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# Primary Math and Reading (PRIMR) Program: Kenya

## Education Policy Study Report

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Prepared for  
Dr. Teresiah Gathenya, COTR, USAID/Kenya  
United States Agency for International Development

Prepared by  
Grace Bunyi, Isaac Cherotich, and Benjamin Piper  
RTI International  
3040 Cornwallis Road  
Post Office Box 12194  
Research Triangle Park, NC 27709-2194

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## Abbreviations

AIE	authority to incur expenses
CODE	Canadian Organization for Development through Education
DEO	District Education Officer
EdData II	Education Data for Decision Making project
EGRA	Early Grade Reading Assessment
FPE	Free primary education
GER	Gross enrolment ratio
HALI	Health and Literacy Intervention
IIEP	International Institute for Educational Planning
INSET	In-service education and training
KCPE	Kenya Certificate of Primary Education
KESSP	Kenya Education Sector Support Programme
KIE	Kenya Institute of Education
KNEC	Kenya National Examinations Council
KRT	Key Resource Teacher
MOE	Ministry of Education
NASMLA	National Assessment System for Monitoring Learning Achievement
NBDCK	National Book Development Council of Kenya
PRIMR	Primary Mathematics and Reading
PTE	Primary Teacher Education
QAS	Quality Assurance and Standards
QASO	Quality Assurance and Standards Officer
GoK	Government of Kenya
RTI	RTI International (trade name of Research Triangle Institute)
RTL	Reading to Learn
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAGA	Semi-Autonomous Government Agency
SbTD	School-based Teacher Development
SIMBA	School Instructional Materials Bank Account
SIMSC	School Instructional Materials Selection Committee
STC	School Tender Committee
TAC	Teacher Advisory Centre
TIQET	Totally Integrated Quality Education and Training
TSC	Teachers Service Commission
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
WERK	Women Education Researchers of Kenya

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Grace Bunyi  
Isaac Cherotich  
Benjamin Piper

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## Executive Summary

The objective of this policy study, carried out under the USAID/Kenya Primary Math and Reading (PRIMR) Initiative, was to highlight important policy issues that would need to be addressed in developing and implementing a national programme to improve the teaching and learning of reading in the lower primary classes in Kenya.

The government of Kenya has, over the years, allocated a proportionately large part of the national budget to education. As a result, and especially following the introduction of free primary education (FPE) in 2003, enrolment has risen tremendously. However, the same cannot be said about the quality of pupils' learning.

Multiple assessments of reading have reported poor reading achievement, including those carried out by the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) in 1998, Uwezo in 2010 and 2011, the National Assessment System for Monitoring Learning Achievement (NASMLA) in 2010, and RTI International/William and Flora Hewlett Foundation in 2010.

Global research literature on reading indicates six key institutional and policy factors that need to be considered in developing and implementing a national programme aimed at improving reading: the reading curriculum, instructional time, language of instruction, teacher training and continuing professional support for teachers, reading textbooks and other teaching-learning materials, and assessment. With regard to the six factors, a programme to improve reading in the lower primary should:

- Adopt a reading skills-based approach within the lower primary school reading curriculum so as to more easily help pupils develop the five basic reading skills;
- Maximize time during which lower primary pupils are actively engaged in learning to read;
- Introduce children to reading in the language they are most familiar with on arrival in school;
- Provide in-service training and continuing professional support for teachers on the components of literacy acquisition, appropriate pedagogical skills, and the appropriate use of teaching-learning materials;
- Use textbooks with adequate and appropriately graded reading texts and supplementary readers for pupils to practice reading; and
- Conduct learning assessments using tools that focus on the essential and teachable reading skills—letter recognition, phonemic awareness, phonics, oral reading fluency, listening and reading comprehension—to obtain reliable, easy-to-understand data on pupils' achievement in reading and therefore to get teachers, schools and their communities to work on improving how pupils learn to read.

An examination of the status of reading in Kenya with regard to the foregoing six essential factors revealed several areas of concern, thus:

**The reading curriculum** –The curriculum takes a language skills integration approach, with reading being one of the components (the others are listening, speaking, and writing) and with language development as the ultimate aim. The focus on reading generally and the skills is that children need to learn how to read in particular is limited.

**Instructional time** – Per week, Kenya allocates five 30-minute lessons each to English, Kiswahili and the mother tongues (that is, languages pupils speak at home and in their neighbourhoods). Lower primary lessons in Kenya are shorter than in neighbouring countries such as Uganda, Tanzania, Ethiopia, and Rwanda. Wastage of instructional time is also high due to teacher and pupil absenteeism among other reasons; and actual time spent on reading is as little as 3.6 minutes per lesson on average, according to reading and mathematics baseline data collected by PRIMR in a national sample of schools in January 2012.

**Language of instruction** –Kenya’s instructional-language policy of using the language of each school’s catchment area is designed to allow pupils to learn how to read in the language they know best when they arrive in school. However, the policy is not implemented; most schools prefer to use English as the language of instruction right from Standard 1. In some schools, children are introduced to reading in three languages in the lower primary school curriculum: the language of the catchment area, Kiswahili and English.

**Teacher training and continuing professional support for teachers** –Research indicates that there is insufficient focus on reading in the pre-service teacher education programme and little in-service education and training (INSET) in Kenya. Further, Teacher Advisory Centre (TAC) tutors rarely visit schools as intended, to provide lower primary reading teachers with continuing professional support in pedagogy and in instructional materials development and use, owing to a shortage of TAC tutors and funding for transport, among other reasons.

**Textbooks and other teaching-learning materials** –Within the FPE programme, the government is responsible for providing all school materials, including textbooks. The near-term policy is a textbook-pupil ratio of 1:3 in Standards 1 to 4 and 1:2 in Standards 5 to 8. The ratio of pupils in textbooks is much better in Kenya than in neighbouring countries, and the Ministry of Education should be commended for its efforts in this year. Unfortunately, studies continue to report serious shortages of textbooks in Kenyan classrooms.

**Assessment** – A number of learning assessment programmes (NASMLA, Uwezo and Early Grade Reading Assessment [EGRA]) with a focus on reading are under implementation in Kenya. It remains to be seen how the growing body of evidence in literacy assessments will impact policy and practice in this area.

Working collaboratively, the Ministry of Education (MOE) and several other organizations also have been implementing small early grade reading improvement programmes on a pilot basis in various parts of the country, some of which are starting to

show positive results. The intervention programmes include those being carried out by PRIMR in association with its periodic assessments; as well as Reading to Learn (RTL), Health and Literacy Intervention (HALI), Reading Kenya, Opportunity Schools, and Bridge International Academies.

The global literature on early grade reading, experiences from the above pilot programmes, and the status of reading instruction in Kenya point to important institutional and policy issues that need to be addressed in developing and eventually implementing a national strategy / programme aimed at improving the reading achievement of primary school pupils. The issues are as follows:

- **The reading curriculum** – refocusing the language curriculum to place greater emphasis on teaching and learning to read; and choosing, from the reading programmes now under implementation on pilot basis, the programme that has the best potential for improving reading on a national scale.
- **Instructional time** – allocating more time to reading and ensuring that time allocated to reading instruction is actually spent helping lower primary school pupils learn the technical and complicated skill of how to read.
- **Language of instruction** – determining the language(s) in which pupils in different catchment areas in the country will be introduced to reading; and when and how pupils are to be introduced to reading in a second and a third language.
- **Teacher training and continuing professional support for teachers** – developing a policy on INSET as well as time and resources for TAC tutors and Quality Assurance and Standards Officers (QASOs) to provide INSET and professional support for teachers implementing a reading improvement programme.
- **Availability of textbooks and other teaching learning materials** – modifying the textbook production and procurement policy to facilitate introduction of materials through the reading improvement program the MOE will choose to implement on a national scale.
- **Assessment** – institutionalizing learning assessment and ensuring that information obtained from assessment programmes is used to improve learning to read.

### **Mathematics Policy Activities**

PRIMR's emphasis on maths has been concurrent with the activities in reading. The report provides a fuller description of mathematics policy support activities, but they include:

- **Scope and Sequence workshop** – Held at KIE in September 2011, the scope and sequence workshop for maths allowed the MOE to look carefully at its syllabus and develop a scope and sequence framework for a new mathematics program designed to rapidly improve outcomes for pupils in Class 1 and 2.

- **TAC tutor training with the MOE** – In this three day training, MOE and KEMI officials trained TAC tutors and instructional coaches in how to use improved instructional methods to improve pupil outcomes in mathematics.
- **Teacher training by TAC tutors/coaches** – During this training, the trainers trained by PRIMR, MOE and KEMI implemented a hands-on training for teachers in how to implement the new PRIMR mathematics methodologies.
- **Ongoing support for mathematics teaching** – As of July 2012, PRIMR TAC tutors and coaches have been supporting instructional improvement activities in schools.
- **Baseline dissemination (via policy brief)** – The PRIMR team, using the baseline report and a policy brief developed to discuss maths outcomes, shared the findings of the baseline report and the policy recommendations for improving outcomes quite widely.
- **EGMA findings dissemination to National Assessment Centre** – During this workshop, held in August 2012, the PRIMR team was able to describe the status of mathematics achievement in Kenya. Particularly emphasized was the difficulty that young pupils have in both accuracy and fluency of mathematics outcomes. Participants developed policy recommendations to be shared with the National Assessment Centre technical committee.

# 1. Introduction

This education policy study was part of the Primary Mathematics and Reading (PRIMR) Initiative now under implementation on a pilot basis by RTI International in collaboration with Kenya's Ministry of Education (MOE), with funding from the U.S. Agency for International Development's (USAID's) Education Data for Decision Making (EdData II) project.

## 1.1 Objective and approach of the study

The objective of the study was to highlight important policy issues that would need to be addressed in developing and implementing a national programme to improve the teaching and learning of reading in the lower primary classes in Kenya.

The study approach involved reviews of published research and MOE documentation, as well as original interviews with Kenyan education stakeholders. *Appendix A* at the end of this report provides further details about the research methodology, including sampling of respondents, the design and administration of the interview instruments, and the procedure for data analysis. *Appendix B* contains copies of the interview guides used for primary data collection.

