



KENYA: Can scripted schooling improve learning?

Before the COVID pandemic, more than half of children in low- and middle-income countries suffered from learning poverty: they either were out of school or failed to learn to read with comprehension by age 10. At the same time, numerous studies have documented serious challenges related to the quality of education services, particularly for those serving poor students. In a country like Kenya, for example, teachers exhibit low levels of content and pedagogical knowledge. Previous research has shown that highly

for-profit company that codified and standardized both pedagogy and teacher monitoring across more than 400 schools across the country. Teachers in Bridge schools were equipped with a basic tablet computer (or e-reader) containing detailed lesson plans created centrally by staff located in the U.S. and Nairobi, Kenya. A scholarship program for Bridge had almost 30,000 applicants for 10,000 scholarships. To deal with this over-subscription, scholarships were allocated through a lottery, and researchers tracked applicants for two years. Preprimary and primary students induced to enroll in a Bridge school by the scholarship learned much more compared to students who did not get scholarships, with test score impacts among the highest observed in the international education literature; they also made more timely grade progression, performed better on the primary school leaving exam, and exhibited gains in cognitive development not captured by subject-matter tests. Low-achieving students benefited more from the program, and impacts were uniform across schools.

It is not possible to attribute the learning gains of Bridge students solely to the intense scripting followed in schools, as Bridge schools differ from government schools along multiple dimensions. Bridge employs teachers with fewer credentials, pays them much less, and monitors them much more closely than civil service teachers. Their class sizes are smaller and school days are longer. Physical facilities are more basic. In addition to the lesson plans, other processes were standardized across all Bridge schools, such as teacher recruitment and monitoring, the payment of school fees, and the construction of school buildings. Nevertheless, these results suggest that scripting may be a promising way to improve and standardize the quality of education at scale. Future experimentation is needed to see if the impressive gains observed can replicate in the public sector and in other countries.

structured teaching guides could improve literacy, but scripted lessons are not without critics, who worry that teachers will not be able to adapt content to student's needs. In places where teachers may be less prepared to tailor high quality lessons to their students, however, scripting may offer a way to standardize a minimum level of quality at scale.

The World Bank's Strategic Impact Evaluation Fund supported an evaluation of a scholarship program that provided funding for preprimary and primary students to attend private schools in Kenya operated by Bridge International Academies, a



Photo: World Bank / Sarah Farhat

Context

Primary education is nearly universal in Kenya, as in many other lower-middle-income countries, and the private sector serves approximately a third of preprimary students and 16 percent of primary students. At the end of primary school, students take the high-stakes Kenya Certificate of Primary Education exam, which plays a role in determining which, if any, secondary schools students can attend.

At the time of the study, Bridge International Academies was a private education company operating in multiple countries, not without controversy. Teachers' unions and international and local non-governmental organizations expressed concerns about the working conditions of teachers, safety of children, and the ethics of charging poor families school fees. While simple comparisons showed that Bridge students in Kenya had above-average test scores in the national primary-school exit examination, this pattern could simply have reflected sorting or selection bias; for example, parents with academically talented children may have disproportionately enrolled at Bridge.

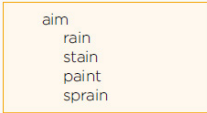
In Kenya, Bridge had more than 400 schools serving almost 100,000 students and charging approximately \$100 per year. Bridge standardizes lessons in all grades through centrally-developed and highly-detailed lesson guides delivered to teachers using tablet computers. The guides even provide teachers with detailed instructions on classroom management and pupil engagement (see box for a sample lesson). School heads are trained and monitored to observe teachers twice daily, recording information on adherence to the detailed teaching plans and their interactions with students. School heads also must follow detailed scripts for giving teachers feedback, which include tallying the number of times a teacher goes off-script for more than 10 seconds, skips a line in the script, or rephrases a line or translates a line to a local language.

At the time of the study, Bridge hired teachers with less formal education and experience than public school teachers, paid them much less, and required them to work longer hours per week, although working hours and pay were comparable to those in other private schools serving the same population. Only 23 percent of Bridge's primary grade teachers had more than secondary school education. Bridge head teachers earned roughly \$100 per month, while civil service teachers earned several times as much.

