Can parental nudges improve early literacy in Sub-Saharan Africa? Experimental evidence from three contexts

Pre-analysis plan – September, 2021

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I. Introduction

Education systems around the world have successfully leveraged additional family time and resources to further support children in the acquisition of their foundational literacy skills (e.g., Mayer et al, 2019; Teepe, et al, 2019 in the U.S., Knauer et al., 2019 in Kenya). However, these interventions tend to come with a relatively high price tag, and especially in low-income settings, can target parents with low educational attainment that may not be familiar with the best approaches to support their children's education (Muralidharan et al., 2019; Portela and Atherton, 2020). In response to this, we evaluate an intervention that provides repeated low-cost reading materials, and low-touch behavioral encouragement to engage parents in their children's literacy development process. We study the effectiveness of the repeated provision of properly leveled, low-cost, scaffolded materials ("postcards") which guide parents through reading exercises they can perform with their children twice a week in an effort to improve early literacy outcomes. As such, we study this intervention through a randomized controlled trial of first graders during their first term across 112 private schools in Kenya, 42 private schools in Lagos (Nigeria), and 446 public schools in Lagos (Nigeria). Our experimental sample consists of over 23,000 students across these three settings.

Additionally, we investigate how the same educational intervention is implemented differently in three different settings. Contextual factors, implementation quality, and participant take-up are at the heart of the effectiveness of all development interventions. However, to date, much of the education literature in low- and middle-income countries has focused on the effectiveness, rather than on the rigorous documentation of the extent to which the local adoption and adaptation moderated their success. In this pre-registered analysis plan, we include a framework for how we will evaluate the implementation of the intervention in the three contexts based on our ex-ante theory of change. This framework will allow us to provide empirical evidence on the extent to which the same intervention was implemented differently in three contexts, and whether this moderated the effectiveness of the intervention.

II. Research questions

We aim to answer the following questions, categorized by the literature to which they will contribute:

<u>Foundational skills in developing countries:</u>

- Can early literacy outcomes be improved through a scalable, low-touch parental intervention that provides households with literacy materials to guide parent-child interactions and reminders to engage in at-home practice?
- If so, are some groups of particular interest (e.g., the poorest communities or lowest performing students) more likely to benefit?

<u>External validity/development effectiveness:</u>

- Does the effectiveness of the intervention vary by context?
- To what extent does the quality of implementation for the same intervention vary across contexts, and how do contextual factors moderate these differences?
- Do stakeholders who are similar on observables but are in different contexts respond in the same way to an educational intervention?

III. Intervention

Early literacy "postcards"

The specific treatment consists of a "postcard" that students will receive every Monday throughout a full term (~15 weeks). This postcard contains two short reading passages, and one reading comprehension exercise on both sides and provides guidance for parents on how to engage on these passages and comprehension activities with their children. The content is largely the same across contexts, but the vocabulary and to a lesser degree the difficulty of the passages were adapted for each context. In an effort to maximize comparability across contexts, this intervention is set to start during the same school term (Term 1) across all three contexts.

The mechanics of the exercises are as follows: one side of the postcard is designed to be completed the same Monday the child brings the postcard home, and the other side is designed to be completed the following Thursday. Every Thursday afternoon, our partner will send parents an SMS text reminding them to complete the exercise. In an effort to increase perceived accountability of parents, each side of the postcard will have a designated space for parents to sign and acknowledge that they completed that day's exercise. Furthermore, every Friday, students are encouraged to bring the signed postcards back to their teachers to check for completion.

Contexts and partnership

This study will take place in Kenya and Nigeria, two countries in which government institutions and educational systems diverge along important dimensions. For instance, demographic indicators such as poverty or literacy rates, and educational achievements such as the share of formally trained primary school teachers or enrollment rates, generally look worse in Nigeria than in Kenya. We are partnering with NewGlobe to implement this project. NewGlobe employs a highly scaffolded and technology-led approach to education across sites, and leverages this in-class technology to keep an accurate record of students' school grades and demographic characteristics throughout all school years. Through this, we can seamlessly track students' performance throughout the term of the intervention and beyond.

Given NewGlobe's presence in multiple countries and educational systems, we have the opportunity to implement the *same* intervention in three different contexts. The first context is Bridge Kenya ("Kenya"), which consists of a network of 112 low-cost, private schools run by Bridge across Kenya, with about 30 first graders per school. The second context is Bridge Lagos ("Lagos (private)"), which is a network of 42 low-cost, private schools run by Bridge only in Lagos, with about 21 first graders per school. The third and final context is public schools in Lagos ("Lagos (public)"). NewGlobe, through the EKOEXCEL partnership with the Lagos government, supports close to 1,000 public schools in the state. We focus on the 448 schools which have baseline geographic data, and which have about 41 first graders per school. While "holding the intervention constant" across these three contexts, we can explore how (1) also holding the geographic region constant (i.e., Lagos), how does the public/private contrast (with the respective differences in school management/endowments and student bodies) moderate the quality of the implementation, and the effectiveness of the intervention?, and how (2) holding the provider constant (i.e., Bridge), how does the Kenya/Lagos contrast (with the respective differences in school management/endowments and student bodies) moderate the quality of the implementation, and the effectiveness of the intervention?