## 1.2 Education progress in Kenya

Since independence in 1963, Kenya has put a premium on education as key to national development and a route out of individual and societal poverty. Consequently, the government has, over the years, allocated a proportionately large part of the national budget to education. In 2005/2006, for example, the education sector accounted for 28% of the aggregate public expenditure. Much of this money goes to the primary school sub-sector. In the same financial year (2005/2006), for example, 56% of the education budget went to primary education. As a result, and especially following the introduction of the free primary education (FPE) programme in 2003, enrolment has risen impressively from a gross enrolment ratio (GER) of 88.2% (87.3% for girls and 88.9% for boys) in 2002 to 109.8% (109.8% for boys and 109.9% for girls) in 2010. However, this growth in numbers has not been matched by growth in the quality of pupils' learning, even in important primary school curriculum areas such as reading.

## 1.3 The importance of learning to read in the early primary classes

The struggle to improve education quality in Kenya must focus substantially on improvements in reading at the lower primary school level, for several reasons. Firstly, literacy, which in school contexts is developed through reading lessons, is associated with individual and national benefits. At the individual level, lack of literacy is strongly correlated with poverty, a lack of empowerment, and low self-esteem. On the other hand, literacy is associated with the level of economic development that numerous nations have attained (UNESCO, 2006).

Secondly, in school, reading is the foundation for other learning activities in the classroom. Indeed, much school-based learning is accomplished through reading. Consequently, few would contest Cook-Gumperz's (1986) assertion that development of reading skills is, to a large extent, the purpose and product of primary education. The implication here is that it is critically important for pupils to acquire reading skills as quickly as possible and definitely before they graduate from the lower primary classes.

#### **1.4 The reading problem in Kenya**

Learning assessment results have shown poor learning of literacy and numeracy in primary schools in Kenya. In 1998, a Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) assessment of English literacy of Standard 6 pupils reported that while 64.8% of Standard 6 pupils had reached the minimum level of mastery, only 23% had attained the English reading mastery level deemed desirable for successful learning in Standard 7 (Nzomo et al, 2001). Other SACMEQ findings indicated that 12.2% of the Standard 6 pupils had not even reached the minimum reading mastery level.

More recent reading assessment studies have also reported poor reading attainment. In 2010 and 2011, Uwezo conducted the *Are Our Children Learning?* learning achievement assessment studies. The studies assessed children between 6 and 16 years of age in reading and mathematics in their homes. The 2011 study reported that only 30% of Standard 3 children could read a Standard 2 level story in English or Kiswahili, and that 4% of Standard 8 children could not read a Standard 2 level story in English (Uwezo Kenya, 2011).

Further, the 2010 government's National Assessment System for Monitoring Learning Achievement (NASMLA) study of literacy in English at Standard 3 reported similarly poor reading attainment (Kenya National Examinations Council [KNEC], 2010). The report indicates that reading achievement stood at a mean score of 297.58, which was below the standardized mean of 300. An analysis of competency-level attainment revealed that less than half of the pupils (47.7%) attained the desirable levels 3 and 4 of literacy.

Correspondingly, poor reading attainment was reported by an Early Grade Reading Assessment (EGRA<sup>1</sup>) study conducted by RTI in Central and Luo-Nyanza provinces in Kenya in September and October 2009 (funded by the William and Flora Hewlett Foundation). The study assessed Standard 3 pupils in reading in English, Kiswahili and two mother tongues, or languages pupils spoke at home (Kikuyu and Dholuo), in keeping with the language policy (Piper, 2010). The assessments included a variety of sub-tasks such as letter naming fluency, letter sound fluency, and syllable fluency, as well as phonemic awareness; and word naming fluency, unfamiliar word naming fluency, oral

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<sup>1</sup> EGRA is a one-on-one oral assessment requiring about 15 minutes per child. It is a simple diagnostic of individual student progress in reading. More information: <https://www.eddataglobal.org/reading/index.cfm>.

reading fluency, and reading comprehension. The study reported that 14% of pupils tested in English, 18.6% in Kiswahili, 14.8% in Gikuyu, and 20.3% in Dholuo in the last term of Standard 3 could not read a single word correctly.

Similarly, the January 2012 PRIMR Initiative baseline evaluation of basic literacy of Standards 1 and 2 pupils in formal and non-formal schools in Nairobi, and in formal schools in Central and Rift Valley provinces, reported deficiencies in pupils' foundational reading skills. The study found that 35% of Standard 2 pupils in these three provinces could not read a single word of a short Kiswahili story, and that 30% could not read a word of an English story. Furthermore, the PRIMR baseline data showed that only 6% of Standard 2 pupils could read fluently and understand what they read.

In their recommendations, all the foregoing studies underscored the need for interventions to address poor reading achievement among primary school pupils in Kenya. Indeed, given the unacceptably poor reading achievements well documented in the studies referred to above, a dramatic shift in the teaching and learning of reading should be a top priority in Kenya in our pursuit of the quality Education for All goal and associated social economic benefits espoused in Kenya Vision 2030 (Republic of Kenya [GoK], 2007).

## 2. Global Research on Early Grade Reading

The reading problem is not unique to Kenya. Because of the extreme importance of reading, and the failure of school systems to develop reading skills in pupils early enough, researchers have sought to investigate the factors that contribute to effective reading programmes in the early years of education. A reading of the resulting research literature reveals six key institutional and policy issues that need to be considered in developing and implementing national programme aimed at improving reading. According to Gove and Cvelich (2011) and DeStefano (2012), the six issues involve (1) the reading curriculum, (2) instructional time, (3) language of instruction, (4) teacher training and continuing professional support for teachers, (5) reading textbooks and other teaching-learning materials, and (6) assessment.

### 2.1 The reading curriculum

Reading scholars in multiple languages have established that in virtually all alphabetic languages—i.e., languages in which print can be decoded, which refers to the breaking down of print into sounds—learning to read involves acquiring five basic skills:

1. **Phonemic awareness**, which refers to focusing on, manipulating, breaking apart, and putting together sounds orally;
2. **Phonics**, or linking written letters to their sounds and forming spelling patterns;
3. **Fluency**, which refers to achieving speed, accuracy, and expression in reading;
4. **Vocabulary**, which refers to knowing words and their meaning; and

## 5. **Comprehension** or understanding what one reads or hears.

Based on the above understanding of what constitutes learning to read, reading researchers recommend adopting a reading skills-based approach to the lower primary school reading curriculum so as to more easily help these pupils develop the five basic reading skills. It seems evident that the primary focus in Kenyan classrooms is on language, rather than on reading. Experience from across sub-Saharan Africa shows that without a focus on acquisition of the reading skill, children do not receive the quality of reading outcomes that they otherwise can.

### **2.2 Instructional time**

Adequate time to practice reading is crucial in learning how to read. Most successful reading programmes allocate 40 minutes to daily reading lessons. However, even when adequate time for reading lessons is provided for on the official timetable, actual reading learning time could be lost through teacher and or pupil absenteeism and poor use of classroom time.

Research has shown that with all other things being equal, students who spend more class time on a learning task perform better than students who spend less time (Berliner, 1990, as cited in DeStefano, 2012). In addition, research has shown that children who arrive at school less prepared to learn require more time to reach a desired achievement level. This is the case with many Kenyan children with regard to learning how to read, as they come from non-literate backgrounds and enter Standard 1 without any pre-school education experiences. Consequently, there is need to be concerned about the time pupils spend actively engaged in learning how to read, as this is not the same as the time that a teacher and pupils are in class. Time for active engagement in learning to read could be lost through time spent on other language skills, class management issues, and other non-learning activities.

### **2.3 Language of instruction**

Decisions on and implementation of language-in-education policies are important considerations in complex multilingual environments such as Kenya, where constitutionally, Kiswahili is the national language and Kiswahili doubles with English as official languages. In addition, the Constitution (GoK, 2010) declares that the state shall promote and protect the diversity of languages of the people of Kenya, which are estimated to be 42 in number (Abdulaziz, 1982).

The language of instruction fundamentally impacts whether a child is able to read and learn. According to Dutcher and Tucker (1997, as cited in Gove & Cvelich, 2011), learning in one's first language is "essential for the initial teaching of reading." This is because children arrive at school with oral language skills such as vocabulary and phonemic awareness in the language they speak at home and in their neighbourhoods (mother tongue). Introducing children to reading in the language the child knows best on arrival at school makes learning to read easier, as children build on the language

competencies they already have in their mother tongues. Language policies that support learning initial reading in the mother tongues meet student learning needs better than those that mandate teaching and learning of reading in a second or third language. There is also a need for policies that guide the management of the transition from the mother tongue to the second language to ensure that the transition is not detrimental to learning to read.

## **2.4 Teacher training and continuing professional support for teachers**

Research examining teacher quality confirms the logical conclusion that poor quality of pupils' learning correlates strongly with poor quality of teachers' teaching. On the other hand, effective teaching is developed through a variety of learning opportunities for teachers, including pre-service training, in-service education and training (INSET), and on-going professional support.

With regard to reading, research has shown that many teachers do not understand how children learn how to read and that they lack the pedagogical skills they need to teach this skill. Interventions that train teachers in the components of literacy acquisition, appropriate pedagogical skills, and the appropriate use of teaching-learning materials have reported positive gains in children learning how to read. EGRA Plus: Liberia, another EdData II intervention and randomized controlled trial in early grade reading improvement implemented by RTI, is a good example of one such programme. In the final assessment, it was found that after 1½ years of the intervention, the average pupil in the experimental group outperformed his / her peers in the control group in reading fluency and reading comprehension by a factor of four, showing substantial gains in a short period of time.

## **2.5 Reading textbooks and other teaching and learning materials**

Reading textbooks and other teaching-learning materials are critical components for learning to read. In particular, textbooks with adequate and appropriately graded reading texts for pupils to practice reading have been shown to be critical in teaching and learning how to read in the early grades. In addition to textbooks, children need supplementary readers to practice reading at school and at home. In a study in the Gambia, Sprenger-Charolles (2008, as cited in Gove & Cvelich, 2011) found that 90% of students with higher reading competencies had reading books at home. Importantly, children need to have access to textbooks, supplementary readers and other reading materials.

