

## Teaching and Learning: A Rapid Review of the Literature

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## **Teaching and Learning: A Rapid Review of the Literature**

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This rapid review of international literature on teaching and learning in primary education was conducted for the Strengthening Education Systems in East Africa (SESEA) project sponsored by Aga Khan Foundation Canada and the Canadian Department of Foreign Affairs, Trade and Development (formerly CIDA). This is one of a set of rapid reviews on key dimensions of school improvement developed as input to a research agenda setting process for East Africa for the Learning and Dialogue component of the SESEA project. The complete set addressed the following themes: teaching and learning, teacher development, school management and leadership, parent and community involvement and early childhood education and development.<sup>1</sup>

The purpose of this rapid review is to synthesize research-based knowledge and issues concerning teaching practices and student learning from the international literature, highlighting key topics which pertain particularly to teaching and learning in East Africa. The review is structured around three broad themes: (1) getting children into school (access); (2) improving the quality of learning; and (3) providing teachers and students with the tools to success. The rapid review also summarizes current issues and knowledge gaps identified in the literature examined.

### **Rapid Review of the Knowledge Base**

Education for All and the accomplishment of universal primary education has been the defining preoccupation of national and international efforts to strengthen primary education across the developing world over the past two decades. Primary enrolment in Tanzania, Uganda and Kenya, for example, has increased substantively at varying rates, but universal primary education has not yet been achieved in any of the East African countries (Sumra & Mugo, 2012| UNESCO, 2013). Issues of access remain a prominent concern in the region, particularly for students and families marginalized for various reasons (e.g., location, poverty, language, gender, ethnicity, disability, religion). Improvements in access and enrolment have created new challenges and heightened concerns about the quality of education children are receiving once they are in schools. The information synthesized in this rapid review is not exhaustive, but it does highlight recurring perspectives teaching and student learning in the international literature.

### **Access and Enrolment: Getting Children into School**

Removing barriers and ensuring that all children are attending school is typically the first step to improving education. Several interventions focusing on increasing access to education are identified in the international literature. While economic and educational interventions are most common in literature, Petrosino et al (2012) found that interventions focused on improving school infrastructure (e.g., school facilities, roads, and updated learning materials)

have the most significant positive effects on enrolment and attendance for students in developing countries. Children in schools with better infrastructure, however, do not necessarily perform better on literacy and numeracy tests (Sumra & Mugo, 2012). Education interventions, in isolation of other access-related interventions such as health and nutrition programs, do not independently increase enrolment, but rather work in combination with each other (Petrosino et al, 2012, McEwan, 2013).

Student attendance and completion of primary school also depend on the costs to families of schooling. The poorest families and families with girls respond well to cost alleviation measures (Banerjee et al, 2013). Conditional cash transfers (CCT), for example, are found to create additional incentives for education which are not present in simple price reduction; however, there is no indication that the amount of money given has a strong effect on attendance (Banerjee et al, 2013). However, despite reported improvements in attendance and enrolment, no positive effects of CCTs on student performance have been identified (UNESCO, 2013). In sum, increased access and enrolment is not consistently correlated with improvements in student learning outcomes.

Barriers to access may differ for different subgroups of students. Enrolment and attendance of girls, for example, is most greatly impacted by girls' experiences of sexual harassment, gender bias, and the cost of schooling (Sumra & Mugo, 2012, Banerjee et al, 2013) independent of indicators of school quality. Children with various types of disabilities represent another largely underserved population in developing countries. International organizations promote inclusive education for children with special needs, and encourage teachers to take steps to ensure that the curriculum can be tailored to the individual needs of children with disabilities (UNESCO, 2013). In Uganda, about 60% of youth without impairments were literate, compared to 47% of youth with physical or hearing impairments and 38% of youth with mental impairments (UNESCO, 2013). One consequence of access efforts and attendance issues in East African schools is the common presence of overage children in primary school classrooms. The educational challenges associated with meeting the needs of overage children represents an important contemporary teaching and learning issue in East African schools (UNESCO, 2013).