IV. Outcomes

Primary outcomes

1. Oral reading fluency (measured in units of correct words per minute)
2. Standardized school grades for English and Kiswahili around the midterm (~6-7 weeks after the expected start of the intervention) and endterm (~13 weeks after the expected start)
3. Student dropout
4. Teacher survey on project implementation, and teacher beliefs and attitudes, also to be used to explore mechanisms
5. Parent survey on project take-up, and parent beliefs and attitudes, also to be used to explore mechanisms

The outcomes for oral reading fluency, language test scores, and enrollment come from our partner's administrative data. The internal data collection process is mostly standardized within our partner's network, allowing us to make direct comparisons for most outcomes and indicators across contexts. Specifically, while oral reading fluency and enrollment are coded in the same units across all three sites, the language test scores reflect different assessments by context, so we plan to use the standardized scores (by context) when pooling outcomes for all contexts. Similarly, within each context, all children take the same test within a testing round (i.e., during the midterm or endterm), allowing for comparisons across schools within each context.

We will also be studying the differences in implementation measures and take-up across contexts. Our main data source for this portion of the study is the teacher and parent phone surveys that will be carried out at the end of the intervention in each context. In the attached appendix, we pre-register a framework that outlines the expected theory of change of this intervention in 10 steps (from "1. Postcards are designed and adapted for the context" to "10. Students' early literacy outcomes increase as a result of the postcard"). We also include in the appendix the survey instruments, and a clear mapping of each step along the theory of change to the survey questions we will use to analyze each step.

The survey data will also provide information on teacher and parental beliefs, which will allow us to explore factors that moderate and mediate the quality of implementation, and the effectiveness of the intervention. On the qualitative side, we will also have access to internal operations reports on the distribution of postcards to each school, as well as qualitative information from spot checks on the ground for a few schools. Pending travel restrictions, this set of qualitative data will be complemented with on-the-field interviews with teachers, principals, and parents.

Secondary outcomes

To explore potential heterogeneity of our results, we will use individual level data on gender, school, and baseline grades. Similarly, we also use regional data on community size (population), poverty levels, adult female literacy, and relative wealth within each country. Beyond the specifications outlined above to directly answer our main research questions, we plan to conduct additional exploratory heterogeneity analyses with these covariates within simple OLS models similar to the one described for the first research question.

The vast majority of the data for these secondary outcomes consists of administrative data provided by our partner. The data that our partner will provide consists of individual-level covariates for students in the treated and control groups which include the gender, and age of the student, school that they attend, time enrolled at schools run by our partner, baseline grades and grades from a previous year if available, and outcome variables. The school-level administrative data consists of the school latitude and longitude, the total enrollment, the pupil-teacher ratio in the overall student body and in the target grade, the female-

male ratio in the overall student body and in the target grade, the average principal and teacher attendance rate, along with student attendance rates by gender. We complement the administrative data with geospatial data containing information on community-level covariates. In particular, we use the GIS poverty rate raster layer from Tatem et al. (2013), and the GIS adult (15-49) female literacy rate raster layer from Bosco et al. (2017). Both of these layers are at a resolution of 1-km at the equator. Similarly, we use Chi et al. (2021) to obtain georeferenced measures of local wealth. We use the latitude and longitude of each school to create an average poverty rate, average relative wealth, average adult female literacy rate, and total population for the 3-kilometer circular area surrounding each school.

V. Experimental design

Randomization

To minimize potential spillovers of the treatment, we randomly allocate treatment at the school level. To increase power, we stratify within each context based on the wealth level of the community surrounding each school, and the relative baseline performance. Within each stratum, we randomly select one school to be treated. Randomization was carried out by the researchers using Stata 17.

Planned sample size

602 schools. Of these, 112 schools are in Kenya, 42 in Lagos (private), and 448 in Lagos (public). The appendix includes a table with descriptive statistics and sample balance across treatment and control schools for all three contexts. The appendix also provides visual representations of where these schools are geographically located. In total, we expect approximately 23,200 students across all three contexts.

In terms of treatment assignment, we expect to have 56 treatment and 56 control schools in Kenya. In the case of Lagos (private), we expect to have 21 treatment and 21 control schools. Finally, in Lagos (Public), we expect 140 treatment schools and 308 control schools. In total, there are 217 total treatment schools, covering approximately 8360 treated students.