## **2.6 Assessment**

Teachers and parents need to know how well (or how poorly) their pupils are learning how to read. More specifically, they should understand areas of reading skill in which their pupils are strongest or weakest. Appropriate assessment-based information on reading in the lower primary classes enables teachers and parents to take the necessary

action to ensure that pupils learn to read before they graduate from these classes. The EGRA instrument, for example, in which test items are closely aligned to the essential and teachable reading skills—letter recognition, phonemic awareness, phonics, oral reading fluency, listening and reading comprehension—and which produces reliable, easy-to-understand data on pupils’ achievement in reading, has been found to be very influential in getting teachers, schools and their communities to improve how pupils learn to read.

### **3. The Status of Reading Instruction in Kenya**

Improving pupils’ achievement in reading and overall learning outcomes in Kenya will call for implementation of a national programme that is informed by research findings on the components of an effective reading improvement programme, as discussed in the foregoing section of this report. A good place to begin thinking through such a programme is to assess the status of reading instruction in Kenya based on the six components that have been found to impact on learning to read: the reading curriculum, instructional time, language-of-instruction policy, teacher training and continuing professional support for teachers, textbooks and other teaching-learning materials, and assessment.

The following sub-sections discuss and assess the status of reading instruction in Kenya—firstly, through an examination of the status of each of the six important components that an effective reading improvement programme needs to consider; and secondly, by presenting some examples of reading improvement programmes being implemented on a pilot basis in Kenya.

#### **3.1 The status of reading instruction in Kenya with regard to the six critical components of an effective reading programme**

##### **3.1.1 The reading curriculum**

A review of educational policy in Kenya and discussions with senior Kenya Institute of Education (KIE) and MOE officers indicate that there is currently no policy on the teaching of reading to guide curriculum development in this area. In particular, discussions with KIE officers and a review of the lower primary curriculum have revealed only a limited focus on reading generally and the skills that children need in order to learn how to read in particular. The curriculum takes a language skills integration approach, with reading being one of the components (the others are listening, speaking and writing), and with language development as the ultimate aim. In discussions with senior KIE officers, the Director of KIE explained, ‘*We should teach all the four skills concurrently so that you are teaching language acquisition*’ and ‘*reading is only one component*’, and ‘*the KIE syllabus talks about the four language skills. We cannot isolate reading.*’

### 3.1.2 Instructional time

The lower primary (Standards 1 to 3) curriculum consists of 10 subjects, with varying numbers of 30-minute lessons a week per subject. Languages—English, Kiswahili and the mother tongues—get five 30-minute lessons per week. According to the PRIMR baseline study, Kenya allocates much less time to language lessons than do its neighbours. For example, Uganda allocates 90 minutes, Tanzania 60, Ethiopia 45, and Rwanda 45 minutes.

On the other hand, research findings indicate that wastage of instructional time is high in Kenya. In the NASMLA study, for example, 58.9% of teachers identified time wastage as a factor affecting syllabus coverage either to a very large extent or to a large extent. The two Uwezo studies (2010 and 2011) as well as the NASMLA study indicated that time wastage was due to high pupil and teacher absenteeism, among other reasons.

The 2011 Uwezo study reported that in many of the districts studied, 40% of the pupils missed school daily, while the 2010 study reported that absenteeism was highest among Standard 1 and 2 pupils. In the NASMLA study, over 70% of Standard 3 pupils studied reported that they were sometimes absent from school. With regard to teacher absenteeism, the 2011 Uwezo study reported that 13% of teachers were absent from school daily.

With regard to actual time spent on reading in lower primary classrooms in Kenya, classroom observation data in the PRIMR baseline study indicated that very little time (the equivalent of 3.6 minutes per lesson on average) was spent on reading, as the focus in the English and Kiswahili lessons was more heavily on grammar rather than on reading. In another study (the MOE 2007) it was found that little time—an average of 2 minutes—was spent on reading in class 6.

### 3.1.3 Language of instruction

In Kenya, many education commissions have tried to give policy direction as to what language(s) should serve as the medium of instruction and what language(s) should be taught as subjects of the curriculum at what levels of primary education (GoK, 1964, 1976, 1998). Current language-in-education policy is more in line with the recommendations of the second post-independence commission, popularly known as the Gachathi Commission (GoK, 1976). The commission made the recommendation *‘to use as a language of instruction the predominant language spoken in the school’s catchment area for the first three years of primary education’* (Recommendation 101, p. 54) and stated that English should *‘supersede the predominant local language as the medium of instruction in Primary 4’* (Recommendation 102, p.55). With regard to the language(s) to be taught, the commission recommended that English be taught as a subject from Primary 1.

For this policy study, discussions with senior MOE officers revealed that in their understanding, categorized by the medium-of-instruction policy, three scenarios of

primary schools emerge: mother tongue, Kiswahili, and English-medium schools. The instructional language policy in Kenya thus allows for pupils to learn how to read in the language they know best when they arrive at school. This is in agreement with research findings indicating that children learn how to read better when they are introduced to reading in the language they know best.

However, this progressive instructional language policy is not implemented as intended, as research (Bunyi, 1997; Muthwii, 2002; Piper, 2010) and the senior MOE officers interviewed in this study have indicated. For a variety of reasons, most schools prefer to use English as the language of instruction right from Standard 1.

On the other hand, in some schools, children are introduced to reading in all the languages in the lower primary school curriculum: the local mother tongue, Kiswahili, and English. The complex task of learning to read is made more difficult by simultaneous instruction in reading acquisition in these languages, often without the teacher having specific training on how this should be done.

### **3.1.4 Teacher training and continuing professional support for teachers**

#### ***Pre-service teacher training***

Kenya has a long history of pre-service training for primary school teachers, which goes back to the early years of the twentieth century when Christian missionaries introduced Christianity and Western education into Kenya. Currently, primary school teachers are trained in government and private colleges, and there are in fact many trained but unemployed teachers in the country.

With regard to the training of teachers to teach reading in the lower primary classes, research indicates that there is insufficient focus on reading in the Primary Teacher Education (PTE) curriculum and that trainee teachers are not trained in appropriate pedagogical skills for teaching reading. Consequently, trainee teachers graduate from the PTE programme ill-equipped to teach reading in the lower primary classes (Bunyi, Wangia, Magoma, & Limboro, 2011).

#### ***In-service teacher education and training***

Although government policy documents dating as far back as the first post-independence education commission (GoK, 1964) have underscored the importance of INSET, the *Sessional Paper No. 1 of 2005* (GoK, 2005) acknowledged that there had been little INSET and that few teachers had had opportunities to participate in INSET activities. This admission by the MOE confirms research findings that report lack of INSET programmes for teachers. In a study of reading instruction in Kenya, Onyamwaro (1990, as cited in Commeyras & Inyega, 2007), for example, found that 70% of the teachers studied had never attended any form of INSET. In its turn, the PRIMR baseline data showed that teachers in the three provinces studied (Nairobi, Rift Valley and Nyanza), on average, had less than 5 days of INSET in the past 3 years, with a very high percentage

citing no INSET at all. NASMLA reported that 37.8% of the teachers studied had not attended any INSET.

### ***Continuing professional support for teachers***

Provision of professional support for teachers in Kenya is seen as the responsibility of Teacher Advisory Centre (TAC) tutors. Created in the early 1970s, TACs were hosted in primary schools so that TAC tutors could be assisting teachers to develop materials and deal with pedagogical and classroom management issues. Each TAC tutor has approximately 15 to 17 schools which constitute an education zone, of which there are 1,052 in the country. According to the Director of Quality Assurance and Standards and the INSET officer interviewed, currently some of these zones do not have TAC tutors. A shortage of TAC tutors, among other reasons, results in teachers receiving little professional support from TAC tutors. Teacher respondents in the PRIMR baseline study, for example, reported being visited very infrequently by TAC tutors, with many saying that they were visited less than once per year.

### **3.1.5 Textbooks and other teaching-learning materials**

Pupils having access to textbooks is associated with improved learning achievement. The PRIMR baseline study, for example, found that pupils who had an English textbook achieved fluency rates 54% higher than pupils who did not. Analysis of educational policy within the current study has revealed that the MOE has clear policies regarding the procurement of teaching-learning materials. Within the FPE programme, the government is responsible for providing all school materials, including textbooks; and the MOE's long-term policy on textbooks is one course book per pupil. In the short term, the recommended textbook–pupil ratio is 1:3 in Standards 1 to 4 and 1:2 in Standards 5 to 8.

Studies of availability of textbooks in Kenyan primary schools report different findings. A study conducted and reported in 2007 by the Ministry of Education, the National Audit Office and UKaid (Republic of Kenya, 2009) reports that by 2008, 58 million textbooks had been purchased and that pupils in 55% of Kenyan primary schools no longer needed to share textbooks in Maths, English and Kiswahili. The NASMLA report, of 2010 (KNEC, 2010) indicates that 67.7% of the schools studied reported they had adequate textbooks. Previous research shows that textbook provision were of similar levels (DFID, 2006). However, with regard to reading and the availability of language textbooks in actual classrooms, the PRIMR baseline data indicated that in the three provinces studied, more than half the pupils had neither an English nor a Kiswahili textbook. The implication here is that while textbooks might have been purchased and are available in schools, they may still not be getting into the hands of pupils in the classrooms.

### **3.1.6 Assessment**

National examinations and the Kenya Certificate of Primary Education (KCPE), in particular, have been the only sources of information on students' learning in Kenya. Currently, however, a number of learning assessment programmes with a focus on

reading exist in Kenya. These include the NASMLA learning assessment tests for Standard 3 completers (in their first term of Standard 4) in reading and mathematics in 2010. The Uwezo civil society assessment, having assessed outcomes in 2010, 2011, and now in 2012, has contributed a good deal to the population's awareness of the importance of reading and having a literate culture. The EGRA tool has been administered several times, starting from 2007. These tools have increased the amount of information about literacy outcomes in lower levels in Kenya. It remains to be seen how the growing body of evidence in literacy assessments will impact policy and practice in this important area.