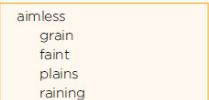
Class sizes were also smaller in Bridge schools. At the time of the study, the pupil-teacher ratio in preprimary classes was 13 in Bridge schools, 25 in other private schools, and 31 in public schools. At the primary level, the pupil-teacher ratio was 20 in Bridge schools, 17 in other private schools, and 34 in public schools.

Box: What does a scripted lesson look like?

Sound Combinations — 5 Minutes


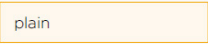
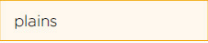
1. **Copy as I write.**
2. **Write on board:**

3. **Eyes on me.** Scan
4. **The letters A - I go together and usually make the sound AY, as in AIM.**
5. **Say AY.** [Signal] *AY*
6. **You will read the words that have letters A-I.**
7. **Say the sound for the underlined part, then read the word.**
8. **Touch word 1. What sound?** [Signal] *AY*
9. **What word?** [Signal] *Aim*
10. **Next word. What sound?** [Signal] *Ay*
11. **What word?** [Signal] *Rain*
12. Repeat last 2 lines for each word.
13. **Copy as I write.**

14. Add to board:



15. **Touch word 1. What word?** [Signal] *Aimless*
16. **Touch word 2. What word?** [Signal] *Grain*
17. Repeat last line for each word.

Build Ups — 5 Minutes

18. Clean board and write:

19. **Eyes on me.** Scan.
20. **What word?** [Signal] *Lain*
21. Change word:

22. **What word now?** [Signal] *Plain*
23. Change word:

24. **What word now?** [Signal] *Plains*

Evaluation

Researchers set up an evaluation to test whether attending a Bridge school improved children's learning. An NGO (UnitedWeReach) started a scholarship program for Bridge schools for the 2016 and 2017 school years. Almost 30,000 students applied, including children already attending Bridge schools without financial assistance. Since the program could only fund 10,000 scholarships, a lottery was used to allocate the scholarships.

Comparing scholarship recipients to non-recipients tells us

what happens when you offer scholarships to Bridge. This is called the intention-to-treat effect in the impact evaluation literature, and this estimate tells us what would happen to average outcomes of applicants if there were a scholarship program for Bridge. Because not everyone offered a scholarship takes it up and because some applicants will go to Bridge even without a scholarship, this does not tell us the impact of actually attending Bridge. To estimate the impact of attending Bridge, the intention-to-treat esti-

mate needs to be scaled by the proportion of children who react to the scholarship offer and attend Bridge. In this case, the researchers exploit the experimental design to estimate the causal impact of the scholarship on Bridge enrollment. They then use these estimates to create a Bridge attendance variable that just captures the variation in attendance induced by the scholarship program, as this is the variation that is random (and can be used to estimate causal effects), as opposed to variation that arises from differences among households in how much value they place on attending a Bridge school. They then use this adjusted Bridge attendance variable to measure the impact of Bridge attendance on learning and grade progression.

To measure outcomes, the study used information collected through phone calls with caregivers and home-based interviews with children. This included information on school enrollment, grade level, national-curriculum-aligned assessment scores, and performance on cognitive and non-cognitive tasks. For children old enough to have completed primary school, the study also used (pupil-reported data on) primary school leaving exam scores. The study focused on children's learning and did not collect data on teachers beyond their credentials, experience, and tenure. Thus, this evaluation cannot shed light on teacher wellbeing, which is one focus of concern for some of Bridge's international and local critics.

Findings

Two-year scholarships increased the probability that applicants attended Bridge schools.

In the first year of the study, 19 percent of primary school applicants to Bridge schools who were not offered a scholarship through the lottery enrolled in Bridge schools anyway. Getting a scholarship increased enrollment by 37 percentage points, nearly tripling enrolment in Bridge schools among applicants. Among preprimary applicants, the scholarship more than doubled enrolment compared to applicants who did not receive scholarships, increasing Bridge attendance by 34 percentage points (over and above the 28 percent of applicants who didn't receive a scholarship but chose to attend Bridge anyway). While the increase in Bridge attendance among primary school students mainly came from students who would have otherwise attended public schools, the increase among preprimary applicants came from students switching out of both public and private options. As almost all applicants enrolled in school, the scholarship had no effect on overall school enrolment. Effects on enrolment were of the same magnitude in the second year of the scholarship.