Power calculations

Pooling students from all three contexts, we estimate that having on average 38.5 students per school across all 602 schools in the sample, with 36% assigned to treatment, assuming an R^2 explained by individual and school-level covariates to be 0.30, and intra-class correlations of 0.20, consistent with our previous work with this our partner, we would expect a minimum-detectable effect (MDE) of 0.09 standard deviations (SD) for the pooled sample. The upper estimate of our power calculations is if we were to analyze data from each context separately. Using the same assumptions but replacing the average number of students per target grade and number of schools with the appropriate figures for each context, we would expect an MDE of 0.21 SD for Kenya and 0.35 SD for Lagos (private), and 0.11 in Lagos (public).

VI. Analytic plan

Our main empirical strategy for the pooled sample will be the following specification, for student *i*, in school *s*, from context *c*:

$$y_{isc} = \beta_0 + \beta_1(\text{Treatment}_s) + \gamma_c + \varepsilon_{isc}$$

Where y refers to one of the outcomes of interest, as described in this pre-analysis plan. $Treatment_s$ is an indicator variable where 1 means that the school *s* was randomly assigned to treatment, and 0 otherwise. The parameter of interest is β_1. The model includes fixed-effects that control for the randomization strata, γ_c.which were based on community wealth and baseline performance. Standard errors will be clustered at the school-level, the level at which treatment was assigned. If this model is ever run separately by context, we will cluster-bootstrap these standard errors to account for fewer clusters, particularly for private schools in Lagos.

We will also conduct initial checks for heterogeneity by running this model separately by context, and by including country-level fixed effects. This is particularly important given the differences in sample sizes across contexts. We will then run a model in which treatment is interacted with indicators for two contexts to formally test for heterogeneity across contexts. For the implementation outcomes for which data will be only available for the treatment group, we plan to conduct hypothesis tests to investigate whether there are significant implementation differences across contexts. If we reached populations with varying degrees of representativeness through the phone surveys across the three contexts, we plan to use the baseline rosters to create survey weights that help make each sub-sample more representative of the broader universe they were drawn from within each context.

Finally, in the eventuality that data missingness becomes a concern for this project, we plan to compare the results from three different specifications. First, running the models as they are, essentially losing these observations with missing variables. Then, we will run the model with a simple imputation of the missing data. Finally, through previous collaborations with this partner, we have some anecdotal evidence suggesting that missingness in fluency and language scores may not be random, particularly in grade 1. Specifically, missing values may be more prevalent in low performing students who may be at or close to 0 correct words per minute. As such, our final approach to imputation is to add zeros to the missing oral reading fluency scores.

VII. Final note

Note that the authors completed the plan before the endline data was collected and analyzed across all three contexts, and hence the plan can provide a useful reference in evaluating the final results of the study.

VIII. Appendix

Appendix A: Sample postcards

Bridge

Week 4

Monday (Jumatatu)

Have your child read this aloud: *Uliza mtoto wako asome sentensi hii:*

Ali and Sara have a small dog.
The name of the dog is Puppy.
The dog loves to eat meat and bones.
Yesterday Ali gave the dog a big bone.

Have your child answer these questions: *Uliza mtoto wako ajibu maswali hili:*

What is the name of the dog?
What are some things Puppy would love to eat?

We did it! Tumemaliza!

Sign here:
Tia Saini hapa: .....

KE_Grade1_Postcards 02-1.indd 9 5/18/21 5:00 PM

Bridge

Week 1

Monday (Jumatatu)

Have your child read this aloud: *Uliza mtoto wako asome sentensi hii:*

Sara has one brother. His name is Tom.
Tom is six years old. He is in grade one.

Have your child answer these questions: *Uliza mtoto wako ajibu maswali hili:*

How many brothers does Sara have?
What does Tom learn in grade one?

We did it! Tumemaliza!

Sign here:
Tia Saini hapa: .....

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Bridge

Week 4

Thursday (Alhamisi)

Have your child read this aloud: *Uliza mtoto wako asome sentensi hii:*

Our school is near the market.
Children go to the market to buy books.
People come to the market to buy clothes.
We like our market.

Have your child answer these questions: *Uliza mtoto wako ajibu maswali hili:*

What do people buy at the market?
What type of books can you buy at the market?

We did it! Tumemaliza!

Sign here:
Tia Saini hapa: .....

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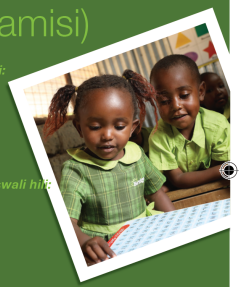
Bridge

Week 1

Thursday (Alhamisi)

Have your child read this aloud: *Uliza mtoto wako asome sentensi hii:*

I like Maths and English.
I always do my homework.
I read English stories for my homework.



Have your child answer these questions: *Uliza mtoto wako ajibu maswali hili:*

What do you do for English homework?
How do you practice maths?

We did it! Tumemaliza!

Sign here:
Tia Saini hapa: .....

