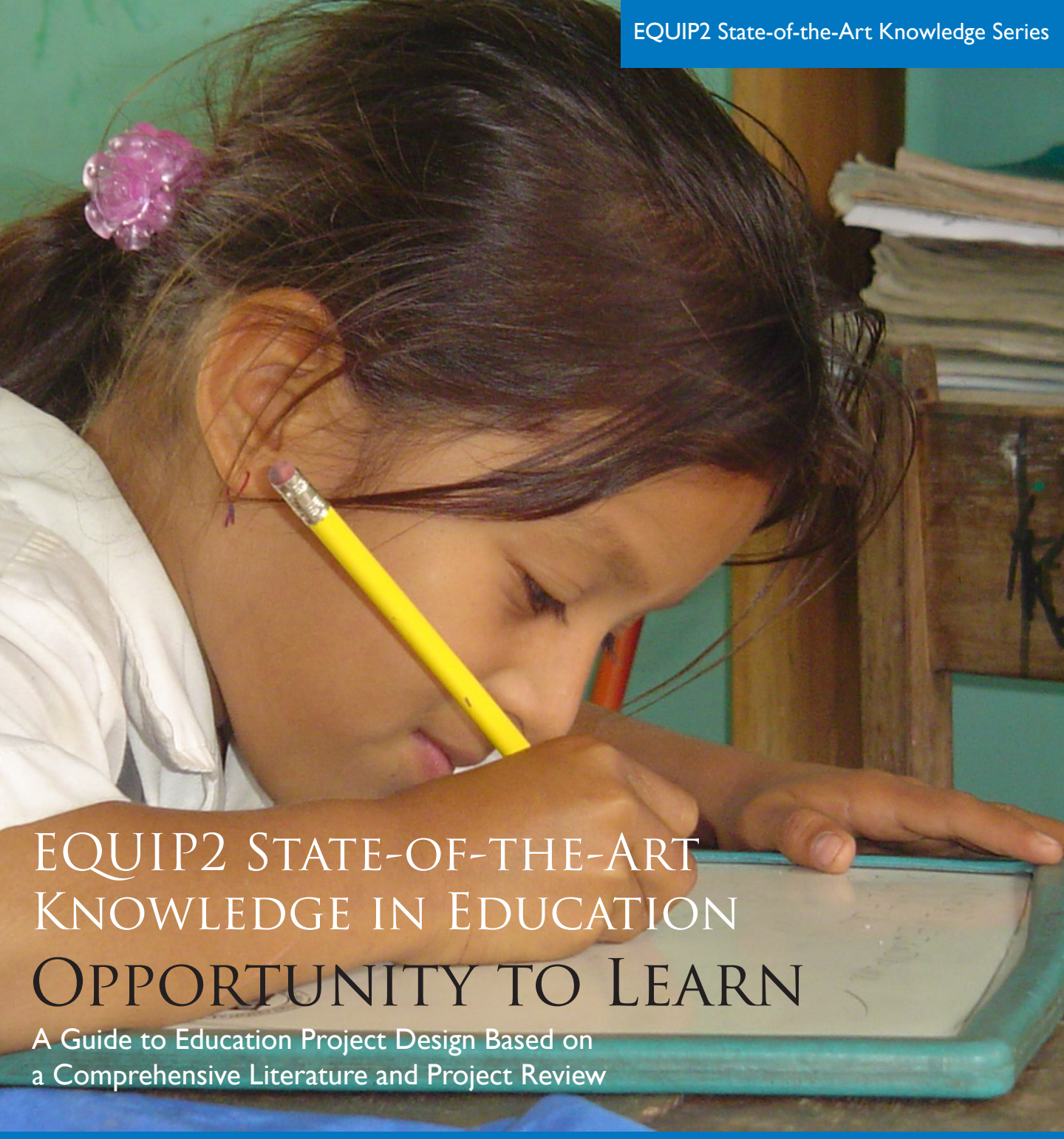
EQUIP2 State-of-the-Art Knowledge Series



EQUIP2 State-of-the-Art Knowledge in Education

Opportunity to Learn

A Guide to Education Project Design Based on a Comprehensive Literature and Project Review

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INTRODUCTION

In the Cabo Delgado province of Mozambique, a recent study demonstrated that more than 90 percent of third graders were unable to read a short, grade-level passage in Portuguese, the official language of instruction. Most of the children could not read at all, and a small percentage could only read a few words (Adelman, Schuh Moore and Shanti, 2011). How could the majority of students fail to read after more than two years of full-time schooling?

