

# **Partnership Schools for Liberia**

## **Innovations for Poverty Action – Liberia Inception Report**

**Version: August 15, 2016**



## **ABSTRACT**

We propose a large-scale field experiment to study the effect of a public-private partnership (PPP) in Liberia. The Partnership Schools for Liberia (PSL) program will delegate management of 92 randomly assigned public schools to a variety of private, for-profit companies and non-profit organizations to be operated free of charge to students. By comparing these PSL schools to regular government schools in the control group, we will test whether private management improves teacher accountability as measured by absenteeism, time on task, and ultimately improved student performance. Complementary analysis will assess the sustainability, scalability, and relative cost-effectiveness of this PPP model, as well as its effects on equity.

## **INTRODUCTION**

Liberia's public education system is moribund. The civil war of 1999-2003 and the Ebola epidemic of 2014 have left the Ministry of Education with little capacity to run a national school system. An effort to clean thousands of ghost teachers from Ministry payrolls was cut short (New York Times, 2016), and while systematic data is scarce, teacher absenteeism appears common (Mulkeen, 2009). Nearly two-thirds of primary aged children are not in school, including over 80% of children in the poorest quintile, placing Liberia in the lowest percentile of net enrollment rates in the world, and at the 7th percentile in youth (15-24) literacy (EPDC, 2014). Demographic and Health Surveys show that among adult women who did not go to secondary school, only six percent can read a complete sentence.

Faced with these dire statistics, the Liberian Ministry of Education announced in early 2016 that it would contract the operation of government primary schools to a group of private companies. The announcement generated international headlines from the BBC to the New York Times about "outsourcing" and "privatization", and even condemnation from a UN Special Rapporteur that Liberia was abrogating its responsibilities under international law. As noted in these press reports, Liberia's ambitious public-private partnership is likely to make it a model -- good or bad -- that informs other countries in the region and beyond. And the involvement of high profile, for-profit, private-school chains like Bridge International Academies and Omega Academies also makes Liberia's experiment a test case for the vision of privately-run education backed by investors ranging from Bill Gates and Mark Zuckerberg to the World Bank's International Finance Corporation and the UK's Department for International Development (DFID).

A key feature of Liberia's experiment is that all schools will remain free. From textbook economic theory, government funding of education is necessitated not only by the need to ensure equal access, but also by market imperfections (e.g., positive externalities, imperfect capital markets, and economies of scale) that lead to a lower supply of education than socially desirable. The efficiency of direct government *provision* of education -- as opposed to mere public *funding* -- is open to empirical debate, particularly in the presence of weak public sector institutions in fragile states. A recent review of the evidence on private schooling in the developing world commissioned by DFID concluded that there was strong evidence that private schools provide better teaching, and moderate evidence of improved learning outcomes, but ambiguous evidence on the affordability of "low-cost private schools" for poor households (Ashley et al., 2015).

Thus existing evidence suggests a classic tension between efficiency and equity. Public-private partnerships like Liberia's charter school program are an attempt to overcome this tension by combining public finance with some elements of private provision.

## **THE PARTNERSHIP SCHOOLS FOR LIBERIA (PSL) PROGRAM**

PSL is a contract-management public-private partnership (PPP). Specifically, the GoL contracted multiple non-state operators to run existing public primary schools (PSL schools). The government (and donors) provide these operators with funding on a per-pupil level. In exchange, operators are responsible for the daily management of the schools, and can be held accountable for results.

PSL schools will continue to be free and non-selective public schools (i.e., operators are not allowed to charge fees or choose which students to enroll). PSL school buildings will remain under the ownership of GoL. Teachers in PSL schools will be existing government teachers (i.e., public servants).<sup>1</sup> Private providers will be accountable to GoL for performance. Specifically, operators must agree to school inspections and provide the necessary data to evaluate performance. However, there are no formal mechanisms to hold operators accountable.