Enrolling in Bridge schools improved timely grade progression.

At endline, in both the preprimary and primary samples, 74 percent of applicants who did not get scholarships were in the grade they would be projected to be in if they were not held back. Preprimary applicants induced to enroll in a Bridge school because of the scholarship were 18 percentage points

more likely to be in their projected grade compared to applicants not offered the scholarship; primary applicants were 20 percentage points more likely to be in their projected grade.

Enrolling in a Bridge school dramatically improved learning for both preprimary and primary school students, with test score effects among the largest recorded in the international education literature.

After two school years, students who attended Bridge because of the scholarship program demonstrated a large test-score advantage over their counterparts who were not offered scholarships on tests that covered English, Kiswahili, Math, Social Studies, and Science. Average test score gains were 1.35 standard deviations for the preschool cohorts and 0.81 standard deviations for the primary school cohorts. To get a sense of the magnitude of these effects, the authors translate them into "equivalent years of schooling" or the years of schooling it would take the control group to make the same learning gains. When students attended Bridge because of the scholarship, preprimary students learned the equivalent of an additional 1.48 years of schooling over and above the control group, and primary school students learned the equivalent of an additional 0.89 years. These learning gains persist even when the authors restrict their focus to exam questions not easily answered through rote memorization. Children's skills in non-subject matter domains like fluid intelligence, working memory, and receptive vocabulary also improved.

Enrolling in a Bridge school also increased the likelihood that students took and passed the national school leaving exam.

Those induced to enroll in a Bridge school because of the scholarship were 15 percentage points more likely (from a base of 74 percent) to take the Kenya Certificate of Primary Education exam, which determines admissions in secondary school. They were also 17 percentage points more likely (from a base of 41 percent) to pass the exam, in part due to the fact that they were more likely to take the exam on schedule.

Lower achieving students gained the most.

While both high-achieving and low-achieving students made significant learning gains, in both the preprimary and primary samples, the gap between the scholarship recipients and non-recipients was greater at the lower end of the distribution of test scores. In fact, in both samples, inequality in learning outcomes decreased, as the standard deviation of test scores was smaller among scholarship recipients, indicating that the scores were less spread out than what was observed among applicants who had not been offered the scholarship.

The consistency of effects across teachers and sites suggests greater standardization of students' classroom experiences.

Just as all students appeared to gain, regardless of their academic achievement, researchers also could not detect any statistically significant heterogeneity in impacts across different school locations. Students' learning gains were also unrelated to teacher characteristics like experience, tenure at Bridge, or teachers' scores on the Kenya Certification of Secondary Education exam.

Despite the large gains in learning, some challenges remained for students attending Bridge schools.

Although student-reported corporal punishment went down in Bridge schools relative to the non-Bridge schools students would otherwise have attended, it remained high. Those enrolled at Bridge were 6 percentage points less likely to report seeing the practice compared to a base of 83 percent among students who did not receive scholarships. Those students who enrolled in Bridge after winning a scholarship and their caregivers were 8 percentage points more likely to report hazards in playing fields, compared to a base of 34 percent among those not receiving scholarships.

Conclusion

The scholarship lottery for Bridge schools in Kenya demonstrated that economically disadvantaged students can make very large gains in learning at both the preprimary and primary levels and that these gains can materialize at scale and uniformly across different schools and different teacher profiles. The estimated learning impacts exceed the 90th percentile

of treatment effects in the international education literature. Bridge schools differ from government schools along multiple dimensions, and while it is not possible to isolate the most effective element of Bridge's approach to pedagogy and management, the highly scripted nature of lessons and monitoring shows promise for future experimentation.

The Strategic Impact Evaluation Fund, part of the World Bank Group, supports and disseminates research evaluating the impact of development projects to help alleviate poverty. **The goal is to collect and build empirical evidence that can help governments and development organizations design and implement the most appropriate and effective policies for better educational, health, and job opportunities for people in low and middle income countries.** For more information about who we are and what we do, go to: <http://www.worldbank.org/sief>.

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