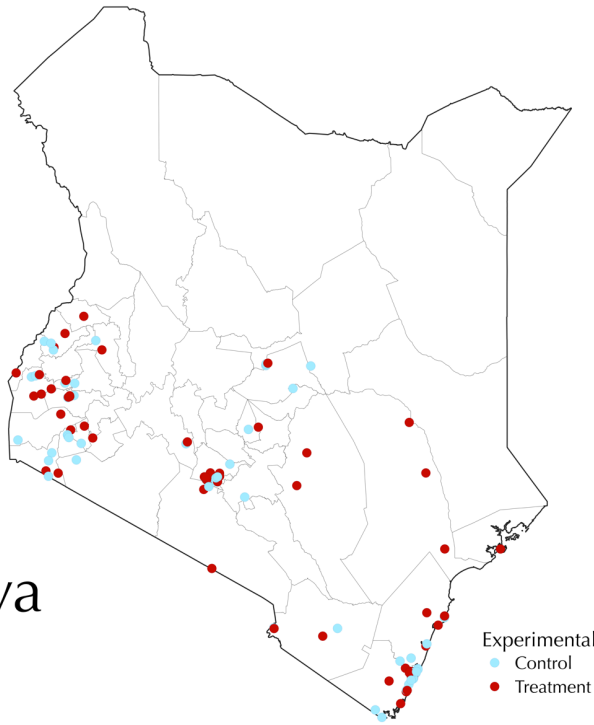
KE_Grade1_Postcards 02-1.indd 4 5/18/21 5:00 PM

Appendix B: Sample description, balance tests, and geographic location of schools