An important feature of PSL schools, compared to traditional charter schools, is that teachers in these schools will be civil servants. This hampers the operators' ability to hold teachers accountable for learning outcomes and raises the question of whether this type of "soft" accountability will affect teacher's behavior.

## **HYPOTHESES**

We hypothesize that the success of the program will hinge on its ability to maintain or improve three key accountability relationships in the education system.

### **MANAGERIAL ACCOUNTABILITY (OF TEACHERS TO PRIVATE OPERATORS)**

A central hypothesis underlying Liberia's charter school program is that private operators with greater capacity to implement routine performance management systems, regularly monitor teacher attendance, track student performance, and provide teachers with frequent feedback and support will help to overcome teacher absenteeism and low education quality.

This is not a story about accountability through carrots and sticks. Teachers in Liberia's charter schools will be drawn from the existing pool of unionized civil servants with lifetime appointments, and be paid directly by the Liberian government. Private operators will have limited authority to request that a teacher be re-assigned, and no authority to promote or dismiss civil service teachers. The hypothesis is that accountability can be generated through monitoring and support, rather than rewards and threats.

Note that this hypothesis stands in stark contrast to standard labor economics theories of accountability in the workplace which have dominated the economics of education literature in developing countries. These theories stress civil service protections and labor unions as impediments to accountability (Mbiti, 2016). In response, the experimental literature has focused on solutions such as payment for performance (Muralidharan and Sundararaman, 2011) and flexible labor contracts with credible threat of dismissal (Banerjee et al., 2007; Duflo, Dupas & Kremer, 2011; Duflo, Dupas & Kremer, 2012; Duflo, Hanna & Ryan, 2012).

We will measure the effectiveness of Liberia's 'softer' approach to managerial accountability through the randomized control trial, comparing teachers in treatment (i.e., charter) and control schools.

### **BOTTOM-UP ACCOUNTABILITY (OF TEACHERS AND OPERATORS TO PARENTS)**

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<sup>1</sup> Operators may enforce existing laws and policies governing teacher workforce.

In the framework of the World Bank's 2004 World Development Report on public service delivery, there is a "short route" to accountability (i.e., bypassing the "long route" through elected representatives and the Ministry of Education) if parents are able to exercise "client power" in their interactions with teachers and schools. Client power emerges from freedom to choose another provider or direct control over school resources.

Internationally, the charter school movement is closely tied to policy reforms bestowing parents with freedom of school choice. The standard argument is that charter schools will be more reactive to parents' demands than traditional public schools, because their funding is linked directly to enrollment numbers. However, there is limited empirical evidence establishing that school choice responds to learning quality in low-income settings (Andrabi, Das & Khwaja, 2008), and this mechanism may be more relevant for schools in high density locations like Monrovia than remote rural areas where choice is *de facto* limited to one or two schools in walking distance. Furthermore, since charter operators' earnings are directly proportional to the number of enrolled children, it is in their best interest to increase enrollment, and retain enrolled children in their schools.

#### **TOP-DOWN, RESULTS-BASED ACCOUNTABILITY (OF PRIVATE OPERATORS TO THE MINISTRY OF EDUCATION)**

Charter school operators' contracts can be terminated if they do not achieve certain pre-established standards. In the U.S. literature, this is generally referred to as a "results-based accountability" structure for charter schools. Operators are given a set of Key Performance Indicators (KPIs) and targets for each school. The GoL expects operators to meet this targets, but has not made it clear what the consequences for operators area if they do not meet these targets.