### **3.2 Examples of interventions to improve reading in Kenya**

The MOE has recognized the importance of reading as one of the vital tools in the realization of its vision in the draft policy paper *A Policy Framework for Education* (GoK, 2012b), now under discussion. Indeed, in Chapter Four on the *Structure of the Curriculum*, in the section on *curriculum content*, the draft policy paper identifies the ability to read and comprehend as some of the key skills and competencies needed of all pupils for education to play its rightful role in the realization of Vision 2030. The Policy Framework states that the curriculum will focus on developing these critical skills (among others) and indicates that the '*Government shall review the percentage time within the curriculum allocated to the development of these skills and the allied assessment weighting given to each throughout the curriculum*' (p. 45).

On the other hand, concerned about the poor reading achievement of primary school children in Kenya, the MOE has been working with various partners on small pilot reading interventions in several places in the country. The interventions include: the PRIMR Initiative, the Reading to Learn (RTL) programme, the Health and Literacy Intervention (HALI) programme, the Reading Kenya programme, Opportunity Schools, and Bridge International Academies. The following sub-sections introduce each of these pilot interventions, and present results where they exist.

These few programmes are probably complemented by others in Kenya that the policy study team is not aware of. The PRIMR policy study team was tasked with sharing the existence and impact of these programmes on student outcomes. It is important to note that, as a heavily research-oriented programme, PRIMR is not seeking to scale up, as that would be inappropriate given the lack of evidence, at this juncture, of the impact of PRIMR. Rather, PRIMR is using the current policy study to offer the MOE an opportunity to explore policy options from which to choose what is best for Kenya.

#### **3.2.1 The Primary Math and Reading (PRIMR) Initiative**

As noted earlier, the PRIMR Initiative of which this study is a part is funded by USAID, with RTI as the implementing agency. The pilot phase of the programme (2011–2014) is currently in 500 urban and rural formal and non-formal schools, where a new approach focusing on improving student achievement in reading in Kiswahili and English in Standards 1 and 2 is under implementation. Key components of PRIMR are:

- Developing appropriate scope and sequence for teaching reading in Standards 1 and 2, based on the national syllabus;
- Developing and providing lesson plans, books, and instructional materials;
- Providing in-service training of implementers, including Standard 1 and 2 Kiswahili and English teachers, TAC tutors, and coaches;
- Providing policy support to the MOE for instructional improvements across the primary education sector; and
- Supporting the creation and expansion of a reading culture in local communities.

The key partners in the PRIMR Initiative are RTI, MOE, KIE, the Teachers Service Commission (TSC), KNEC, and the local communities in the programme areas.

**Results:** Given the recent start date of PRIMR, there is no research-based evidence yet of the impact of the approach in Kenyan classrooms. Research in progress shows that the take-up of the instructional model in PRIMR is high, but more time is necessary to determine the impact on student outcomes, even with this short time frame.

### 3.2.2 The Reading to Learn Programme

Working with the MOE, the Aga Khan Foundation is implementing the RTL intervention in the educationally marginalized Kwale and Kinango districts of Coast Province. The RTL intervention adopts the whole-language approach to reading. That is, instead of starting from the sound (as in the phonics approach) or from the word (as in the look-and-say approach), the RTL approach starts from the whole text in the form of a story, and moves to the sentence, the word, the sound, and finally the letter. At the start of the intervention, teachers were trained for three days on using the approach to teach reading in English and Kiswahili. RTL teachers write the stories they use in class themselves. Therefore, a key focus of the training is on how to write the stories and how to use the stories in teaching. TAC tutors and RTL project workers provide professional support to the teachers in their schools.

**Results:** An external evaluation funded by the Hewlett Foundation and undertaken by the African Population and Health Research Center, a Kenyan research firm, showed no statistically significant impact on student outcomes in reading due to the RTL approach in Kenya. In Uganda, on the other hand, the program had a statistically significant impact.

### 3.2.3 The Health and Literacy Intervention

The reading component of the World Bank and Hewlett Foundation-supported HALI intervention in Kwale and Msambweni districts in the Coast Province aims at improving lower primary pupils' reading achievement over two years in 100 primary schools in the two districts. The intervention has a teacher-training component in which teachers are trained on how to develop their pupils' oral language skills—phonological awareness and vocabulary—and how to teach the relationship between letters and sounds in a systematic

way in 35-minute daily reading lessons. The intervention also has a Buddy Reading component within which Class 6/7 mentors read with a group of children from Class 3 using developmentally appropriate reading books following a simple curriculum of five reading-based activities.

**Results:** Reading tests administered after 6 months of the implementation of the intervention showed that children enrolled in the literacy intervention schools outperformed those in control schools, particularly in letter identification and the skill of decoding basic words.

### **3.2.4 The Reading Kenya Programme**

The Reading Kenya intervention is an initiative of the National Book Development Council of Kenya (NBDCK), the Canadian Organization for Development through Education (CODE), and MOE. The intervention is in Kisii in Western Kenya and has the aim of promoting literacy through use of child-centred pedagogy and developing a reading culture through provision of libraries. The programme started with the training of *trainers* in 2010. Training of *teachers* started in 2011.

**Results:** An assessment was conducted in March 2012 but the results are not yet available.

### **3.2.5 Opportunity Schools**

The Opportunity Schools initiative is a pilot programme, implemented by the Women Education Researchers of Kenya (WERK), based in Kajiado Central and Loitokitok and using Maasai language materials. The program is focusing on 20 villages initially, with plans to expand to 60 districts by 2015. The programme has just begun, and as yet, has no results, but it is based on promising research on the power of mother-tongue educational interventions.

### **3.2.6 Bridge International Academies**

Based in the informal settlements of Kenya's urban centres, the Bridge International Academies have been implementing literacy programmes, amongst many other interventions focused on improving education quality in Kenya. Bridge International Academies is currently working in more than 70 schools, with plans for rapid expansion. Their programme is heavily scripted and primarily implemented in English as the language of instruction.

**Results:** Bridge International reports show significant gains in reading achievement, over their baseline scores and over the scores of other schools serving similar populations.

## **4. Key Issues That a National Strategy / Programme to Improve Reading Would Have to Address**

Given what the global literature has to say on the key components of effective reading instruction (the reading curriculum, instructional time, language of instruction, teacher training and continuing professional support for teachers, textbooks and other teaching and learning materials, and assessment), and the status of reading instruction in Kenya with regard to these key components, important institutional and policy issues emerge that need to be addressed in developing and eventually implementing a national strategy / programme aimed at improving the reading achievement of primary school pupils. This section of the report discusses the key issues related to each component.

### **4.1 The reading curriculum**

It is clear that the implementation of a programme to improve reading in Kenya on a national scale will require a policy to guide curriculum development, among other things. Since reading is such a key learning area in the lower primary classes, it will be important to consider an approach to the teaching of language that puts particular emphasis on reading.

Some of our participants in the current study argued that the current approach to curriculum, which stresses language skills integration at the expense of a focus on the skills required for literacy acquisition, has not maximized the potential of young Kenyan learners in the area of reading acquisition. As evidence, they point to the poor reading achievement reported in virtually all the assessments conducted in the country recently.

Since Kenya is already implementing several reading improvement programmes on an experimental basis, the implementation of a national reading strategy will need to consider which of the programmes that are being piloted has the potential of improving reading on a national scale. This consideration should investigate both the impact alone and the impact relative to costs.

### **4.2 Instructional time**

With regard to allocation and use of adequate time for the teaching and learning of reading in the lower primary classes, Kenya will have to address two critical issues in the implementation of a national reading improvement programme. The two issues are: (1) finding more time to allocate to reading instruction, and (2) ensuring that time allocated to reading instruction is actually spent on helping lower primary school pupils learn the technical and complicated skill of how to read.

If the experimental reading improvement programmes now under implementation in Kenya show that more time needs to be allocated to reading lessons, as is the case in neighbouring countries and elsewhere, a review of the lower primary curriculum could point to how additional time for the reading lessons could be found.

On the other hand, ensuring that time allocated to reading instruction is actually spent on the teaching and learning of reading will require effective quality assurance mechanisms. Although the Directorate of Quality Assurance and Standards has an elaborate infrastructure with quality assurance and standards officers (QASOs) at national, provincial, district and zonal levels, and a policy of one QASO for every 30 schools, information gathered through interviews with participants in the current study indicated that quality assurance is not effectively conducted, for various reasons.

According to the Director of QAS, there is a serious shortage of QASOs in the country. Further, the Director of QAS pointed out that in the districts, QASOs do not have authority to incur expenses (AIE), and that they are therefore dependent on the District Education Officer (DEOs), who—according to the Director of Field and other Services—focus more on administrative matters. He said, *‘Most of their (DEOs’) time is spent on administrative matters so little time is spent on learning’*. In this circumstance, the DEOs are unlikely to give funding priority to QASOs to facilitate their transportation. Further, especially in the new districts, there is no physical infrastructure and QASOs do not have appropriate office spaces in which to hold discussions with teachers.

One way in which constraints on QASOs could be reduced is by having separate budget allocations for their work, with particular earmarks for transport funds for observing education quality, and with reading instruction as a key indicator. Further, MOE could consider articulating policies with a strong focus on supporting learning above everything else. This would change the emphasis of the system towards educational quality improvement, which would fit well with the ideas in the current reform discussions.

### **4.3 Language of instruction**

The language-of-instruction policy in Kenya is in consonance with research showing that the best language in which to teach reading is pupils’ mother tongue or the language with which they are most familiar. However, as indicated previously, the reality on the ground is that the policy is not implemented, with many schools choosing to introduce children to reading through English and Kiswahili. The RTI/Hewlett Foundation study in 2010 showed that mother tongue was used very infrequently in classrooms. As a result, children have difficulty in engaging with basic reading instruction, as there are schools where children are introduced to reading in three languages: the local mother tongue, Kiswahili, and English.