Table 1: sample description and balance tests, pooled and by context

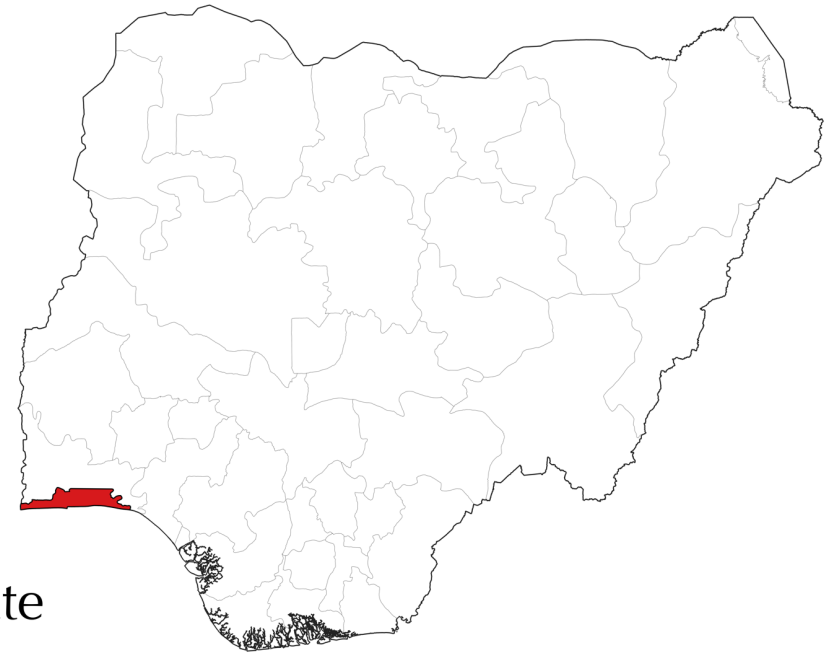
	All contexts		Kenya		Lagos		EKOEXCEL	
Covariate	Control	T-C	Control	T-C	Control	T-C	Control	T-C
Poverty rate in community	0.41	0.01	0.33	0.01	0.56	0.00	0.42	0.00
	(0.18)	(0)	(0.18)	(0.02)	(0.08)	(0.02)	(0.18)	(0.01)
Adult female literacy rate in community	0.86	0.00	0.87	-0.03	0.83	0.01	0.86	0.00
	(0.07)	(0.01)	(0.11)	(0.02)	(0.05)	(0.02)	(0.06)	(0)
Relative wealth in community	1.00	0.00	0.56	0.03	1.11	-0.06	1.07	0.00
	(0.42)	(0.01)	(0.4)	(0.02)	(0.29)	(0.04)	(0.37)	(0.01)
Years of activity of school	2.28	-0.05	8.15	-0.16	4.19	-0.05	1.08	-0.02
	(2.63)	(0.05)	(1.73)	(0.27)	(0.57)	(0.11)	(0.37)	(0.04)
Total enrollment	441.35	0.69	159.48	2.89	159.52	11.45	511.81	-1.40
	(281.69)	(2.43)	(69.21)	(12.96)	(50.75)	(12.66)	(270.77)	(24.8)
Total number of teachers	12.45	0.45	11.04	0.02	9.00	0.00	12.94	0.62
	(4.22)	(0.22)	(0.33)	(0.06)	(0)	(0)	(4.56)	(0.47)
PTR in entire school	34.32	-0.45	14.41	0.38	17.67	1.35	39.07	-0.92
	(17.3)	(0.57)	(5.97)	(1.16)	(5.66)	(1.44)	(15.87)	(1.47)
Number of G1 classes	1.17	0.00	1.02	-0.02	1.00	0.00	1.22	0.01
	(0.41)	(0.01)	(0.13)	(0.02)	(0)	(0)	(0.45)	(0.05)
Total enrollment in G1	38.53	0.43	30.05	2.38	21.48	1.62	41.25	-0.25
	(20.15)	(0.89)	(11.02)	(2.08)	(7.32)	(1.83)	(21.04)	(1.99)
Average PTR in G1	33.89	0.73	29.42	3.01	21.48	1.62	35.56	0.01
	(17.48)	(0.99)	(9.54)	(1.96)	(7.32)	(1.83)	(18.59)	(1.75)
Average student attendance rate	0.33	0.00	0.64	-0.03	0.65	-0.04	0.26	0.01
	(0.19)	(0.01)	(0.11)	(0.02)	(0.12)	(0.04)	(0.11)	(0.01)
Average student attendance rate (boys)	0.35	0.00	0.65	-0.03	0.65	-0.03	0.27	0.01
	(0.19)	(0.01)	(0.11)	(0.02)	(0.11)	(0.04)	(0.12)	(0.01)
Average student attendance rate (girls)	0.34	0.00	0.64	-0.02	0.63	-0.02	0.27	0.01
	(0.19)	(0.01)	(0.13)	(0.02)	(0.19)	(0.05)	(0.12)	(0.01)
Average teacher attendance rate	0.84	0.02	0.89	-0.01	0.92	0.02	0.82	0.03
	(0.22)	(0.01)	(0.17)	(0.03)	(0.1)	(0.02)	(0.22)	(0.02)
Average principal attendance rate	0.88	-0.01	0.87	-0.08	0.77	-0.01	0.89	0.01
	(0.17)	(0.03)	(0.24)	(0.06)	(0.13)	(0.05)	(0.16)	(0.02)
Average age in G1	6.23	0.07	7.06	-0.04	5.75	0.05	6.06	0.13
	(0.74)	(0.07)	(0.29)	(0.05)	(0.15)	(0.05)	(0.7)	(0.11)
Share of students in G1 who are female	0.49	0.00	0.49	0.01	0.48	0.02	0.49	-0.01
	(0.1)	(0.01)	(0.08)	(0.01)	(0.16)	(0.04)	(0.1)	(0.01)
Average aggregate language score (std)	-0.01	-0.01	0.10	-0.04	-0.04	0.05	-0.03	0.00
	(1.09)	(0.01)	(1.05)	(0.03)	(0.85)	(0.07)	(1.11)	(0.02)
Average fluency z-score	0.01	-0.03	0.04	0.03	-0.02	0.06	0.01	-0.05
	(0.73)	(0.03)	(0.68)	(0.05)	(0.52)	(0.1)	(0.76)	(0.05)
Average English z-score	-0.02	0.01	0.05	-0.07	-0.02	-0.01	-0.04	0.04
	(0.65)	(0.04)	(0.45)	(0.05)	(0.44)	(0.07)	(0.69)	(0.05)
Fluency at MT	35.10	-0.76	36.44	1.56	36.10	2.92	34.72	-1.60
	(18.83)	(1.06)	(19.62)	(1.77)	(14.51)	(2.94)	(19)	(1.41)
Engligh z-score at MT	-0.02	0.03	0.05	-0.06	0.01	-0.04	-0.04	0.07
	(0.76)	(0.05)	(0.45)	(0.06)	(0.54)	(0.14)	(0.83)	(0.07)
Fluency at ET	32.31	-1.29	43.62	0.38	40.24	0.90	28.39	-1.02
	(15.26)	(0.73)	(17.29)	(1.99)	(10.88)	(2.04)	(13.16)	(1.25)
Engligh z-score at ET	0.02	-0.01	0.09	-0.09	-0.05	0.01	0.01	0.01
	(0.6)	(0.04)	(0.52)	(0.07)	(0.47)	(0.09)	(0.63)	(0.07)
Average missingness at MT	0.46	0.00	0.15	0.03	0.25	0.00	0.53	-0.01
	(0.29)	(0.01)	(0.15)	(0.03)	(0.21)	(0.06)	(0.27)	(0.03)
Average missingness at ET	0.56	0.03	0.13	0.06	0.06	-0.01	0.67	0.02
	(0.34)	(0.01)	(0.24)	(0.05)	(0.06)	(0.02)	(0.27)	(0.03)
p-value of F-test		0.98		0.82		0.97		0.95
R-squared of regression for joint significance regression		0.087		0.175		0.308		0.098
Blocks		217		56		21		140
Treated schools		217		56		21		140
Total schools	385	602	56	112	21	42	308	448

Note: differences between treatment and control schools calculated through simple regressions with each covariate as the dependent variable, and a binary indicator for the treatment status as the independent variation. All regressions include fixed-effects for randomization strata. Significance level: * p<0.10, ** p<0.05, *** p<0.01