### **Improving the quality of learning**

Despite vast improvements in student enrolment and attendance in East Africa and worldwide, many children are still not achieving desired learning outcomes (UNESCO, 2013). Significant efforts have been made by governments and international donors to ensure that students achieve a solid foundation in reading, writing and mathematics at the primary school level. Some have criticized the focus on literacy and numeracy as narrowing the learning agenda with little regard for other areas of instruction which prepare children to be independent citizens, healthy, and employed (UNESCO, 2013). International interest in the teaching of 21st Century skills, which include problem-solving skills, skills for sustainable development, advocacy and communication skills, conflict-resolution skills, global citizenship and rights-based education (UNESCO, 2013) extends to Africa and other regions of the developing world. It cannot be said, however, that a robust base of research on teaching and learning for those skills exists in developing countries.

Literacy and numeracy proponents argue that in order to develop advanced learning skills, children must have a solid foundation in reading, writing, and mathematics. There has been extensive research on conducting effective literacy and numeracy interventions at the primary level developing countries. A Hewlett Foundation review (2014) stresses the importance of targeting interventions to the specific level of each child by assessing students at a base level, setting goals with clear instructions and timelines to complete these tasks, and including regular assessments to monitor the students' progress. Evidence from multiple studies support the claim that these forms of intervention are most effective when they are initiated in the early years of a child's schooling (Hewlett Foundation, 2014; Nag, Chiat, Torgerson, & Snowling, 2014).

Teachers play an instrumental role in improving learning outcomes, and it is important that they are aware of the impact their practice has on student learning (Timperley, Wilson, Barrar, & Fung, 2007). Some research argues that the relationship between teachers and students is most effective when both are willing to engage in an open discussion about the learning process in order to ensure that instructions are clear and goals are met (Higgins, Baumfield & Hall, 2007). Timperley et al (2007) emphasize the importance of giving teachers the authority to design their lesson plans in a way that fits their own teaching style and benefits the students. However, several studies suggest that a more tightly scripted approach to lesson planning is needed in developing country contexts where teachers' professional preparation and knowledge may be weak. A study by the Hewlett Foundation (2014) identified lesson-planning practices in sub-Saharan Africa classrooms that have proven to be most effective for promoting student learning, including providing clear guidance and a logical sequence of instruction. Creating routines that teachers can employ in different lessons is also a useful technique to simplify the task for teachers and create continuity for students. Some of the most exciting recent research on teaching practices in East Africa tries to understand the teaching routines and aspirations of local teachers, using this as a starting point for working with teachers to improve instruction (Dubek, Jukes, and Okello, 2012; Vavrus 2009).

Several pedagogical interventions have been found to be successful in promoting children's learning in developing countries. Westbrook, Durrani, Brown, Orr, Pryor, Boddy & Salvi (2013) identify six teaching practices that are most effective for promoting learning: (1) balance of whole-class, group and pair work, (2) learning materials beyond the textbook, (3) open and closed questioning, expanding responses, encouraging student questioning, (4) demonstration and explanation, drawing on sound pedagogical content knowledge, (5) using local languages and code switching and (6) varying lesson sequence. What is evident from findings that arise from research on teaching and learning in developing countries is that the characteristics of effective teaching are not much different from those identified as good teaching internationally.

Appropriate assessment practices and feedback are additional important factors in improving student learning. Classroom assessment can be a useful tool for identifying, monitoring, and supporting students who are at risk of falling behind their peers (UNESCO, 2013). Assessments are most effective when they are closely aligned to curriculum goals (UNESCO, 2013) and used frequently to provide diagnostic feedback to students (Higgins, Baumfield & Hall, 2007). When explicit instructions are given, assessments can be used to ensure that there is mutual understanding between teachers and students of the learning tasks

and goals (Higgins, Baumfield & Hall, 2007). Research on classroom assessment practices and the use of student assessment data by teachers in developing country contexts, including the East Africa region is not well developed.