In the current study, many of the officers interviewed were of the view that a national reading improvement programme should be in all the languages in which lower primary school pupils in different language-of-instruction schools are introduced to reading: mother tongues, Kiswahili, and English. The Director of QAS, for example, talked at length about the language policy and gave the example of Turkana District, where he said *‘real rural schools with real rural teachers’* could be found and where the mother-tongue policy was therefore being implemented. The Senior Deputy Director of Policy, Partnerships and East African Community Affairs said, *‘The ministry wants reading in*

*three languages*’ and *‘The ministry wants reading in the mother tongue included (in reading improvement programmes).’* The Director of KIE in her turn pointed out that the policy was informed by the need to *‘introduce the child to learning in a language they are familiar with.’* Some of the officers expressed the view that otherwise, an intervention could be seen as being inequitable in not focusing on the mother tongues that, going by the policy, should most commonly be used in schools in the rural areas and therefore in relatively disadvantaged schools.

On the other hand, the officers showed awareness of the difficulties associated with the implementation of the language policy. The Director of QAS, for example, identified the difficulties thus: *‘Parents force teachers to teach in English’*; *‘Teachers lack skills and knowledge to teach mother tongues’*; *‘They also lack skill and mastery of content of mother tongue since the teachers are very young and have not learnt the languages themselves’*; *‘Materials in mother tongues are not available, especially for languages such as Somali and Borana’*; *‘The teacher education curriculum does not come out explicitly on skills and methods for mother tongue exposure’*; and *‘Education officers who are administrators grading and assessing teachers don’t help either since they grade those schools where kids are taught in English and are good in it better.’*

Given that the lower primary curriculum in Kenya encompasses Kiswahili, English, and mother tongues, the implementation of a national reading improvement programme will need to address the issue of the language(s) in which pupils in different catchment areas in the country will be introduced to reading. Further, the issue of when and how pupils are to be introduced to reading in a second and a third language will also have to be addressed, as countries have very different policies on the timing within early primary when children are expected not only to be fluent in oral English, but also to be able to decode and comprehend English. Uganda, for example, requires that the transition from oral to reading English occurs in the third term of Standard 1. This question is different altogether from the one about what level to transition from local languages to English with respect to language of instruction.

Once the decisions on the foregoing issues are made, the necessary actions for effective implementation of the policies will have to be put in place. Such actions include teacher training; INSET and teacher deployment, production and distribution of appropriate textbooks, teachers’ guides, and other materials for teaching reading.

## **4.4 Teacher training and continuing professional support for teachers**

### **4.4.1 Teacher training**

The implementation of a reading improvement strategy / programme will require vigorous INSET activities for the relevant teachers throughout the country at the outset, as well as continuing support of all implementing teachers in the country. Consequently, it is critical that the INSET policy environment be supportive of such activities.

Information gathered in the course of the current study indicated that an INSET section was first established in the MOE in 1999 within the Quality Assurance and Standards (QAS) directorate but was later moved to the Field and Other Services Directorate. INSET was also given recognition in the MOE through identification of INSET for primary teachers as one of the 23 investment programmes in the Kenya Education Sector Support Programme 1 (KESSP 1) 2005–2010 (MOE, 2005).

All the same, INSET has not taken deep root in the MOE. There is as yet no policy on INSET; neither is it an annual programmed activity. Also, the INSET section in the MOE is thinly staffed, with only two officers. Discussions in the interview with the INSET officer revealed that the MOE does not have an active and sustainable INSET programme of its own. Rather, the section works on small projects sponsored by different education partners, which prove difficult to coordinate and do not lend themselves well to a national reading improvement programme. Since the INSET section does not have officers of its own, it depends on TAC tutors and QASOs to conduct INSET, which requires that these officers be allowed the time to undertake such activities.

#### **4.4.2 Continuing professional support for teachers**

Reading improvement research shows that teachers require continuing professional support to enable them to acquire new knowledge and learn how to use new teaching-learning methods and materials effectively. In Kenya, successful implementation of a national programme to improve reading will depend on the quantity and quality of support the at this juncture tutors provide to the relevant teachers. However, discussions with the senior MOE officers interviewed revealed that several issues concerning TAC tutors require policy interventions to enable TAC tutors the necessary continuing professional teacher support. The key issues to be addressed are (1) multiple roles of TAC tutors, (2) inadequate resources, (3) motivation for TAC tutors and teachers, and (4) lack of clarity regarding the supervision of TAC tutors.

##### ***Multiple roles of TAC tutors***

Virtually all MOE officers interviewed, including the Education Secretary, Director of QAS, and Director of Field and other Services indicated that due to shortages of education field officers, TAC tutors play a variety of roles and that therefore they rarely visit schools for professional support purposes. Instead, TAC tutors have become what some interviewees referred to as ‘DEOs’ *errand boys*.’ The Director of QAS commented thus: ‘*TAC tutors are not there [for teacher support work] because of shortage of QASOs. They are doing the work of QASOs as Zonal examinations officers and Zonal QASOs. We even have TAC tutors acting as Deputy DEOs and QASOs. They have forgotten their jobs.*’

Further, the roles of TAC tutors and QASOs were initially separate but complementary; TAC tutors visited teachers to provide professional support and their reports were used for follow-up professional development functions, whereas the QASO reports were used

for purposes of disciplining and promoting teachers. The Director of QAS rightly explained that TAC tutors doing the work of QASOs compromises their teacher support role in the eyes of the teachers.

According to the INSET officer interviewed, given the multiple roles of TAC tutors, the most that could be expected is that they would launch the reading intervention in their zones. The management of the on-going reading intervention programme would require a different arrangement, if current structures and policies hold. All the same, the senior TSC officers interviewed indicated that the TSC was addressing the issue of multiple roles of TAC tutors since taking over the management and supervision of TAC tutors from the MOE.

The Director of QAS and the INSET officer suggested that the problem of shortages of TAC tutors and QASOs could be addressed through the use of identified competent classroom teachers as trainers. The INSET officer suggested that such teachers could be identified from the Key Resource Teachers (KRTs) trained to train teachers at school level in the School-based Teacher Development (SbTD) programme. According to the Director of QAS and the INSET officer, teachers could be encouraged to create what the INSET officer called 'self-support groups' to meet regularly as professional support communities. According to the INSET officers, the use of teachers to train other teachers would be viewed as recognition of classroom teachers and therefore serve as a form of intrinsic motivation for teachers.

Given the heavy INSET demands of a national reading programme, multiple ways of meeting the demands will need to be explored.

### ***Inadequate resources***

The important role that TACs can potentially play in improving teaching and learning has been recognized in many policy documents which have recommended strengthening of TACs. For example, the 1988 *Report of the Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond*, popularly known as the Kamunge Report (GoK, 1988), recommended the strengthening of the centres with regard to both human resources and availability of appropriate facilities, equipment, and budget to enable the TAC tutors to give professional advice to all teachers. However, the recommendation was not implemented, as the problem of inadequate resources continues to confront TACs. Currently, TAC tutors do not have access to transport as necessary in their work. Even though some centres have motorbikes, lack of fuel means that the motorbikes are not used. Indeed, the PRIMR Initiative, which is essentially a pilot programme for reading teacher development, has had to provide transport for the TAC tutors working in the programme in the form of a modest reimbursement in line with the MOE's allocated amount per TAC tutor for transport.

Part of the explanation for this lack of resources is that there is no specific budgetary allocation for TACs in the MOE's budget. For TAC tutors to perform their teacher

support role in the implementation of a national reading improvement strategy / programme, specific funds will need to be allocated to TACs.

### ***Motivation for TAC tutors and teachers***

Interventions always come with added work for the implementers. Consequently, it is critical that such implementers are highly motivated so as to take on the added responsibilities positively (Fullan, 1991). In the case of the reading intervention, TAC tutors and lower primary teachers are the key implementers. The interview data gathered in the course of the current study suggests that according to the senior MOE officers, TAC tutors are not highly motivated to play their teacher support role effectively. For example, the INSET officer interviewed identified motivation for TAC tutors and teachers as a challenge to effective implementation of a national reading improvement programme. He argued that TAC tutors *'would prefer to attend Board of Governors meetings where they are given an incentive'* rather than provide instructional feedback to teachers in schools.

Both the Director of QAS and the INSET officer pointed out that teachers would need some form of motivation. However, the INSET officer observed that *'teachers really only require recognition, therefore can showcase good teaching.'*

The implication here is that innovative but sustainable ways of keeping teachers and TAC tutors motivated to implement a reading improvement programme effectively will need to be considered.

### ***Management and supervision of TAC tutors***

According to some of the officers interviewed, the procedures for appointment and supervision of TAC tutors have weakened the teacher support role of TAC tutors. According to the Director of QAS, for example, in the past, TAC tutors were appointed from among good-performing teachers and therefore teachers had confidence in them. However, recent changes that have allowed TAC tutors to be appointed through interview performance have led to persons with good interview skills (he referred to them as *'good talkers'*) succeeding in obtaining these posts. To the INSET officer, this was at the expense of those with a proven track record of good teaching.

In addition, within the MOE, the study respondents indicated some dissatisfaction with reporting lines for TAC tutors. Following the new Constitution, TSC has withdrawn the MOE's agency over TAC tutors and has started putting in place structures for the management of teachers, including TAC tutors, by appointing 47 County Directors for the 47 counties in the country.

The senior MOE officers interviewed were unhappy with the supervision of TAC tutors being removed from the MOE. The Director of QAS, for example, expressed the opinion that *'for TAC tutors to work, they should be delinked from TSC.'* TSC, on the other hand, is actively pursuing reforms that will allow them to more adequately support the TAC

tutors in their instructional support roles. Clarity on reporting lines and management structures will be essential to the success of any national reading programme.

#### **4.5 Availability of textbooks and other teaching-learning materials**

As already indicated, despite the government efforts to provide textbooks and other teaching-learning materials through the FPE programme, pupils have limited access to reading textbooks. Further, as already learned from PRIMR, a research-based reading programme that the MOE might choose to develop and implement nationally will require specifically designed materials for teaching reading that are used in all the reading lessons. Getting such materials into the hands of teachers and their pupils will require consideration of policy issues related to the production and procurement of textbooks and other teaching-learning materials, as described next.