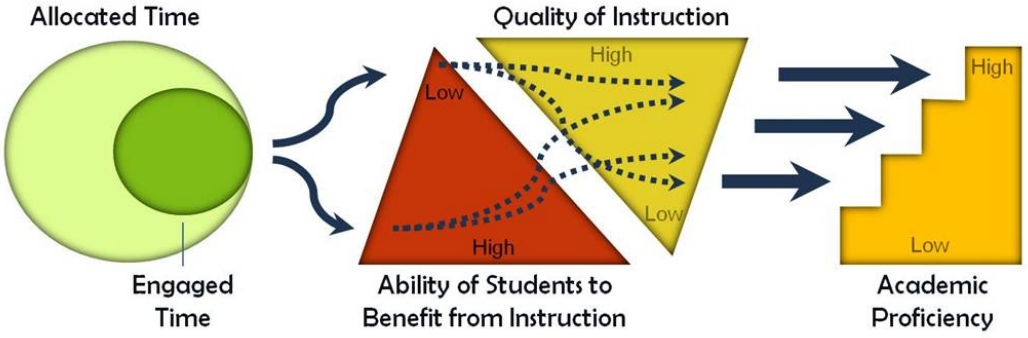
In the Cabo Delgado province, part of the answer to that question is that more than 80 percent of the time available for instruction is wasted. Of the 183 days in the official school year, only the equivalent of 30 days (16 percent of the available time) is actually spent on activities related to learning (Adelman, Schuh Moore and Shanti, 2011). Mozambique is not unique. Case studies in developing countries in Latin America, Africa, and Asia reveal large amounts of time loss, resulting in many illiterate children in the third grade. In fact, the studies revealed a strong correlation between the average amount of engaged instructional time, or "time on task," and the average reading fluency of students (DeStefano, Schuh Moore and Adelman, 2010). Time, when used effectively, does matter.

TIME IN SCHOOL MATTERS

Three factors combine to determine whether or not students a desired level of academic proficiency: time, students' abilities, and teacher skills (See Figure 1). The first factor is the amount of time that students are actually engaged in instructional activities at school. For decades, research on time use at school has made a distinction between allocated and engaged time. Allocated time represents the total number of days (or hours) during which students are supposed to be in school, based on the number of days in the school calendar and the length of the school day. Engaged time refers to the time when students are involved in an "instructional situation" (Mann, 1928). Research in the 1950s recognized that not all students need the same amount of engaged time to reach a desired level of learning: in Carroll's (1963) formulation, the ratio of engaged time to the amount of time a learner needs to learn is what is defined as "adequate" time for learning (i.e., if the ratio is less than 1, then the student has not had adequate time).

Subsequent research has shown that the amount of time individuals need to reach a particular level of learning is also a function of the student's starting point: disadvantaged students need more time at the beginning than those who come to school "ready to learn" (Brown and Saks, 1986). Students who have limited vocabularies, have not been read to, have not been exposed to printed material, or do not know their letters, colors, or shapes will need more time to catch up to children who come to school equipped with those advantages.