Student learning can improve significantly if students are given the opportunity and skills to monitor their own learning and internalise feedback as self-regulation (UNESCO, 2013; Higgins, Baumfield & Hall, 2007). Teaching students meta-cognitive strategies can help them to monitor their own work and use problem-solving to self-correct and improve their understanding (Higgins, Baumfield & Hall, 2007). Simply relying on rote memorization tasks is less effective (Nag et al, 2014). Using scaffolding has been shown to be an effective way for students to understand the different processes involved in a given task and track their own progress (Higgins, Baumfield & Hall, 2007). For example, if students are guided by a teacher through a task in a step-by-step manner, they are then able to retrace their steps and identify wrong turns when attempting to solve problems independently. Expectations for teachers to act as guides and partners in student learning may challenge traditional conceptions of teachers as holders and transmitters of knowledge in some contexts.

The language of instruction is an important issue particularly in the East African context. National governments establish education policies that mandate instruction in national languages as well as in a wide variety of local languages at different grade levels. Many children are raised in multilingual families and have an interest in learning English, as well, for employment opportunities in urban or international settings. The Hewlett Foundation (2014) states that deciding which languages to use for teaching and assessment should be based on the home environment of students, as well as the teachers' spoken and written proficiency in the instructional languages in primary schools. Research evidence on best practices in different contexts remains elusive.

Curriculum is another focus of school reform activity. There is a shift to replace content-driven curricula with relevant and applicable knowledge (Westbrook et al, 2013). These approaches emphasize the teaching of skills and attitudes, not simply knowledge of material. Nevertheless, teaching content knowledge is also important for student learning and must remain a part of the curriculum. Several studies have pointed to the positive results of a competency-based thematic framework in East Africa, specifically Uganda and Tanzania (Altinyelkin, 2010, Holland et al, 2012, Vavrus, 2009, Vavrus & Bartlett, 2012, as cited in Westbrook et al, 2013). Evidence on incorporating indigenous knowledge into curricula and teaching is mixed, with some contexts showing positive results and others questioning the value of indigenous knowledge or the lack of focus on international perspectives (Westbrook et al, 2013). Research underscores the importance of aligning curriculum goals and forms of assessment (Westbrook et al, 2013, UNESCO, 2013). Teacher education and student goals must also align with the curriculum.

### **Providing Teachers and Students with Tools to Succeed**

A synthesis of findings from early primary initiatives in Africa and India emphasized the need for well-developed programs that provide teachers with clear guidance for student assessment, lesson planning, sequencing of lessons, and alignment of materials to lessons and assessments of student learning levels (Hewlett Foundation, 2014). The materials used in

lessons are most effective when they are at the appropriate level and relate closely to the topics of instruction. Low-cost teaching materials should be prioritized in order to ensure that all students have access to relevant materials (Hewlett Foundation, 2014; McEwan, 2013). The gap between the ideal and practice can be daunting. In Tanzania, for example, only 3.5% of children had their own reading textbook according to a recent UNESCO report (UNESCO, 2013).

Class sizes and student-teacher ratios are an important area of research for East African schools, as many primary school teachers struggle to manage significantly increasing enrolment with limited resources. A recent meta-analysis on learning in developing countries identified that reducing class size and introducing improvements in school management and supervision do not typically show significant effects unless combined with teacher training and appropriate classroom instruction and resources (McEwan, 2013). Class size can, however, have an impact on teacher retention, which is discussed in more detail in the rapid review on Teacher Development.

Child-centred curriculum, materials, and teaching techniques that cater to the individual needs and abilities of students and are effective at promoting learning (Westbrook et al, 2013; Hewlett Foundation, 2014). Incorporating students' backgrounds and experiences into the lessons is said to be a way for them to feel connected to the content, and to promote sustained attention and inclusion (Westbrook et al, 2013; Nag et al, 2014). Again, these findings reflect knowledge about effective teaching internationally, not exclusively to teaching in developing country classrooms. Instructional technology interventions such as laptops and tablets have been shown to improve engagement and learning in some studies, however more research is needed in order to determine how they may be used most effectively (McEwan, 2013).