##### **4.5.1 Policy issues related to the production of teaching-learning materials**

Kenya has a clear and elaborate policy on the production of school materials which is well understood and practiced by the relevant officers. Prior to the current policy, which separates curriculum development and curriculum materials production, development of teaching-learning materials—including textbooks—was the responsibility of KIE and the Jomo Kenyatta Foundation. The KIE staff did the writing and the Jomo Kenyatta Foundation the actual publication (GoK, 1976). However, with liberalization policies, the government left the production of teaching-learning materials to private publishers, and KIE was assigned the role of publisher of last resort. This means that KIE can only publish materials it considers important for effective curriculum implementation but which the private publishers may consider unprofitable and therefore fail to publish.

With the separation of curriculum development and materials development, once KIE has developed the curriculum and the syllabi have gone through the various committees for approval, KIE-approved publishers can purchase the syllabus from KIE to produce appropriate textbooks. The publishers subsequently submit their books to KIE for vetting. The books go through a rigorous vetting process in which they are evaluated for content, technical aspects and price. Two independent administrators oversee the vetting process and a Ministerial Level Committee—the Minister Course Material Vetting Committee—makes the final ratification of the book list. The textbooks that pass the test are published in a catalogue, *The Approved List of Primary and Secondary School Textbooks and Other Instructional Materials*, popularly referred to as the “Orange Book.” The list contains the textbooks (pupils’ books and teachers’ guides) and other instructional materials (reference books for pupils and teachers, dictionaries, and readers), which have been successfully vetted by the KIE.

This book production policy poses challenges for materials produced within a research-based reading innovation. The senior MOE officers interviewed expressed the view that changing the policy to allow KIE to publish such reading intervention teaching-learning materials would be difficult. The Education Secretary, for example, pointed out that *‘it is*

*unlikely that the policy will change since changing policy is a long process.’ Indeed, the policy has serious gatekeepers in the form of private publishers who would strongly fight any changes that would bring KIE back as writer. In the words of the Deputy Director Policy and Planning, ‘any attempts to have [intervention-created] materials supersede those of private publishers will be highly resisted by publishers who have invested heavily in English and Kiswahili books for the lower primary.’*

Asked to make suggestions on how materials produced in a research programme could get into the Orange Book and therefore become available to schools, the officers suggested that the research programme could surrender / transfer ownership of the materials to KIE or even the MOE. The materials could then go through the KIE vetting processes to facilitate enlisting in the Orange Book.

#### **4.5.2 Policy issues related to procurement of textbooks and other teaching-learning materials**

As indicated previously, within the FPE programme, the government is responsible for provision of all school materials, including textbooks. Under the current policy on procurement of textbooks and other teaching-learning materials, only books in the Orange Book, which has six titles per subject per class, can be purchased using the FPE funds.

The FPE programme makes a provision of Kshs 1,020 per pupil per year, of which Kshs 650 per pupil per year goes towards the purchase of teaching-learning resources, including textbooks and stationery for the pupils. At the inception of the FPE programme in 2003, each primary school was required to open a School Instructional Materials Bank Account (SIMBA) into which funds for instructional materials would be disbursed directly from the MOE headquarters in Nairobi. Each primary school was also required to establish a School Instructional Materials Selection Committee (SIMSC) to take responsibility for selection of instructional materials and to guide the School Tender Committee (STC) on selection of suppliers (MOE, 2007). Once the selection has been done, the selected textbooks and the accompanying teachers’ guides are procured from commercial book suppliers through an open tender method.

The foregoing textbooks procurement policy poses some policy-related challenges for materials produced through a research programme. As the policy stands, only by entering the Orange Book can such materials be made available for purchase by schools. Since the research programmes are not publishers, a way would have to be found through which the materials could be taken through the vetting process and enter the Orange Book.

Secondly, without some policy interventions / adjustments, listing in the Orange Book would not ensure that all schools would buy the materials. Schools would have to be persuaded to buy such materials, which would be competing with several other titles. Further, at the rollout of a national programme to improve reading, means would have to be found to ensure that all schools purchased the programme materials, since procurement of the materials would not be in the SIMSCs plans.

According to the officer in charge of the School Instructional Materials in the MOE, a possible solution to the problem would be *'to have targeted funding for procuring reading improvement programme teaching-learning materials.'*

Another alternative would be for the MOE to appeal to its development partners to support the initial procurement of national reading improvement programme materials to give SIMSCs time to incorporate the purchase of the materials into their planning.

#### **4.6 Assessment**

Learning assessment at the different levels below Standard 8 provides useful diagnostic information to teachers, students and parents. Previously, teachers and parents had to wait for eight years for the KCPE to provide information on pupils' learning. However, with both government- and nongovernment-supported learning assessment programmes in place, the situation has improved. All the same, it is important for the MOE to ensure that appropriate learning assessments are institutionalized in the education system in Kenya. Also, it is important for the MOE to provide policy guidelines regarding the classes that will be assessed and the form that the assessments will take. In particular, to contribute to the improvement of reading, it will be critical to ensure that learning assessment does not degenerate into mini-examinations. The purpose of the assessments should be to provide quick and precise feedback to teachers in how reading interventions and activities can be improved.

#### **4.7 Mathematics Policy Activities**

PRIMR's emphasis on maths is also notable. Given the low findings in basic Maths outcomes in the 2009 EGMA pilot, confirmed by the 2011 baseline report, PRIMR was designed to improve outcomes in mathematics, and to help the Ministry of Education to respond to these low findings with policy improvements.

During the 2011-2012 period PRIMR had several successful policy activities in supporting the mathematics improvement process in Kenya. These include:

- **Scope and Sequence workshop** – Held at KIE in September 2011, the scope and sequence workshop for maths allowed the MOE to look carefully at its syllabus and develop a scope and sequence framework for a new mathematics program designed to rapidly improve outcomes for pupils in Class 1 and 2.
- **TAC tutor training with the MOE** – In this three day training, MOE and KEMI officials trained TAC tutors and instructional coaches in how to use improved instructional methods to improve pupil outcomes in mathematics. Led by national and international maths experts, this training focused on the practical aspects for how to observe high-quality instruction and how to ensure that pupils have conceptual understanding of mathematics concepts.
- **Teacher training by TAC tutors/coaches** – During this training, the trainers trained by PRIMR, MOE and KEMI implemented a hands-on training for teachers in how to

implement the new PRIMR mathematics methodologies. The training was two days long, and was attended by all Class 1 and 2 teachers and head teachers in PRIMR schools, and was also attended by QASO, TSC and MOE officials across the country. The importance of mathematics, and the practical aspects of what officials could do to improve the concerning outcomes were the main topics of discussion.

- **On-going support for mathematics teaching** – As of July 2012, PRIMR TAC tutors and coaches have been supporting instructional improvement activities in schools. A research tool for policy discussion was developed to help TAC tutors, coaches and QASO officers to examine the quality of mathematics training. Results from program implementation will help to refine how the MOE operates in improving mathematics outcomes.
- **Baseline dissemination (via policy brief)** – The PRIMR team shared the distressing results of math outcomes with key MOE and SAGA members from April 2012 through August 2012. PRIMR developed a policy brief, specific to math, for this purpose. The policy brief is attached here as Appendix B.8. This brief and the correlated mathematics findings from the baseline were shared in the following meetings:
  - 6-8 March, Stakeholders meeting, Nakuru: Findings presented to DEOs, DQASOs, TAC tutors and the PRIMR Program Development and Implementation team, Ministry of Education
  - 21 May, Program Development and Implementation team, Nairobi: At this meeting, PRIMR made an in-depth presentation of the findings and the implications. The PDIT team suggested that the findings be shared with senior MOE and SAGE staff due to their concerning nature
  - 29 May, TAC tutor and coach meeting, Nairobi: Findings from baseline and midterm assessment presented to the TAC tutors and coaches from the Ministry of Education
  - 30 May, Teachers’ Service Commission, Nairobi: Senior members of the PRIMR team shared the findings and the implications with the Secretary and leadership of TSC
  - 31 May, Permanent Secretary, Nairobi: The PRIMR team met with the Permanent Secretary to discuss the findings in depth
  - 5 June, Directors of Nonformal schools, Nairobi: At this meeting, all of the directors of Nonformal schools were shown the findings, with particular attention to the outcomes in their individual schools and clusters
  - 11 June, Education Secretary, Nairobi: A very important meeting was held with the Education Secretary, sharing the details of the report and how this influences the next steps of the MOE on improving quality
  - 11 June, Chief Economist, Nairobi: As part of a long list of key MOE personnel, the findings were shared with the Chief Economist

- 12 June, Kenya National Examinations Council, Nairobi: At this meeting, the PRIMR team discussed the findings with the Council CEO and other key KNEC officials. This meeting was the impetus for the current presentation to the Steering Committee of the National Assessment Centre
- 25 June, Kenya Institute of Education, Nairobi: KIE and PRIMR discussed the findings in depth, including the implications for curriculum
- **EGMA findings dissemination to National Assessment Center** – During this workshop, held in August 2012, the PRIMR team was able to describe the status of mathematics achievement in Kenya. Particularly emphasized was the difficulty that young pupils have in both accuracy and fluency of mathematics outcomes. A policy recommendation from the participants at this workshop included an emphasis on the pre-service requirements for teacher trainee admission based on the weak maths scores.
  - The MoE to review the regulations governing pre-service criteria for teacher trainee admission to move from C (plain) to C+ (plus). It has been having a requirement for Maths at D+ (plus) general to those being admitted but there should be a higher grade for those to specialize in the teaching of Maths to be at C (plain) for Specialists

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# Appendix A: Research Methodology and Data Analysis

## Research Methodology

The objective of the PRIMR policy study was to highlight important policy issues that would need to be addressed in developing and implementing a national programme to improve the teaching and learning of reading in the lower primary classes in Kenya.

The study was conceptualised through interactions between the PRIMR Initiative's education policy consultant and education policy specialist. These interactions led to the choice of the qualitative research methodology for the research, with document review and in-depth interviews of senior Ministry of Education (MOE) officers and those of related Semi-Autonomous Government Agencies (SAGAs) as the two data collection strategies. The documents reviewed were chosen to facilitate an analysis of what the official policy on key aspects of a reading improvement intervention would be.