Figure 1: Understanding how time in school interacts with other factors to determine whether students can reach desired levels of academic achievement



Engaged Time	Student Ability	Quality of Instruction	Academic Proficiency
All of the time allocated for schooling is not used for instruction and learning. Some time is spent on logistics, some on non-academic activities, and some is just wasted. The share of allocated time, during which students are involved in instructional activities, is often referred to as engaged time, or as time on task. Engaged time varies considerably across schools and classrooms.	Students come to school with different levels of readiness to learn, in part depending on their family's socioeconomic status, availability of other resources at their homes, parents' and siblings' levels of education, and their level of health and nourishment. More disadvantaged students are, for obvious reasons, less ready than their more affluent peers to take advantage of the learning opportunities made available in school.	Whether students fully benefit from the time used during a lesson also depends on the skill of their teacher. Effective teachers have structured lessons that include ample time to practice skills, reinforce correct work, provide help as needed, and keep students on task for greater portions of their lesson time. Less skilled teachers may exhibit none or few of these capabilities. Their students, even if engaged, will get less out of a lesson.	The amount of engaged time, the skill of a teacher to keep students on task and productive during that time, and the degree of disadvantage which a student may have to overcome all combine to determine what that student is able to achieve as a result of a given amount of time in school. Disadvantaged students need more time and more effective instruction than their more advantaged peers to reach a desired level of academic proficiency.

The research on time and learning makes distinctions among allocated time, engaged time, and a third category, academic learning time. Although the easiest to measure, allocated time has little to no relationship with student achievement. Engaged time is somewhat harder to measure because it requires observation, but it has been shown to have a stronger relationship to achievement (Holsinger, 1982; Nelson, 1990; Aronson, et al., 1998). The strongest relationship found to impact achievement is with academic learning time, the hardest variable to observe and track (Aronson et al, 1998). Academic learning time is the subset of engaged time when instructional activities align with a student's readiness and ability to learn. How much allocated time ends up as engaged time or academic learning time depends on a number of factors, some of which relate to school management and others to the instructional skills of teachers. A growing body of research demonstrates that engaged and academic learning time in classrooms in developing countries are too low to overcome students' disadvantages, especially in the early grades (DeStefano, Schuh Moore and Adelman, 2010).

TIME IN SCHOOL IS OFTEN LOST OR WASTED

The number of days allocated to a school year varies from country to country. Japan has the longest school year in the world, with 243 days. However, most developing countries, as well as OECD countries, allocate 170 to 180 days per year. In many countries, this number does not reflect the actual number of days that schools are open and students are on task. Five factors (see insert) impact the amount of time actually available for productive instructional activities. Time is lost when school is closed. Any day that a school is closed when it is supposed to be open is subtracted from the total days allocated for the full school year. Time is also lost when teachers are absent. Any day that school is open, but a teacher is not there, his or her students are denied that day's opportunity to learn. Time is lost when students are absent. Any day students are absent means lost opportunity to learn. Time is lost during the school day. School may start late, recess may run longer than it is supposed to, or teachers and students may wander out of class at random points in the day. Time is wasted when students are not on task. Even when teachers and students are gathered in the classroom,

Measuring Time or Opportunity to Learn

1. The percentage of days that the school is actually open;
2. Teacher attendance rate;
3. Student attendance rate;
4. The percentage of time during the day available for instruction (accounting for things such as late start and recess); and
5. The percentage of time in class when students are observed to be "on task."

students may not be following the lesson or the teacher may spend time disciplining students rather than teaching.

By accounting for all of these factors, it is possible to measure the equivalent number of days that is actually spent on instructional activities in comparison with the official number of days that are allocated for schools to be opened. Table 1 summarizes the number of days estimated as lost for different reasons in Guatemala, Honduras, and Mozambique (Moore, DeStefano, Adelman, 2011).

Table 1. Three Examples of the Loss of Allocated Time

	Guatamala	Honduras	Mozambique
Allocated time (length of the school year)	**180**	**186**	**183**
Days school closed	5	11	15
Days lost to teacher absenteeism	29	5	21
Days lost to student absenteeism	11	31	31
Days lost to poor management of the school day	38	61	55
Total equivalent days lost	**83**	**108**	**122**
Total days lost as a percentage of allocated time	*44%*	*58%*	*67%*

Allocated time in each school sample is dramatically reduced for a variety of reasons. However, national differences in the data reveal potentially different management issues in each context. In Guatemala, school is not often closed, but teacher absenteeism causes the equivalent of 29 lost days of school. In the Honduran context, schools are closed more often than those in Guatemala. Teacher absenteeism is a minor contributor to lost time, but student absenteeism and management of the school day pose significant problems. In fact, management of the school day accounts for a large amount of lost time – the equivalent of 61 days, or almost a third of

allocated time. In Mozambique, poor management of the day accounts for the largest portion of lost time, as well as school closure and teacher and student absenteeism.