### **Knowledge Gaps**

There is a large body of knowledge on teaching and learning at the primary education level in developing countries and, as noted, much of what is known about effective teaching and learning echoes evidence from the international literature. Few studies found in this review focus specifically on teaching and learning in East Africa. This section provides a brief outline of general gaps in the international literature on teaching and learning, as well as specific references to East Africa when possible.

### **Pedagogical Interventions**

More research is needed to understand the adaptation and impact of new pedagogical approaches on student learning in developing countries (Sumra & Mugo, 2012; Banerjee et al, 2013). While complex research designs are not possible or necessarily appropriate to all research on teaching and learning, understanding of teaching and learning effects would certainly be enhanced by judicious use of more experimentally-oriented research designs that allow investigators to distinguish between the effects of multiple overlapping interventions (McEwan, 2013). Research on teaching and learning is also constrained by the lack of reliable contextually appropriate assessment tools for literacy and numeracy which would help to gauge the quality of interventions (Nag et al, 2014). Hence, research that includes the development and/or validation of valid and reliable assessments of student learning is clearly needed. In addition, many non-governmental organizations (NGO) design and support innovative interventions for education in resource-poor contexts, but their work is not well

documented and disseminated to the international research community (Nag et al, 2014). It is important for researchers and local program developers to consider how their work can be disseminated to teachers and schools beyond those involved in implementing promising teaching and learning practices (Westbrook et al, 2013).

Effective pedagogical interventions are often discussed in vague terms, without providing the details necessary for practitioners to replicate effective practices. One example is the use of group work, which requires instructions about the topics for students to discuss, how teachers can monitor group work, and the type of learning that is achieved through this method (Westbrook et al, 2013) for different learning objectives and classroom contexts. Further research is needed, for example, to understand how teachers can use group work to manage large class sizes effectively. A recent study of Ugandan classrooms has shown that the majority of teachers were unable to use group work effectively to include rural and overage students and promote learning (Altinyelkin, 2010, as cited in Nag et al, 2014). These same considerations apply to many teaching methods associated with active and complex learning goals in primary classroom contexts unlike those in which the methods were initially developed and used.

In an attempt to be more inclusive, some schools in developing countries have introduced policies that reserve a certain number of places for children from marginalized backgrounds, but there is little research on good practices for integrating these children both socially and academically (Banerjee et al, 2013). There is also a lack of research on specific ways that teachers can create inclusive learning environments for children with disabilities (Westbrook et al, 2013). More information is also needed on the effect of having overage children in primary schools, and how to teach and integrate overage children into primary schools and classrooms (Westbrook et al, 2013).

It is important that families understand the purpose and effectiveness of no-traditional teaching methods, as they may be more familiar with and resist changes to the traditional 'talk and chalk' approach to learning (Nag et al, 2014). A student's home environment can impact the effectiveness of different pedagogical approaches. More information is needed on how children's health, nutrition, motivations and psychosocial well-being can support or impede the success of pedagogical interventions (Nag et al, 2014, Petrosino et al, 2012). Further investigation is also needed in order to understand the best ways to inform parents about the benefits of education. Such interventions can be inexpensive and very effective in improving student enrolment and success after graduation (Banerjee et al, 2013).

Information-communication technology (ICT) is quickly gaining interest among the international education community, however there is not enough research to reliably guide investments. There is plenty of excitement and the costs of ICT materials are diminishing, however it is unclear how effective the use of ICTs is at actually improving learning outcomes (Banerjee et al, 2013). Some research has shown that ICTs can be used to provide access to education for remote groups of students and engage children in learning (Banerjee et al, 2013; Hewlett Foundation, 2014). This line of research is particularly important for the East African context, but more information is needed to understand how to move forward with new technology in pedagogically effective ways. The majority of research has been done using computers, however tablets and mobile phones may be more practical tools in low-income contexts (Banerjee et al, 2013).