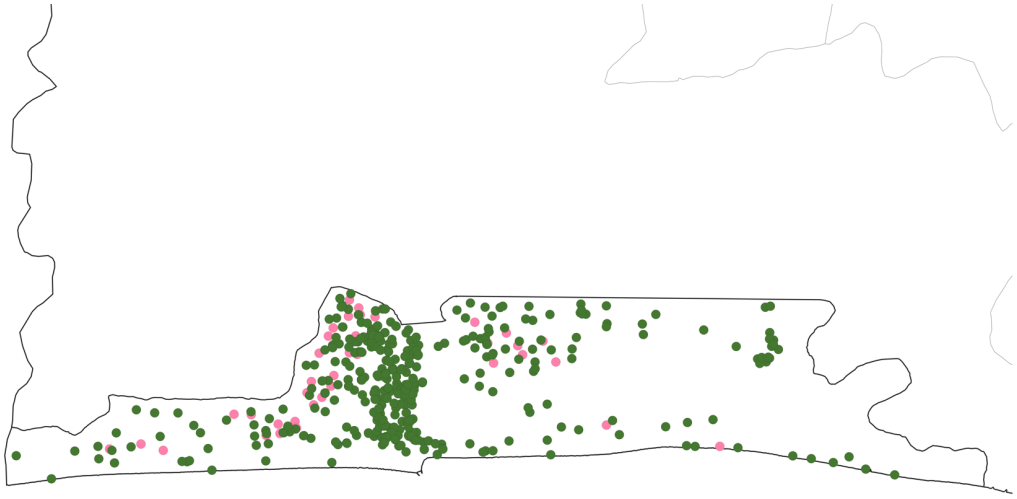


Kenya

Full sample



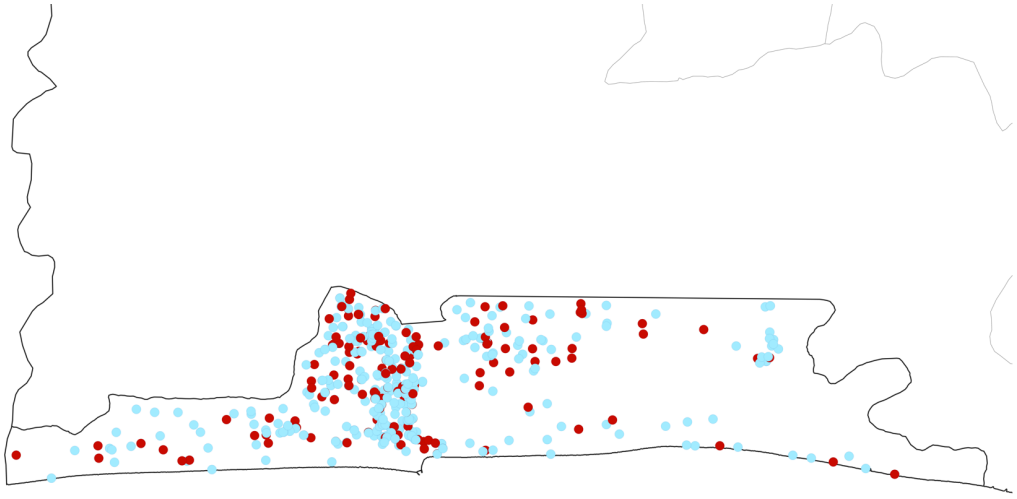
Lagos state in Nigeria



Lagos

Full sample

School classification by ownership
- Private
- Public



Lagos

Full sample

Experimental assignment of schools
- Control
- Treatment

Appendix C: Survey instruments

Parent survey

Part 1: Introduction. Hello. My name is _____ and I am calling on behalf of Bridge Kenya. I am hoping to speak with you to get a bit of information about our pupils' reading practices at home. Your participation is totally voluntary and you are welcome to skip any questions that you do not feel comfortable answering. These questions are intended for us to improve the programme, and you will not be penalised in any way for any answers you give. Does that sound okay?

[For the treatment group only. For control group parents, skip to Step 4.] Please think back to the school term that just finished for your pupil in grade 1. We implemented a program where children were supposed to receive "postcards" on a weekly basis from their teachers for you, or other relatives, to engage with.

