Providing Primary Education for Foundational Literacy and Numeracy in Guinea Bissau

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Sector(s): Education

Location: Quinara and Tombali

Sample: 2,112 children from 49 villages

Target group: Children Students Children under one

Outcome of interest: Student learning

Intervention type: Early childhood education School-based inputs

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Research Papers: Large Learning Gains in Pockets of Extreme Poverty: Experimental Evidence from ...

Partner organization(s): Effective Intervention

In many remote regions, children are growing up without basic knowledge of reading and mathematics despite high levels of school enrollment. Researchers conducted a randomized evaluation to test the impact of creating schools offering four years of primary education, in lieu of the government, on early grade reading and math skills in rural Guinea Bissau. The intervention led to substantial improvements in literacy and numeracy.

Policy issue

In many remote regions with limited resources, children grow up without acquiring foundational skills for reading and math, even in places where there are high rates of school enrollment. This phenomenon, often referred to as "schooling without learning," can be attributed to several factors, including low demand for schooling, low quality school materials, and a low supply of skillful teachers. These issues result in a large portion of the population being illiterate and innumerate, leading to lower income levels and fewer opportunities for these children to succeed in the long run. Additionally, this contributes to a greater wealth gap between children in poorly served areas and those in areas with better schooling. Can supplying the first four years of primary education in place of government schools dramatically increase learning levels in low-resource settings?

Context of the evaluation

This randomized evaluation took place in rural areas of Guinea Bissau. In 2018, 47.7 percent of Bissau-Guineans were experiencing poverty; among them, 75 percent lived in rural areas.[1] The study focused on rural villages in the Quinara and

Tombali regions, which have some of the lowest learning levels in the country. The selected villages were relatively small and isolated, with rough terrain, large distances between locations, and no internet connection during the period of the study.

The official education system in Guinea Bissau comprises nine years of compulsory basic education, followed by three years of secondary school. However, the reach of government schools in the study area was uneven and inconsistent, with frequent teacher strikes. At the beginning of the study, half of the schools in the area were run by the government. The rest were managed by local communities, NGOs, or private organizations.

Despite schools being open, learning levels remained extremely low. In 2010, seventy percent of children in a nationally representative survey were enrolled in school, but only a third of the children surveyed could identify a numeral or read a simple word. Families were aware of the low quality of education their children were receiving, and majority expressed a willingness to expend around 20 percent of their income per child for better schooling.



Three young students walk on a street in Guinea Bissau

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Details of the intervention

Researchers conducted a randomized evaluation to measure the impact of opening schools offering four years of primary education on literacy and numeracy in rural Guinea Bissau. The intervention team recruited, trained, and monitored teachers to deliver schooling from the pre-primary level to grade 3. They implemented a specially designed curriculum, teacher training materials (e.g. scripted lessons), and materials for both teachers and students. The program entailed frequent monitoring of teachers with a focus on improving teaching practices (i.e., teacher coaching) and assessing children as well as regular efforts to stimulate and sustain community involvement. Each community provided and furnished the spaces in which schooling took place.

The evaluation included 49 villages, with a total of 2,112 eligible children. Villages were randomly assigned to either the intervention or comparison group.

1. *Intervention group (16 villages):* Children in villages randomly selected to receive the intervention received four years of school in place of government schooling, starting with a year of pre-primary school focusing on Portuguese language acquisition, followed by grades 1-3 of the national primary education curriculum.
2. *Comparison group (33 villages):* Children in the comparison group had access to local government, community, and private schools.

All children were taught in Portuguese, the official language in Guinea Bissau.

Researchers conducted surveys before, during, and after the intervention to track enrollment, attendance, residence, and sibling literacy and numeracy. After completing four years of schooling, students took one-on-one oral early grade reading and math assessments (EGRA and EGMA) which were used to measure the intervention's impact on their reading and math skills.

The main ethical consideration the researchers faced was whether it was ethical to randomly assign such a highly-resourced intervention. They felt that this was justified because a similarly highly-resourced intervention in health that they had previously run had no impact on the outcome of interest, so they were sufficiently unsure as to the ultimate impact of the intervention to justify randomization. In addition, they agreed to (and did, upon analysis of the results) provide the intervention to all villages in the study, regardless of randomization status, for several years after the intervention if a positive impact was found.