All of the above factors determine the equivalent proportion of allocated time during which teachers and students can work together on instructional activities. How allocated time gets used then determines whether or not students are actually being provided with an opportunity to learn. During class time, teachers and students could be engaged in dynamic, productive lesson activities, or one student could be working at the board while the rest sit idle, or the teacher could wander out for a cigarette break, leaving the students to occupy themselves. After accounting for time loss, the available portion of allocated time can be used with varying degrees of productivity, including being completely wasted on unproductive activities.

A measure of the extent to which available allocated time translates into engaged time relies on observation of student and teacher actions and interactions in class. In the three cases discussed above, classroom observations in each country revealed great variation in the amount of time that students and teachers were engaged in instructional activities. Students were off task 42 percent of the time in the sample schools in Guatemala, 12 percent of the time in Honduras, and 49 percent of the time in Mozambique. In each case, time spent off-task was essentially wasted (i.e., students were not engaged in any instructional activities). Table 2 compares engaged time with allocated time, taking into consideration both lost and wasted time.

Table 2. Allocated Time Compared to Engaged Time

	Guatamala	**Honduras**	**Mozambique**
Allocated time (length of the school year)	**180**	**186**	**183**
Total equivalent days lost (from table 1)	5	11	15
Total equivalent days wasted (time off task)	29	5	21
Engaged time	**11**	**31**	**31**
Engaged time as a percent of allocated time	*38%*	*61%*	*55%*

A key finding in each of these cases is that instruction only occurs during a small fraction of the time officially allocated for schooling. According to this research, the allocation of time for school represents a substantial allocation of resources that is largely wasted.

Interestingly, although Honduras lost the most allocated time because of school closures, teacher and student absenteeism, and poor management of the school day, Honduras has the greatest percentage of engaged time because teachers and students in those schools were observed to be on task more often. Further analysis of observation data could be used to explore the nature of engaged time. On which activities do teachers and students spend most of their time on task? What materials are they using and how are they using them? How often do they engage in activities that are appropriately suited to the learning needs of the students (also referred to as academic learning time)?

Skilled teachers.

- Keep non-instructional time to a minimum by beginning and ending lessons on time, keeping transition times short, and minimizing disruptive behavior.
- Maintain a brisk pace for instruction. They introduce new objectives quickly and provide clear start and stop cues to pace lessons according to specific time targets.
- Ask focused questions, provide immediate feedback and correctives, and engage students in review of material.
- Maintain awareness of the whole class when working with individuals/ small groups, keeping all students on task.
- Present activities that are neither too easy nor too difficult for the majority of students, making adaptations to serve the needs of faster and slower learners.
- Keep seatwork activities productive through careful preparation, active supervision, and provision of assistance to students as needed.

Whether the school day includes significant amounts of engaged and academic learning time depends in large part on the skill of teachers. Highly skilled teachers organize lessons to maximize engaged and academic learning time for each student (see insert)[1]. The difference between a skilled and an unskilled teacher can be significant in terms of how well they use time and therefore, impacts the amount of learning their students are able to achieve. Skilled teachers know how to use materials so that students benefit from the available resources in their classrooms. Even when working

1 A large body of research exists to support the characteristics of skilled teachers that impact classroom time management by maximizing academic learning time. See for examples: Anderson, L. W. (1980, 1985); Berliner (1979); Bielefeldt (1990); Brookover & Lezotte (1979); Brophy & Good (1986); Brown & Saks (1986); Butler (1987); Cooper (1989); Denham & Lieberman (1980); Evertson & Harris (1992); Gall, et al. (1990); Gettinger (1989); Good (1984); Hawley, et al. (1984); Helmke & Schrader (1988); Karweit (1984, 1985); Knorr (981); Kulik & Kulik (1988); Levine & Lezotte (1990); McGarity & Butts (1984); Slavin (1994a); Strother (1985); Stallings (1980); Teddlie, Kirby, & Stringfield (1989); Walberg (1988); Walberg, et al. (1985); Wang, Haertel, & Walberg (1993-1994); Wyne & Stuck (1979).

with the same kind of students, skilled teachers can achieve three times the amount of learning than can less skilled teachers (Hanushek, 2010).