Deciding which language of instruction to use is a very complicated and political issue in many countries, as different actors have different views on the value of local and global languages (Nag et al, 2014). Research has shown the benefits of instructing children primarily in their mother tongue (Nag et al, 2014; UNESCO, 2013), however identifying and responding to the mother tongue of all students poses a challenge in many schools in East Africa. National governments mandate instruction in national languages and vary in their provisions for mother tongue instruction. Parents may also have the desire for their children to learn English (Nag et al, 2014). There is a need for more empirical research on how language is learned at home, what issues arise as children enter school and how schools are coping pedagogically with linguistic diversity and competing expectations for language learning (Nag et al, 2014). More research is also needed into the effectiveness of alternative programs and approaches that utilize multi- or bi-lingual approaches instruction.

### **Curriculum implementation**

In general, there is a lack of understanding of how the curriculum is enacted at the classroom level (Westbrook et al, 2013) within the varying contexts and practical challenges (e.g., large multi-age classrooms, language diversity) of East African schools. More studies are needed which consider the intended and actual outcomes of the curriculum at the classroom level. “A research gap identified here is for studies to track how teachers implement the given curriculum and work towards the assessment mode, using a mixed methods approach to understand teacher processes and student learning over time.” (Westbrook et al, 2013, p. 63).

### **Financing interventions and incentives**

One of the most important areas of future investigation is how to alleviate the cost of education while promoting quality learning (McEwan, 2013, Banerjee et al, 2013). The current evidence on learning outcomes and cost-effectiveness is incomplete (Hewlett Foundation, 2014), as is the cost-effectiveness of different strategies to promote access. For example, despite the growing popularity of CCTs in both policy and practice, little is known about the most effective way to design these incentives (e.g., the amount of money given, the structure of payments, and the types of conditions involved). Further investigation is needed to determine how CCTs and other kinds of financial incentives can be designed in a way that yields the largest results while remaining cost-effective (Banerjee et al, 2013). A cash transfer program in Kenya that targets orphans and vulnerable children costs approximately 0.12% of Kenya's GDP (Bryant, 2009, as cited in UNESCO, 2013). When comparing this to the overall education budget of Kenya (6.7% of GDP), it is clear that more research needs to be done in order to understand how cost-effective cost alleviation interventions can be used in combination with other tools to help the most disadvantaged students access quality schooling.

As mentioned earlier in this review, reducing class sizes and improving pupil:teacher ratios has not been found to be correlated with learning unless the appropriate teaching techniques and materials are used (McEwan, 2013). Understanding how to maximize learning outcomes in large classes is a very important issue in East Africa. For example, the pupil:teacher ratio in Kenyan primary schools has risen 45% from 1999 to 2009 (UNESCO, 2013). This raises

the issue of how funds can be most effectively spent in resource-poor contexts in order to improve teaching and learning. An assessment conducted by Sumra & Mugo (2012) on learning outcomes in Tanzania, Uganda, and Kenya concluded that providing teacher incentives may be a way to improve learning outcomes inasmuch as it can reduce the persistent problem of teacher absenteeism (see rapid review on Teacher Development for more information on professional development strategies to reduce absenteeism and classroom management).

### **School Location and Improvement**

Past research has focused on regions that are most accessible, not regions most in need of information and support (Nag et al, 2014). Future investigation could seek to understand how teaching and learning can be best supported in rural areas where the majority of students are taught, rather than urban areas that may be more convenient for study (Westbrook et al, 2013). An effective and affordable approach could identify schools in a given region that are performing well given their resources, and visit these schools to gain insight into what similar characteristics might explain their positive outcomes (Sumra & Mugo, 2012).

### **Conclusion**

This review highlights current research on teaching and learning in East Africa and other developing country contexts. Despite some improvements in the area of access to schooling, for teaching and learning there is still much that can be improved. As emphasized here, a number of different factors contribute to enhance learning. More research on teaching and learning in East Africa is needed – not only about what teaching approaches work, where, and why, but also about how to align different types of interventions and improvements in teaching to best enhance quality learning for all children.