Part 2: Project implementation

Question PS.1. Over the last term, how often did you receive any reading materials in the form of small cards or "postcards" from your child? [Goal: step 7]

- ☐ On a weekly basis
- ☐ Every two or three weeks
- ☐ Only a few times
- ☐ Just once
- ☐ Never

Question PS.2. [CONDITIONAL IF Q1!=NEVER] When did you start receiving postcards? [Goal: step 7]

- ☐ At the start of the term
- ☐ Around the middle of the term
- ☐ Only starting at the end of the term

Question PS.3. [CONDITIONAL IF Q1!=NEVER] When did you stop receiving postcards? [Goal: step 7]

- ☐ At the start of the term
- ☐ Around the middle of the term
- ☐ Only starting at the end of the term

Part 3: Engagement with card

Question PS.4. [CONDITIONAL IF Q1!=NEVER] After receiving the postcards, how well did you understand the instructions on the postcards? [Goal: step 8]

- ☐ I did not understand the instructions at all
- ☐ I understood some of the instructions, but I still had questions about what I had to do
- ☐ I understood the instructions very well, and I had almost no questions about what I had to do

Question PS.5. [CONDITIONAL IF Q1!=NEVER] How often did you read the stories on the postcards with your children? [Goal: step 9]

- ☐ Never
- ☐ Just once
- ☐ Only a few times
- ☐ Once every two or three weeks
- ☐ Once a week
- ☐ Twice a week

Question PS.6. [CONDITIONAL IF Q1!=NEVER] Did you ever stop completing the exercises on the postcards with your child even though you were still receiving them? [Goal: step 9]

- ☐ Yes
- ☐ No

Part 4: Opinions about the project

Question PS.7. [CONDITIONAL IF Q1!=NEVER] Overall, how valuable do you think the idea of the postcard programme was for improving pupil literacy skills? [Goal: parental beliefs]

- ☐ Not at all valuable
- ☐ Not very valuable
- ☐ A little bit valuable
- ☐ Quite valuable
- ☐ Extremely valuable

Question PS.8. [CONDITIONAL IF Q1!=NEVER] How much benefit do you think your child received from using the postcards? [Goal: parental beliefs]

- ☐ No benefit
- ☐ Not much benefit
- ☐ A little benefit
- ☐ Quite a benefit
- ☐ A very large benefit

[All the questions up to here are for the treatment group only. From here until the end of the survey, these questions are for both treatment and control parents]

Part 5. Practices and attitudes towards early literacy acquisition

Question PS.9. On average, in a typical week during the most recent school term, how many hours a week –if any– did you or another relative spend helping your child with school work **in general**? [Goal: parental beliefs]

- ☐ Type a number of hours here: _____

Question PS.10. On average, in a typical week during the most recent school term, how many hours a week –if any– did you or another relative spend helping your child with **their reading skills**? [Goal: parental beliefs]

- ☐ Type a number of hours here: _____

Question PS.11. How important do you believe parents' role is in helping children to learn how to read? [Goal: parental beliefs]

- ☐ Not at all important
- ☐ Not very important
- ☐ A little bit important
- ☐ Quite important
- ☐ Extremely important

Question PS.12. Where do you think children primarily learn how to read? [Goal: parental beliefs]

- ☐ Mostly at home
- ☐ At home and at school
- ☐ Mostly at school

Question PS.13. How confident do you feel helping your child as they learn how to read? [Goal: parental beliefs]

- ☐ Not at all confident
- ☐ Not very confident
- ☐ A little confident
- ☐ Very confident

Question PS.14. When you think about your child's current reading skills, do you think your child is...? [Goal: parental beliefs]

- ☐ Among the 2 or 3 weakest pupils in their class
- ☐ Weaker than average, but not the weakest
- ☐ About average for their class
- ☐ Above average, but not the strongest
- ☐ Among the 2 or 3 strongest pupils in their class

Question PS.15. Please think about books or reading materials that you may currently have in your home which would be appropriate for your child to read, excluding school books. Approximately how many books would you say you currently have in your home that would be appropriate for your child to read? [Goal: parental beliefs]

- ☐ None
- ☐ (If more than 0, write down a whole number with the parents' closest approximation)_____

Part 6: Closing. Many thanks for your help with this.

Teacher survey

Part 1: Introduction. Hello. My name is _____ and I am calling on behalf of Bridge Kenya. I am hoping to speak with you to get a bit of information about our pupils' reading practices outside of school. Your participation is totally voluntary and you are welcome to skip any questions that you do not feel comfortable answering. These questions are intended for us to improve the programme, and you will not be penalised in any way for any answers you give. Does that sound okay?

[For the treatment group only. For control group teachers, skip to step 4] Please think back to the school term that just finished. We implemented a programme where children were supposed to receive "postcards" on a weekly basis to practice literacy at home.

Part 2: Project implementation

Question TS.1. Did you receive the postcards from your academy manager? [Goal: step 4]

- ☐ Yes
- ☐ No

Question TS.2. [CONDITIONAL IF Q1!=NEVER] When was the first time you received these postcards from your school? [Goal: step 4]

- ☐ Before the start of the term
- ☐ During the first week of school
- ☐ During the first two or three weeks of school
- ☐ Later in the term
- ☐ After the end of the term

Question TS.3. [CONDITIONAL IF Q1!=NEVER] How often did you distribute the postcards? [Goal: step 5]

- ☐ Never
- ☐ Just once or twice
- ☐ Once a month
- ☐ Every other week
- ☐ Every week

Question TS.4. [CONDITIONAL IF Q1!=NEVERS] What happened when a pupil was absent the day you distributed the postcards? [Goal: step 6]