Results and policy lessons

Children in the intervention group showed clear gains over children in the comparison group on the endline assessment. Using each child's composite scores as a measure, children in intervention villages got 70.5 percent of questions right on average, while children in comparison villages got 11.2 percent of questions correct (a difference of 59.3 percentage points or 529 percent). In terms of test score standard deviations, this amounted to 5.3 SDs.

Literacy and numeracy: Children in intervention villages were also much more likely to reach international standards of foundational literacy and numeracy than those in the comparison villages. On the endline test, 63.9 percent of children in intervention villages met the standard for numeracy. In comparison villages, less than 0.1 percent of children reached the same threshold. For numeracy, 21.3 percent of intervention children met the standard for numeracy, and not a single child in the comparison villages reached this standard.

Reading: Children in the intervention group scored 65.7 percentage points better on endline reading tests than children in the comparison group, who answered 6.8 percent of questions correctly. This comprised a 966 percent difference. Across all reading skills tested, ranging from naming letters to demonstrating comprehension, students in the intervention group outperformed comparison children by at least 42 percentage points. For example, letter recognition among children in treatment villages was 56.8 percentage points better than in the comparison villages (where the average was 11.5 percent of questions answered correctly; a 494 percent difference). Their o ral reading fluency was 82.6 percentage points higher (compared to a comparison group average of 4.3 percent; a 1,921 percent difference) , and their reading comprehension was 74.6 percentage points higher (from a comparison village average of 5.1 percent; a 1,463 percent difference). By the end of the intervention, all children in the intervention group could recognize at least one letter, compared to only 64.8 percent of children in the comparison group (a 54 percent difference).

Math: Children in intervention villages scored 52.9 percentage points better on endline math tests compared to children in the comparison villages (the average rate for comparison children was 15.6 percent of questions answered correctly; this comprises a

339 percent difference). The difference in performance between children in intervention and comparison villages across the various math skills assessed ranged from 32 to 69.8 percentage points depending on the skill, with the largest differences made in quantitative comparison skills (from a comparison group average of 19.9 percent; a 351 percent difference) . The skills tested on the math assessment spanned in difficulty from identifying numbers to solving word problems. The enrolled children could answer around 12 more single-digit addition problems (out of 20 total), as compared to a comparison group average of approximately 3 (a 441 percent difference) and around 8 more single-digit subtraction problems from a comparison group average of about 1 (a 638 percent difference). By the end of the intervention, all children in the intervention group could name at least one number, as compared to 84.5 percent of children in the comparison group (an 18 percent difference).

Enrollment and progression: Four years into the study, children in the intervention villages were 12 percentage points more likely to be enrolled in school compared to 85 percent of children in comparison villages (a 14.12 percent difference) . They were also 65.6 percentage points more likely to be enrolled in the second grade or higher.

Overall, the study found evidence that concerted provision of early primary education in communities where government-provided schooling is inconsistent can substantially increase children's foundational literacy and numeracy and school attendance to levels comparable to those in far higher-income countries. Although the intervention required many resources, costing approximately US$425 per child per year, estimates of the future benefits to the child's future employment and income far exceed the program's costs.

Use of Results

Due to the large learning gains, the intervention was extended to children entering school in all 49 villages initially included in the randomized evaluation, whether they were assigned to the intervention or comparison group. The intervention was also offered to a new cohort of children aged 5-6 (i.e. at pre-school age). These children were enrolled in 2019, received one year of pre-primary, and continued to receive schooling until at least Grade 4 (an extension of the coverage of the original intervention).

In addition to extending the intervention to all villages that were part of the evaluation, the researchers will continue collecting data on the participating children into their adolescence, with the goal of understanding the extent to which the learning gains measured in the initial evaluation persist later in life and the potential impacts on school success and persistence. They will also measure the impacts of the intervention on families and communities.

Fazzio, Ila, Alex Eble, Robin L. Lumsdaine, Peter Boone, Baboucarr Bouy, Pei-Tseng Jenny Hsieh, Chitra Jayanty, Simon Johnson, and Ana Filipa Silva. "Large Learning Gains in Pockets of Extreme Poverty: Experimental Evidence from Guinea Bissau." Journal of Public Economics 199 (July 2021): 104385. https://doi.org/10.1016/j.jpubeco.2021.104385.

1. Ndoye, Djibril. "Poverty & Equity Brief: Guinea-Bissau." Africa Western & Central. World Bank Group, April 2021. https://databankfiles.worldbank.org/public/ddpext_download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/AM2020/Global_POVEQ_GNB.pdf.