### **Notes**

1. The series of rapid reviews utilized a strategic search method in order to identify key resources related to the review focus including existing systematic reviews, literature reviews, reports and other grey literature from well-known and reliable sources on school improvement in general as well as in the contexts of developing countries and East Africa specifically. To this end our team identified search terms for, conducted, and recorded more than 765 individual searches (465 in Google and 362 in Google Scholar). We combed through and collected links to potential sources from approximately 4,135 pages of Google and Google Scholar search results. After the initial search was completed we identified 1) key sub-themes; 2) prominent authors and organizations; and 3) created a list of documents to be considered for the rapid review. We sorted through and summarized key resources making note of significant findings, the evidence-base supporting these findings, and any knowledge gaps identified in the literature. The final documents included in the series of rapid reviews focused primarily on knowledge from extensive systematic reviews of the literature related to the sub-themes of this series, supplemented by recent empirical studies of particular relevance to East Africa and other

developing country contexts. The list of key documents synthesized for this review of teaching and learning appear in the references at the end of this review.

## References

- Banerjee, A., Glewwe, P., Powers, S. & Wasserman, M. (2013). Expanding Access and Increasing Student Learning in Post-Primary Education in Developing Countries: A Review of the Evidence. *Abdul Latif Jameel Poverty Action Lab (J-PAL) Post-Primary Education Initiative Review Paper*. Retrieved from: <http://www.povertyactionlab.org/publication/expanding-access-and-increasing-student-learning-post-primary-education-developing-count>
- Dubeck, M., Jukes, M. & Okello, G. (2012). Early Primary Literacy Instruction in Kenya. *Comparative Education Review*, Vol. 56, No. 1, pp. 48-68
- Hewlett Foundation (2014). Learning to Improve Learning: Lessons from Early Primary Interventions and Evaluations in India and Sub-Saharan Africa. Unpublished draft.
- Higgins, S., Baumfield, V., & Hall, E. (2007). Learning skills and the development of learning capabilities. Technical Report. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- McEwan, P.J. (2013). Improving learning in primary schools of developing countries: A meta-analysis of randomized experiments. Unpublished manuscript. Retrieved from: <http://academics.wellesley.edu/Economics/mcewan/PDF/meta.pdf>
- Nag, S., Chiat, S., Torgerson, C., & Snowling, M. J. (2014). Literacy, Foundation Learning and Assessment in Developing Countries. DFID publication retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/305150/Literacy-foundation-learning-assessment.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305150/Literacy-foundation-learning-assessment.pdf)
- Petrosino, A., Morgan, C., Fronius, T., Tanner-Smith, E. & Boruch, R. (2012). Interventions in developing nations for improving primary and secondary school enrolment of children: a systematic review. *3ie grantee final review*.
- Sumra, S., & Mugo, J. (2012). Are our children learning? Assessment of learning outcomes among children in Tanzania, Kenya and Uganda (Uwezo Working Document 1.4.05). Retrieved from: [http://www.Sumra & Mugo, 2012net.org/triennale/Triennalestudies/subtheme1/1\\_4\\_05\\_UWEZO\\_en.pdf](http://www.Sumra & Mugo, 2012net.org/triennale/Triennalestudies/subtheme1/1_4_05_UWEZO_en.pdf)
- Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration [BES]*. New Zealand Ministry of Education. Retrieved from <http://www.oecd.org/edu/school/48727127.pdf>
- UNESCO (2013). *Teaching and learning: Achieving quality for all*. Education for All Global Monitoring Report. Retrieved from: <http://www.UNESCO, 2013.org/new/en/education/themes/leading-the-international-agenda/efareport/reports/2013>

Vavrus, F. (2009). "The cultural politics of constructivist pedagogies: teacher education reform in the United Republic of Tanzania." *International Journal of Educational Development* 29 (3)303-311.

Westbrook, J., Durrani, N., Brown, R., Orr, D., Pryor, J., Boddy, J., & Salvi, F. (2013). *Pedagogy, Curriculum, Teaching Practices and Teacher Education in Developing Countries*. Final Report. Education Rigorous Literature Review. Department for International Development.

Yu, G. (2007). Research evidence of school effectiveness in sub-Saharan Africa (EdQual Working Paper No, 7). Retrieved from:  
<http://www.edqual.org/publications/workingpaper/edqualwp7.pdf>