The following policy documents were reviewed:

- *Kenya Education Commission Report* (GoK, 1964);
- *Report of the National Committee on Educational Objectives and Policies* (GoK, 1976);
- *Report of the Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond* (GoK, 1988);
- *Totally Integrated Quality Education and Training (TIQET)* (GoK, 1998);
- *Kenya Education Sector Support Programme (KESSP) 2002–2010* (MOE, 2005);
- *Sessional Paper No. 1 of 2005 on a Policy Framework for Education, Training and Research* (GoK, 2005);
- *Kenya Vision 2030* (GoK, 2007);
- *Procurement Manual for Primary Schools* (MOE, 2007);
- *Report of the Task Force on the Re-alignment of the Education Sector to the Constitution of Kenya 2010* (GoK, February 2012); and
- *A Policy Framework for Education–Draft* (GoK, April 2012).

In addition, research literature on reading assessment and related issues was reviewed as cited in the report.

The in-depth interviews of senior MOE officers were conducted by the education policy consultant and the PRIMR programme education policy specialist. In-depth interviews were used because they enabled the interviewers to ask follow-up questions to the interviewees' responses and therefore sufficiently probe the officers' thinking on how existing policies could be used and/or changed to facilitate the implementation of a reading improvement programme on a national scale.

## The Study Sample

The implementation of a national-scale learning improvement programme is an important and complex undertaking that has policy implications in the areas of curriculum development, teaching-learning materials development and acquisition, in-service training, and continuing professional development for different cadres of curriculum implementers and evaluators. These include teachers, TAC tutors, education field officers, quality assurance officers, and those involved in national learning assessment and examinations.

Consequently, the heads or senior officers of relevant MOE directorates and SAGAs were sampled for the study, as shown in *Table A-1*.

**Table A-1. Senior MOE and related SAGAs officers interviewed**

S/No.	Name	Directorate/office	Designation
1	Prof. George Godia	Education Secretariat	Education Secretary
2	Ms Leah Rotich	Basic Education	Director
3	Mr.Enos Oyaya	Quality Assurance and Standards	Director
4	Mr.Kimanith M’Nkanata	Field and Other Services	Director
5	Mr.Onesimus Kiminza	Policy, Partnerships and East African Community Affairs	Senior Deputy Director
6	Mr. Lawrence Baraza	Basic Education	Assistant Director
7	Mr.Charles Kanja	Field and Other Services (In-Service Education and Training [INSET] Section)	Senior Assistant Director
8	Ms. Lydiah Nzomo	Kenya Institute of Education (KIE)	Director
9.	Ms. Hellen Kimathi	Kenya Institute of Education (KIE)	Senior Assistant Director
9	Ms. Jennifer Wambugu	Kenya Institute of Education (KIE)	Assistant Director
11	Mr. Peter Kega	Kenya Institute of Education (KIE)	Assistant Director
12	Mr.Vitalice Juma	Teachers Service Commission (TSC)	Deputy Director (Primary)
13	Ms. Mary Rotich	Teachers Service Commission (TSC)	Senior Deputy Director Staffing (Secondary)
14	Mr. Hilary Lukhafwa	Teachers Service Commission (TSC)	Deputy Director Quality Assurance and Standards
15	Ms. Melea Nthia	Teachers Service Commission (TSC)	Senior Staffing Officer
16	Mr. Paul Wasanga	Kenya National Examinations Council (KNEC)	Chief Executive Officer

## The Research Tools

Interview guides (see *Appendix B*) were the main research tools in this study. The questions in the guides touched on issues relevant to the national implementation of improvements in reading. The issues included language policy, other relevant policies, teaching-learning materials production and procurement, INSET and continuing professional support for teachers, and interviewees’ perceptions of the challenges in the

implementation of a reading intervention on a national scale and how the challenges could be overcome.

As noted above, the interview tools were used as guides, allowing for flexibility, such that different interviews went into greater depth on different issues with specific officers depending on their areas of work in the MOE and in the SAGAs.

## **Data Analysis**

Data analysis involved transcription of interview notes and organisation of the same according to the research objectives. The researcher then synthesised the information by pulling together the different responses to the same question. The researcher subsequently read the synthesised responses to identify general trends and the points of dissent where there were conflicting points of view.

# Appendix B: Research Tools

## B.1 Interview Guide for Director, Kenya Institute of Education

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What is the policy regarding the language(s) in which reading is to be taught in the lower primary classes?	
2	Which language(s) has KIE prepared syllabi for?	
	<b>DIAGNOSTIC</b>	
3	In which language is reading taught in lower primary classes in actual classrooms?	
4	What reasons can you give for the implementation/non-implementation of the policy?	
5	In which ways does implementation/non-implementation of the policy affect how children learn to read in lower primary classes?	
6	What steps has KIE taken to monitor the implementation of the policy?	
7	What do you think would be the best policy with regard to the teaching of reading at lower primary?	

<b>S/No.</b>	<b>Question</b>	<b>Response</b>
	<b>EVALUATIVE</b>	
8	How have the barriers to the implementation of the policy been addressed?	
	<b>STRATEGIC</b>	
9	What actions are needed to improve implementation of the policies?	
	<b>SCALING UP OF INNOVATIONS</b>	
10	What is the role of KIE in the implementation of innovations in reading at the lower primary level?	
11	Please comment on the relationship between KIE and TAC tutors with regard to putting emphasis on learning.	
12	What would it take to increase the attention to reading in the syllabus?	
13	What are the arrangements for the production and dissemination of teaching-learning materials?	
14	Given current arrangements, how best can teaching-learning materials produced within an innovative reading programme be published and disseminated nationally?	
15	Is there any way KIE can lead in the production of reading materials for lower primary classes?	
16	Are there mechanisms through which KIE experts can produce reading materials for lower primary but the publishers still publish?	
17	Given current arrangements, how best can teaching-learning materials produced within an innovative reading programme be published and disseminated nationally?	
18	In your opinion, what INSET model would be most effective in the scaling up of a pedagogical innovation?	
19	What changes in the innovation implementation system would be necessary for effective scaling up of an innovation on a national scale?	
20	In your opinion, what barriers would the implementation of a national reading improvement programme for lower primary face?	
21	What would be the best ways of addressing such barriers?	

## B.2 Interview Guide for Director, Policy, Partnerships, and East African Community Affairs

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What policies supportive of the implementation of a national reading improvement programme exist?	
	<b>DIAGNOSTIC</b>	
2	How does the directorate monitor implementation of the policy?	
	<b>EVALUATIVE</b>	
3	How have the barriers to the implementation of the policy been addressed?	
	<b>STRATEGIC</b>	
4	What strategies are required to review policies related to reading at the lower primary level?	
	<b>SCALING UP OF INNOVATIONS</b>	
4	What do you see to be the role of the Directorate of Policy, Partnerships and East African Community Affairs in the scaling up of a reading programme for the lower primary?	
6	What changes in the innovation implementation system would be necessary for effective scaling up of such a programme?	

<b>S/No.</b>	<b>Question</b>	<b>Response</b>
7	In your opinion, what barriers would the scaling up of an innovative reading programme for lower primary face?	
8	What would be the best ways of addressing such barriers?	
9	What opportunities could the scaling up of an innovative programme take advantage of?	

## B.3 Interview Guide for Director, Quality Assurance and Standards

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What is the policy regarding the language(s) in which reading is to be taught in the lower primary classes?	
2	How do different lower primary education stakeholders (teachers, parents, the learners, head teachers) view the policy?	
3	What are your views about the policy?	
	<b>DIAGNOSTIC</b>	
4	In which language(s) is reading actually taught in lower primary classes?	
5	What reasons can you give for the implementation/non-implementation of the policy?	
6	In which cases has the policy worked well?	
7	How does QAS monitor the implementation of the policy?	
8	What do you think would be the best policy with regard to the teaching of reading at lower primary?	
	<b>EVALUATIVE</b>	
9	How have the barriers to the implementation of the policy been addressed?	

<b>S/No.</b>	<b>Question</b>	<b>Response</b>
	<b>STRATEGIC</b>	
10	In your opinion, what types of measures are required to meet unmet needs defined by the policy?	
11	What actions are needed to improve implementation of the policies?	
	<b>SCALING UP OF INNOVATIONS</b>	
12	What would be the role of QAS in the implementation of innovations in reading at the lower primary level?	
13	What would be the role of TAC tutors in a reading programme for lower primary classes?	
14	How could the QAS office ensure that TAC tutors have time to work on instructional issues given their other roles?	
15	What INSET model would be most effective in scaling up a pedagogical innovation?	
16	In your opinion, what barriers would the scaling up of an innovative reading programme for lower primary face?	
17	What would be the best ways of addressing such barriers?	
18	What opportunities could the scaling up of an innovative programme take advantage of?	

## B.4 Interview Guide for Senior INSET Officer

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>STRATEGIC</b>	
1	In your opinion, what changes in the innovation implementation system are necessary for effective scaling up of an effective pedagogical innovation for reading in lower primary?	
2	In your opinion, what barriers would the scaling up of an innovative reading programme for lower primary face?	
3	What would be the best ways of addressing such barriers?	
4	What opportunities could the scaling up of an innovative programme take advantage of?	
	<b>INSET FOR SCALING UP OF INNOVATIONS</b>	
5	What is the role of the INSET Section in the implementation of innovations in reading at the lower primary level?	
6	What strategies does the INSET Section adopt in ensuring effective INSET for all concerned teachers in scaling up successful innovations for lower primary level teachers?	
7	What are the shortcomings of the strategies adopted?	
8	What 2 to 3 INSET models are in use in Kenya?	
9	In your opinion, what INSET model would be most effective in scaling up a pedagogical innovation?	

<b>S/No.</b>	<b>Question</b>	<b>Response</b>
10	Given your INSET experience, what constraints does the Section face in successfully providing INSET to all concerned in a national programme?	
11	How can the constraints be overcome?	
12	What suggestions can you make for how to phase in or stagger the approach to a national programme for reading improvement?	

## B.5 Interview Guide for Chief Officer, Supplies and Materials

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What are the policies governing supplies and materials in the MOE?	
	<b>SCALING UP OF INNOVATIONS</b>	
3	What is the role of the department in the implementation of innovations in reading at the lower primary level?	
4	What are the arrangements for the production and dissemination of teaching-learning materials?	
5	How is the programme allowing schools to buy their own books going?	
6	What other methods could there be to get books to schools?	
7	What is the status with regard to availability of books in schools?	
9	Given current arrangements, how best can teaching-learning materials produced within an innovative reading programme be published and disseminated nationally?	
10	In your opinion, what supplies and materials related barriers would the scaling up of an innovative reading programme for lower primary face?	
11	What would be the best ways of addressing such barriers?	

