E-READERS IN KENYAN PRIMARY SCHOOLS

Research Brief

What Organizations Need to Know About Investing in Ed-Tech for Development

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Sub-Saharan Africa faces some of the greatest challenges in education and has lagged behind in progress toward many of the goals set through the Millennial Development Goals (MDGs) and Sustainable Development Goals (SDGs). With a lack of teachers, infrastructure, and materials, organizations and schools have turned to technology, when available, to supplement their educational efforts. However, the implementation of technology itself is dependent on many of those same resources, and it is difficult to determine how "ed-tech" can be made more effective.

Information presented in this brief is linked with larger ongoing studies at Vanderbilt University and the Lwala Community Alliance (LCA). The aim of this brief is to shed light on the following key areas:

- How ed-tech (e-Readers) can influence literacy.
- The relationships between students/teachers and ed-tech in a developing region.
- The support necessary for effective use of ed-tech in the developing world.
- Professional Development for teachers is necessary to ensure best practices and efficacy of ed-tech programs.

Approach and Results

LCA had the goal of improving educational outcomes for the students in the community surrounding Lwala, Kenya using e-Readers. In order to effectively support at-school use, schools were selected based off of existing infrastructure (i.e., electricity) and personal plans for implementation. Following relevant research, LCA trained teachers on e-Reader use and best practices[iii]. LCA also provided ongoing tech support through the local education team, which is also vital for successful implementation[iii]. Studies show tech can be more effective in aiding instruction when teachers feel that ed-tech aligns with their current teaching ideology[iiivv]. Thus, this study analyzed educational outcomes in terms of literacy, as well as teacher's use of ed-tech and practices in the classroom through interviews.

In a one-to-one model, LCA provided e-Readers to Year 6 students in primary school.

Students' literacy was assessed using a measure of their ability to read quickly in English and Kiswahili using correct words per minute (CWPM). Students' comprehension was also assessed through a vocabulary measure and story. Six schools in the same region participated in the research—3 with e-Readers and 3 without e-Readers. Students were given a baseline assessment at the beginning of the academic year and again towards the end of the academic year to measure growth.

Students with e-Reader access showed significant improvement over the course of the school year.

Students provided e-Readers showed significant improvement in both comprehension and literacy for Kiswahili and English. Students gained more words per minute in Kiswahili and English by the end of the school year. Similarly, students in treatment schools achieved a higher score on the comprehension exam. With only a few questions, those that had e-Readers scored 1 out of 10 points higher on the English exam. There was not a significant improvement for Kiswahili, however.

Teachers and students both had positive relationships with the e-Readers, with some caveats.

Teachers cited multiple reasons why they thought that the e-Readers provided more opportunities for themselves and their students for teaching and learning. Teachers noted that students seemed more engaged in lesson, and excited about school. Attendance and enrollment had both improved considerably, which exacerbated the challenge of providing *one-to-one* e-Readers for students in the long term.

At the same time, teachers were concerned about ongoing power outages and keeping the e-Readers charged. Many schools were without power for considerable amounts of time, leaving teachers to either bring the e-Readers home to charge or wait for LCA staff to charge them and bring them back.

Some teachers had more difficulty working with the e-Readers in their classes. It should be noted that not all teachers were trained—some missed the training to cover classes or for personal reasons and then suffered to use them effectively during their initial integration into classrooms. Consequently, many students took a long time to get adjusted to the e-Readers, and, with short class periods of 35 minutes, transition time took a large part of class. Teachers were also concerned with student off-task behavior, although little was observed within classrooms.

Implications and Conclusion

Although this research showed some successes in ed-tech use, it also identified research-based practices that were critical to implementation and lessons learned that should be considered by any organization planning to implement educational technology. Overall, the findings suggest promise and potential for even greater gains in the future in developing contexts (see https://my.vanderbilt.edu/digitaled/ for additional information).

Teachers need initial and ongoing training and professional development for all staff members.

Organizations need to advocate for and support infrastructure development—access to an electricity source does imply it is consistent.

Provide ongoing opportunities for students to meaningfully engage with ed-tech, including adding more storybooks, readings, and/or applications to the e-Readers.

Look into internet access to increase capacity for new applications of the e-Readers and for monitoring and evaluating use of the e-Readers.

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