A simple metric of how often students spend time practicing their reading skills in class provides some insight into whether engaged time equates to academic learning time. Data from the three EQUIP2 studies show students were observed doing some kind of reading activity for four percent of class time in Guatemala, six percent in Honduras, and five percent in Mozambique. Clearly, these low percentages equate to little time practicing reading, and therefore, little time to consolidate the skills needed to read with fluency and comprehension. Poor use of time is part of the reason why large proportions of children are not learning to read during the first few years of school (Gove & Cvelich, 2010). Essentially, if students are not participating in enough instructional activities and if they do not have adequate time to practice reading (and other skills they are supposed to be acquiring), then it is unrealistic to expect them to achieve desired levels of learning.

USAID'S EDUCATION STRATEGY AND OPPORTUNITY TO LEARN

USAID has made a commitment to helping 100 million children learn to read by the end of second grade. Research, such as that conducted by EQUIP2, shows that two school years of allocated time does not necessarily equate to two years of opportunities to learn to read. How much allocated time is really available in the first and second grades, and how well teachers and students make use of that time, will determine whether USAID can meet its ambitious goal.

Furthermore, the children targeted by USAID are some of the most disadvantaged learners in the world. Students may not have any literate family members, may rarely, if ever, have been read to, and may have rarely seen printed material prior to coming to school. Levels of oral language development may be limited to the predominant use of the mother tongue rather than the official language of instruction. Children may be undernourished, suffer from vitamin deficiencies, or be weakened by disease such as malaria. Overcoming these kinds of compound disadvantages will require greater and more effective instructional time.

Students with these kinds of disadvantages need teachers who can adeptly prepare and deliver well-structured lessons. The availability of such skilled teachers is low, however, in many schools in developing countries. Rather, teachers are often unskilled, lacking basic training in how to manage a classroom, design engaging lessons, maintain a brisk instructional pace, assess student responses, and provide

feedback and correctives as integral features of every lesson. Increasing engaged time in school is going to require more effective training and support for unskilled teachers. Having more certified teachers is not necessarily the answer because the skills associated with good teaching are not obtained through certification in most education systems, especially in developing countries. In fact, certification has little to no relationship with teaching ability particularly since the majority of teacher education programs and trainings focus on conceptual and theoretical knowledge rather than practical instructional competency (Hanushek, 2010).

In sum, many countries face a situation in which inadequately skilled teachers are working with highly disadvantaged students in poorly managed schools. Learning outcomes are bound to be dissatisfactory in these circumstances. What can be done to address these constraints? What can realistically be expected in terms of accomplishing tangible improvements in learning outcomes in countries facing these obstacles? In short, how can USAID meet its reading goal?

IMPROVING OPPORTUNITIES TO LEARN TO READ

Research and experience highlight specific ways to improve opportunities for students to learn, and especially to learn to read. If USAID is to achieve its goal of 100 million children learning to read, then programs and projects need to devote more attention and resources to the following:

Instructional time. Research has shown that academic learning time accounts for a significant amount of the variation in student achievement (Berliner, 1990). With all other things being equal, students who spend more time in class on instructional activities related to an area of achievement perform better than students who spend less time. Although this finding appears to be rather common sense, it is often neither accepted nor addressed. More importantly, research has shown that academic time variables predict achievement even more strongly for students of the lowest abilities. The more time students need to learn a skill, that is, the less able or less prepared they are, then the more instructional time they need to reach a desired level of achievement.

> Schools that work with students from non-literate households who enter the first grade with limited vocabularies and limited language facility need to spend more time engaging them in academic time related to learning to read.