- ☐ This pupil would probably not get a postcard for this week
- ☐ The pupil got the postcard later that week
- ☐ Something else: _____

Question TS.5. [CONDITIONAL IF Q1!=NEVER] Over the full term, how many pupils returned the signed postcards? [Goal: step 9]

- ☐ None of the pupils
- ☐ A few pupils, but less than half
- ☐ About half of the pupils
- ☐ The majority of pupils
- ☐ All, or close to all pupils
- ☐ I did not collect the postcards on a regular basis

Question TS.6. [CONDITIONAL IF Q1!=NEVER] Did parents stop returning signed postcards before the end of the project? [Goal: step 9]

- ☐ None of the pupils ever returned signed postcards
- ☐ Only a few pupils, less than half, returned signed postcards until the end of the term
- ☐ About half of the pupils returned signed postcards until the end of the term
- ☐ The majority of pupils returned signed postcards until the end of the term
- ☐ All, or close to all pupils returned signed postcards until the end of the term

Part 3: Opinions about the project

Question TS.7. [CONDITIONAL IF Q1!=NEVER] Overall, how valuable do you think the idea of the postcard programme was for improving pupil literacy skills? [Goal: teacher beliefs]

- ☐ Not at all valuable
- ☐ Not very valuable
- ☐ A little bit valuable
- ☐ Quite valuable
- ☐ Extremely valuable

Question TS.8. [CONDITIONAL IF Q1!=NEVER] How much benefit do you think your pupils received from using the postcards? [Goal: teacher beliefs]

- ☐ No benefit
- ☐ Not much benefit
- ☐ A little benefit
- ☐ Quite a benefit
- ☐ A very large benefit

[All the questions up to here are for the treatment group only. From here until the end of the survey, these questions are for both treatment and control parents]

Part 4: Practices and attitudes towards early literacy acquisition

Question TS.9. How important do you believe parents' role is in helping children to learn how to read? [Goal: teacher beliefs]

- ☐ Not at all important
- ☐ Not very important
- ☐ A little bit important
- ☐ Quite important
- ☐ Extremely important

Question TS.10. Where do you think children primarily learn how to read? [Goal: teacher beliefs]

- ☐ Mostly at home
- ☐ At home and at school
- ☐ Mostly at school

Question TS.11. How confident do you feel helping your pupils learn how to read? [Goal: teacher beliefs]

- ☐ Not at all confident
- ☐ Not very confident
- ☐ A little confident
- ☐ Very confident

Question TS.12. How many of your pupils would you say get appropriate support at home as they become stronger readers? [Goal: teacher beliefs]

- ☐ None of the pupils
- ☐ A few pupils, but less than half
- ☐ About half of the pupils
- ☐ The majority of pupils
- ☐ All, or close to all pupils

Question TS.13. How many of the children you currently teach are well on their way to becoming strong readers? [Goal: teacher beliefs]

- ☐ No one
- ☐ Only a few pupils
- ☐ About half of the pupils
- ☐ The majority of the pupils
- ☐ All, or close to all

Part 6: Closing. Many thanks for your help with this.

Appendix D: Mapping of survey questions to theory of change

Stage	Steps	Specific data source
Implementation (by policymaker)	1. Postcards are designed and adapted for the context	Already documented that it was successfully completed before implementation for all three contexts
	2. Postcards are printed	Already documented that it was successfully completed before implementation for all three contexts
	3. Each school gets the postcards at the start of the term	Internal operations report on the distribution of postcards to each school, and whether this was on time
Implementation (on the ground)	4. Teachers get postcards at the start of the term a. Did teachers receive the postcards from their schools? b. Did teachers receive the postcards from their schools on time to start the intervention as expected?	4a. TS.1 4b. T2.2
	5. Teachers distribute postcards each week a. Did teachers distribute the postcards with the expected frequency?	5a. TS.3, and qualitative data from spot checks on the ground
	6. Students get postcards each week a. Did students receive the postcards later in the week even if they were absent the day that postcards were distributed?	6a. TS.4
Take-up	7. Parents get the postcards from their children each week a. Did parents actually receive these postcards at all? b. With what frequency did parents receive the postcards, i.e., was the intensity/frequency of treatment less than intended? c. Did the intervention start on time? d. Was the intervention phased out locally before the intended date?	7a. and 7b. PS.1 7c. PS.2 7d. PS.3
	8. Parents engage with the postcard a. Did parents even consider engaging with the materials? (PS.5)	8a. PS.4
	9. Parents work with their children on postcard exercises (and return the signed postcard to school) a. Did parents ever even try to complete the exercises? b. Did parents engage with the postcards frequently? c. Did parents get tired of the exercise?	9a. and 9b. PS.5; TS.5. 9c. PS.6; TS.6.
Effectiveness	10. Students' early literacy outcomes increase as a result of the postcard	10. Test score and reading fluency data

Appendix E: References

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