## B.6 Interview Guide for Senior Teachers Commission Officers

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What policies supportive of reading improvement are under implementation?	
	<b>DIAGNOSTIC</b>	
2	What steps does TSC take to monitor the implementation of curriculum-related policies?	
	<b>EVALUATIVE</b>	
3	What barriers does TSC face in monitoring the implementation of curriculum-related policies?	
	<b>STRATEGIC</b>	
4	What actions are needed to improve implementation of the policies?	
	<b>SCALING UP OF INNOVATIONS</b>	
5	What would be the role of TSC in scaling up a reading improvement programme?	
6	What role does TSC play in the management of TAC tutors?	
7	What can be done to ensure that TAC tutors play their teacher support role during the implementation of a lower primary reading programme?	

<b>S/No.</b>	<b>Question</b>	<b>Response</b>
8	Comment on TSC's capacity to manage and supervise TAC tutors.	
9	In your opinion, what barriers would the implementation of a national reading improvement programme for lower primary face?	
10	What would be the best ways of addressing such barriers?	

## B.7 Interview Guide for Kenya National Examinations Council Chief Executive Officer

### Interview Administration Information

Name of interviewer(s):

Date:

Time:

Place:

### Background information

Name of officer:

Designation:

Sex of the officer:

Length of service in current position:

S/No.	Question	Response
	<b>CONTEXTUAL ISSUES</b>	
1	What is the policy regarding learning assessment?	
2	To what extent has the policy been implemented?	
	<b>EVALUATIVE</b>	
3	To what extent does knowledge gained through learning assessments impact teaching and learning?	
	<b>STRATEGIC</b>	
5	What strategies should be adopted to ensure that learning assessment data is used to improve learning to read?	
	<b>SCALING UP OF INNOVATIONS</b>	
6	What would be KNEC's role in the scaling up of a lower primary reading improvement programme?	
7	In your opinion, what would be the barriers to the successful scaling up of a reading improvement programme?	
8	What would be the best ways of addressing such barriers?	
9	What opportunities could the scaling up of an innovative lower primary reading programme take advantage of?	



## B.8 Mathematics Policy Briefing Note

The USAID-funded Primary Math and Reading initiative (PRIMR) just completed a baseline evaluation that provides a wealth of information regarding how well Class 1 and 2 students are learning basic mathematics in formal and non-formal schools in Nairobi, and formal schools in Central and Rift Valley provinces. The PRIMR findings point out certain deficiencies in students' foundational maths skills and also indicate areas where teaching and learning in mathematics can be improved.

### Are students learning basic maths skills?

To evaluate learning of mathematics in the first few years of primary school, PRIMR makes use of the Early Grade Maths Assessment (EGMA) methodology. EGMA evaluates student performance in several skills areas, including: counting, number identification, quantity discrimination, filling in a number in a presented sequence, addition, subtraction and solving word problems. Children are tested to see how accurately they can perform the maths tasks which an assessor presents to them. For number identification, addition and subtraction, the assessment is also timed in order to gauge how automatically students are able to produce responses. In this manner we can discuss whether students are learning to correctly respond to basic math questions and whether they can automatically and rapidly identify numbers and complete simple addition and subtraction calculations. Table 1 below summarizes these results.

**Table 1: Basic Maths Accuracy (% correct) and Automaticity (#/min.)**

	Class 1		Class 2	
	Accuracy	Automaticity	Accuracy	Automaticity
<b>Timed Tasks</b>	% Correct	# Correct per min.	% Correct	# Correct per min.
Number ID	51%	10.4	72%	18.0
Addition	32%	4.7	63%	7.6
Subtraction	15%	1.4	42%	4.1
<b>Untimed Tasks</b>				
Quantity Discrimination	32%		53%	
Missing Number	26%		37%	
Addition (2)	6%		16%	
Subtraction (2)	4%		8%	
Word Problems	14%		25%	

Given that Class 1 students were tested early in the school year, most of what is being measured are the skills they are carrying with them from pre-unit or from home. We see that children in the first few

weeks of term 1 are able to identify numbers, but with poor accuracy, and with very limited automaticity. They could only identify between 10 and 11 numbers in a minute (for example, taking 5 to 6 seconds to identify a number). Skills beyond number ID and counting for students at the start of Class 1 are extremely limited. For students at the start of Class 2, the news is considerably better. They are both more accurate and more automatic than Class 1 students in number identification, addition and subtraction. However, their level of performance is still very limited. For example, they are only able to do about eight simple addition facts (of the type shown to the right) in one minute, and even fewer subtraction facts. If we compare Class 2 student performance on EGMA to the Kenya Institute of Education syllabus objectives, it is clear that students are not coming close to meeting the curricular objectives set for the end of Class 1. For example, the syllabus states that Class 1 students should be able to work out addition problems with sums up to 99. However, Class 2 students worked slowly and only at 63% accuracy on the simple one-digit addition problems shown here, answering only 1 in 4 correctly.

$3 + 3 = \square$	$6 - 3 = \square$
$8 + 1 = \square$	$9 - 1 = \square$
$7 + 3 = \square$	$10 - 3 = \square$
$3 + 9 = \square$	$12 - 9 = \square$

Regarding the untimed tasks, Class 2 students had only slightly above 50% accuracy on quantity discrimination and even less on identifying the missing number in a sequence. And, given how slowly students worked on basic addition and subtraction, it is no surprise that on the more difficult addition and subtraction problems their responses were highly inaccurate, with only 8% accuracy. Class 2 students also performed poorly on solving word problems.

## How does performance vary across counties and formal vs. non-formal?

Students were assessed from samples of formal and non-formal schools in Nairobi, as well as from three districts in Nakuru and from Thika. As one would perhaps expect, students in both sets of Nairobi schools are outperforming their counterparts in the other areas. Table 2 below shows Nairobi Class 2 students in formal and non-formal schools on average can identify numbers and complete simple addition and subtraction facts are about the same rate, and that both of them complete considerably more of each type of item per minute than students from Thika and Nakuru. On the other assessed tasks, the pattern of performance is the same. In all locations, the performance of boys and girls was essentially the same across all the subtasks although boys did perform slightly better than girls on quantity discrimination.

**Table 2: Automaticity Scores by Location**

<b>Class 2</b>	Nairobi Formal	Nairobi Non-Formal	Thika	Nakuru
Number ID	20.7	20.5	13.1	15.9

Addition	8.2	7.9	6.0	7.3
Subtraction	3.3	3.1	1.5	2.6

## What factors can help explain student performance in maths?

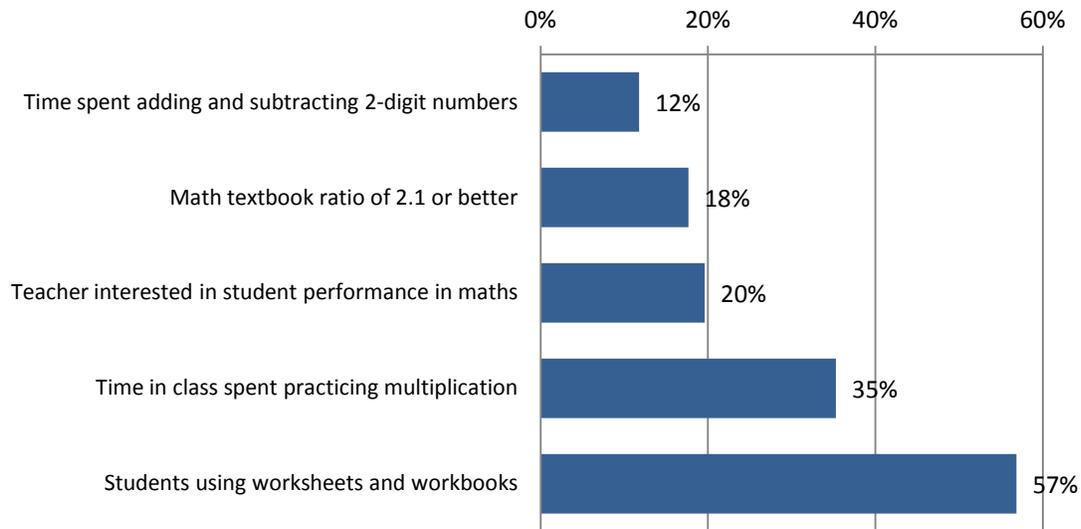
Based on observations of Class 1 and 2 across all four categories of schools, PRIMR also collected data on instructional practices, materials being used, and predominant student activities during maths lessons. For example, we found that the language of instruction was English for more than 90% of lesson time. The observations show that 50% of the time the teacher was focused on the whole class rather than individuals or small groups, and the most frequently observed teacher action was asking questions (followed by writing on the board).

Lessons most frequently focused on adding one digit numbers, counting and number identification. That addition was the most frequently observed content in math lessons, yet it is an area of weak skill development, raises concern about teachers' instructional approach to this important skill area.

Students spent the most time doing individual desk work (30% of the time), followed by listening to or watching the teacher (25%). Over 80% of teachers report having students copy math problems from the board and repeating numbers from the chalkboard or a chart as part of their daily instruction. The vast majority of schools have sufficient math books to achieve a 3:1 student to book ratio. However, books were observed being used by students only 14% of the time during maths lessons. Use of materials seems to be an area to improve.

Our analysis was able to associate classroom practices, school characteristics and other factors with variations in student performance on the simple addition subtask as depicted in the chart below. For example, having a low maths textbook ratio is associated with an 18% increase in the number of math problems correctly solved per minute. More significantly, teachers giving worksheets and/or workbook practice during class is associated with a 57% increase in student skills in addition.

### Percentage increase in addition performance associated with different classroom factors



These findings reinforce the idea that improving instructional practices can have an impact on student performance in basic maths. PRIMR’s support to schools will include support for mathematics instruction, and we will share these pilot findings with the MOES in the near future.