

Researchers

Jamie Johnston
Stanford University

Christopher Ksoll
Mathematica Policy Research

Staff

Joyce Jumpah
Research & Policy Coordinator

Loïc Watine
Senior Director, Right-Fit Evidence

Madeleen Husselman
Country Director, Ghana

Daniel Atta Marfo
Senior Data Manager

Timeline

2013-2016

Sample Size

5,485 students

Research Implemented by IPA

Yes

Satellite-Transmitted Classes to Reach Rural Students in Ghana

Abstract

Recent efforts to increase primary school education enrollment in developing countries have been extremely successful, yet major challenges persist in improving educational outcomes. In rural areas, this challenge is even more severe, as remote communities struggle to attract and retain professionally trained teachers. This study assesses the impact of a program that aims to improve student learning for marginalized pupils in rural Ghana through an interactive distance learning model. The study found that the transmitting distance instruction via satellite into daily school lessons significantly improved primary students' numeracy and pre-reading literacy skills.

Policy Issue

Although enrollment in primary school has increased dramatically in recent decades, many developing countries struggle to ensure high-quality education for children attending school. In rural areas, this challenge is even more pronounced: learning outcomes in rural areas of lower- and middle-income countries are often only a fraction of those in urban areas.

Context of the Evaluation

Like many sub-Saharan African nations, Ghana faces significant challenges in education quality. In 2016, only 37 percent of students in Grade 4 achieved proficiency in English, and 22 percent of students achieved proficiency in math (in this context, reaching proficiency means that the student scored at least 55 percent on a standardized test conforming to the national curricula).[1] Students in rural areas performed worse: while 54 percent of Grade 4 students in urban areas achieved proficiency in English, only 26 percent of rural students did; in math, 33 percent of urban students achieved proficiency, but only 14 percent of rural students did. A potential source of these divergences is the difficulty in attracting and retaining professionally trained teachers to remote, rural areas of Ghana.[2]

The Making Ghanaian Girls Great (MGCubed) program, implemented by the Varkey Foundation, aims to overcome gaps in instructional quality by using distance technology to increase access to high-quality teaching by well-trained instructors. This evaluation of the MGCubed program took place in six districts in the Volta and Greater Accra regions that the Ghanaian government identified as among the most deprived communities. Families in these districts are chiefly subsistence farmers and fishermen.

Details of the Intervention

Researchers collaborated with the Varkey Foundation and Innovations for Poverty Action to conduct a randomized evaluation assessing whether reliable, high-quality interactive distance classes improves learning outcomes among marginalized school children in rural Ghana. This is the first impact evaluation of interactive distance learning within Sub-Saharan Africa.

Researchers randomly assigned 147 randomly schools to either receive the MGCubed program or to serve in a comparison group that did not receive the program. In the 70 schools randomly selected to receive the program, school administrators identified students that were most marginalized (in terms of home life, distance to the school, and school attendance and performance) for inclusion in the program.

Two classrooms in each school received all the technology needed participate in the distance learning program: solar panels, a satellite modem, projector, web cam, and more. The program trained school-based facilitators (through a five-day residential training and several refresher trainings throughout the year) to manage these classrooms and contribute to the instruction when the technology failed.

Every day, the Varkey Foundation broadcasts live mathematics and English lessons from Accra to the rural classrooms. The six studio teachers delivering the lessons were professionally trained and received continuous coaching through the program. In place of traditional math and English lessons, selected students attended satellite classes: one hour each of math and English lessons, five days a week. Lessons were delivered in real-time and

were two-way interactive. Through web cams and microphones, studio teachers and students could see and directly communicate with one another. After school, girls also attended non-academic satellite lessons focused on empowerment and health.

Results and Policy Lessons

After two years, the program measurably improved students' numeracy and literacy skills. In math, satellite classes improved students' test scores by 0.23-0.24 standard deviations. In English, while the satellite classes did not lead to gains in overall reading fluency, the classes did improve students' foundational, pre-reading skills, such as letter naming fluency (a 0.82 standard deviations improvement over the comparison group) and word-naming fluency (0.17 standard deviations). The learning gains appear to be sustained, at least in math: for the cohort of children who researchers assessed one year after the program ended, students maintained the overall math gains observed immediately after participation in the program.

Unannounced classroom observations demonstrated that the satellite classes did not impact teacher or student attendance and overall classroom time-on-task. This suggests that the learning gains may be a result of instructional quality rather than increases in total quantity of instruction time. In addition, the classroom observations showed that the in-classroom facilitators were engaged in meaningful classroom activities during video instruction more than half of the time that the video was being shown. Their involvement essentially increased the classrooms' teacher-student ratio—another potential source of the learning gains.

Taken together, these results suggest that a blended distance learning model of this nature is a promising approach for reaching marginalized students in rural areas. As technology improves, such programs will become more cost-effective, making scaling more feasible.

Sources

[1] "Ghana 2016 National Education Assessment Report of Findings," Ministry of Education, Ghana Education Service National Education Assessment Unit, November 2016. http://pdf.usaid.gov/pdf_docs/PA00MHMR.pdf

[2] Ibid.

March 20, 2017