Teacher knowledge and skill. Many studies have shown that teachers do not understand how children learn to read and they do not understand the linguistic components of teaching reading. Interventions that train teachers in the components of literacy acquisition and that show them how to apply that knowledge to their instructional practices have had demonstrated impact on student performance in reading. A diverse range of interventions, such as Success For All in U.S. schools, EGRA Plus implemented by RTI International in Liberia, the Systematic Method for Reading Success of Plan International in Mali and Niger, and Pratham's Read India, are demonstrating how providing teachers with instructional packages built on the linguistic components of teaching reading can dramatically improve student performance in reading.

> Teachers need to learn how children acquire literacy, the basic elements of literacy instruction, and how to apply those elements in their daily instruction.

Use of a diversity of materials. Numerous projects have been successful at providing textbooks to schools. However, research indicates that the presence of textbooks alone in schools does not guarantee their use. Teachers need to learn how to use textbooks in their instruction and make sure that students use their materials effectively. Additionally, classrooms need more than just textbooks to create literate environments. In some cases, textbooks have been shown to lack sufficient "text" for students to read, and textbooks for a particular grade may not actually be geared towards the reading levels of the students in that grade. Projects that are having success in dramatically improving reading outcomes introduce books with "decodable" text for early grades and provide detailed, scripted lesson plans for teachers to follow, ensuring that the basic elements of instruction are covered, and that the materials are incorporated as needed into daily instructional activities.

> Greater success in developing literacy in primary schools is going to require different materials and systematic efforts to train teachers in how to use diverse sets of materials. The key to improved reading is a focus on getting materials not only in the classroom, but also into the hands of the children.

Assessment. Assessment tools, such as the Early Grade Reading Assessment (EGRA), that reliably produce easy-to-understand data on student achievement in reading are proving to be essential in getting teachers, schools, and their communities to improve how students learn to read. Teachers need data that can tell them how well (or how poorly) their students can read by highlighting areas of reading skill in which their students are strongest or weakest. Teachers need instruments that allow them to periodically check and recheck student progress in reading, while providing feedback on which skills to target instructionally.

> Introducing assessments and helping teachers learn how to administer them, interpret the data they generate, and plan instruction based on what the data show are important pieces of any literacy improvement intervention.

Language. Research irrefutably demonstrates that children learn to read best in their mother tongue or first language. It is easiest for students to learn to read in a language that they have grown up speaking and that is spoken and used around them on a daily basis. Learning to read in a second language is best accomplished after literacy is achieved in the first language. Several issues impact how well children learn to read in the official language of the schools they attend when that official language is different than their mother tongues. In some cases, the second language is introduced from the first day of school, and students are expected to learn how to read in both languages simultaneously. In others cases, teachers and others in the community may have limited skills in the official language. In yet other cases, instruction begins in the students' maternal languages and shifts to the official language, but without specific attention being paid to the transition. Projects need to address the issue of language of instruction more explicitly.

> Identifying strategies that directly address language transition issues and that better equip teachers and schools to manage and support introduction of a second (or third) language will be important for future projects.

Teacher professional development and support. Successful improvements in reading instruction and student literacy acquisition are going to require developing and supporting teachers. As indicated earlier, teachers need to be taught how children learn to read and understand how to apply the elements of sound reading instruction. They also need to learn how to use a diversity of materials and assessments. They may need to learn how to address language transition issues. None of this learning can happen without effective training, or, more importantly, without effective follow-up monitoring and coaching.

More than ever, projects are going to need robust teacher professional development programs and ongoing support.

Together, the six issues raised above form the core of how USAID can think strategically about intervening to achieve its reading goal.

USAID programs will be able to help improve reading achievement by assuring that students have a greater opportunity to learn. This means having more allocated time actually available to teachers and students by identifying, understanding, and then reducing some of the factors that cause loss of time. It also means making sure that teachers know what to do with the time available to them so that students remain on task. Most importantly, learners need to be engaged in reading activities and use the materials that provide the practice they need to develop reading fluency and comprehension.

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