saharan Africa that utilized random selection and

assignment, and the other study is the largest randomized controlled trial assessing the impact of a mother tongue intervention in Sub-Saharan Africa.

Intervention / Program / Practice:

The PRIMR interventions discussed here centered on improving teacher practices related to literacy acquisition, moving teachers beyond using whole-class oral repetition as their primary pedagogical approach toward research-supported strategies to improve bilingual literacy acquisition. The literacy arm of the program included 150 structured lessons in both Kiswahili and English, and for the mother tongue study, one of two mother tongues (Kikamba or Lubukusu). Teachers received modest instructional aids, including pocket charts and flashcards with letters on them, and students received low-cost student books that aligned with the scripted lessons. In PRIMR classrooms, the student-to-textbook ratio was 1:1 rather than the standard 3:1 mandated by the national textbook policy and found in PRIMR schools at the baseline (Piper & Mugenda, 2012). The PRIMR books focused on letters, phonological awareness, and decoding skills. They also exposed students to controlled-text stories relevant to their local context, as well as stories for teachers to read aloud, with a heavy emphasis on comprehension strategies. Together, the PRIMR lessons and materials were intended to move children who had not attended preschool and had little exposure to the alphabet from basic letter knowledge to full fluency and comprehension within one school year.

A significant amount of PRIMR's time and technical expertise was spent on teacher professional development. Each participating teacher and head teacher received 10 days of training during the first year of implementation, and for literacy, approximately 7 of those days was spent per year. The training provided brief substantive overviews of reading topics, then allowed ample time for teachers to practice with the scripted lesson plans and activities. The mother tongue instructional intervention increased the number of days for training by 2 days for teachers and 3 days for TAC tutors. TAC tutors and instructional coaches, responsible for supporting teachers in clusters of schools, received 15 days of training to ensure that they would be capable of guiding teachers as they implemented the program. Given their critical role in shaping instructional improvement nationally in Kenya, these trainers are seen as critical to the program's ongoing success and scalability. In fact, it is the TAC tutors (for zones of formal schools) and instructional coaches (for clusters of nonformal schools) who provided the training for teachers and head teachers as well as follow-up support.

Research Design:

PRIMR was a randomized control trial of several instructional interventions. Random assignment to treatment or control (delayed commencement of program) group was conducted at the zone level—groups of 15 geographically proximate schools. Schools were randomly selected from the cluster and zone of schools to which they belonged, and the sample of schools in the baseline included one half of the total number of schools in each zone. Enumerators selected the pupils using simple random sampling by having all of the students in each grade line up and then randomly selecting five boys and five girls each from grades 1 and 2, using a sampling interval derived from the student population. When the child assessed in January 2012 was not available, another child was randomly selected from the classroom. These children are not assessed in this

paper, but their results are included in other research from this dataset (Piper, Zuilkowski & Mugenda, 2014).

Data Collection and Analysis:

The baseline data collection of the longitudinal study was completed in January 2012, at the beginning of the school year, and the midterm assessment was completed in October 2012, with the endline assessment in October 2013. For the mother tongue intervention study, the baseline was in March 2013, the midterm in October 2013, and the endline in October 2014. A battery of literacy tasks were undertaken for both English and Kiswahili using a version of the Early Grade Reading Assessment (EGRA) (Gove & Wetterberg, 2011), adapted for Kenya. The assessments were conducted by Kenyan field staff who had worked with PRIMR implementer RTI International since 2007 on several studies using EGRA. These assessors received five days of training before assessments commenced for both the baseline and year one studies. Interrater reliability scores were above 92% in all languages at all three data collection rounds.

Previous research using the non-longitudinal dataset from the PRIMR study shows statistically significant impacts on English and Kiswahili outcomes (Piper, Zuilkowski & Mugenda, 2014); for the poor (Piper, Jepkemei & Kibukho, 2014); and particularly in schools provided additional instructional support by TAC tutors (Piper & Zuilkowski, 2014). Impacts ranged from .3 to .5 standard deviations (Piper & Mugenda, 2014).

Findings / Results:

The analysis shows that the PRIMR treatment groups had a positive impact on the literacy outcomes of interest, including but not limited to letter sound identification fluency, oral reading fluency, the percentage of pupils who read at the MOE's benchmark, and reading comprehension, although not on all combinations of language, grade, and school type. The longitudinal analysis is able to determine how the language skills interact over time and across languages, and suggest that in some skills, pupils are transferring literacy skills from English to Kiswahili. This is unexpected based on the Western literature, which generally suggests language transfer in the other direction.

Conclusions:

The meaningful impacts of PRIMR on student achievement was used by the Ministry of Education, Science & Technology in the national scale-up of the PRIMR approach, which began in 2015. The mother tongue instructional program showed that impacts can be made using mother tongue, but the MoEST is still debating the possibility of using mother tongue in classrooms at large scale. The longitudinal results suggest that literacy acquisition in Kenya follows an unexpected path, and that additional research is required to understand what intervention points are available to more rapidly improve outcomes. PRIMR's research has shown that teachers can be sensitive to in-service teacher professional development (ITPD) if that ITPD is closely linked to the books and lesson plans used in schools, and if teachers are observed and supported frequently (Piper & Zuilkowski, 2015).

Appendices

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Appendix A. References

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