To investigate these questions, the evaluation will collect survey data from parents, teachers, and students to measure both intermediate inputs (e.g., school management, teacher behavior, parental engagement), and final outcomes (i.e., student learning outcomes). We collect data on intermediate factors to provide insights into why PSL schools did or did not have an impact. Specifically, we will study the impact of this program on:

- Access to schooling (i.e., enrollment rates in communities with and without PSL schools)
- Learning outcomes of students attending PSL schools (i.e., the effectiveness of these schools compared to regular public schools)
- Teacher behavior (e.g., absenteeism, time on task, use of corporal punishment, and teachers' job satisfaction and turnover rates)
- School management (e.g, monitoring visits, support and training for teachers, investment in school infrastructure and materials, and extra-curricular activities)
- Parental engagement in education (e.g., expenditure on education and involvement in school activities)
- Equity, as measured by the socio-economic composition of students who access PSL schools
- Equity, as measured by spillover effects on nearby non-PSL schools

#### **STUDY AREA & PARTNERS**

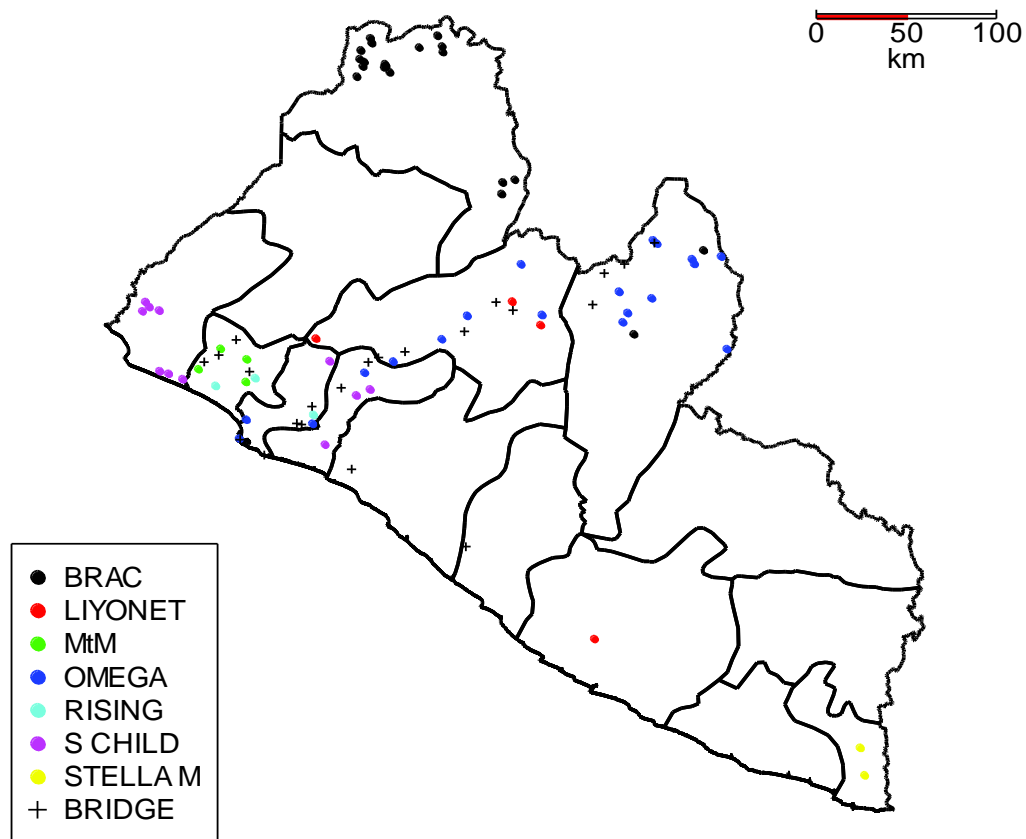
There are eight partners in charge of implementing the program's pilot, all chosen by the government. In the first pilot year (2016/2017), Bridge International Academies is managing 22 schools, BRAC is managing 20 schools, Omega Academies 19, the Liberia Youth Network 4, More than Me 6, Rising Academies 5, Stella Maris 4, and Street Child is managing 12 schools. Figure 1 shows the distribution of schools, by operator, across the country.<sup>2</sup>

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<sup>2</sup> Figure 1 only shows the schools for which we have GPS coordinates.

Each academy is free to manage schools as they see fit. Operators are required to deliver the Liberian national curriculum, but may supplement it with remedial programs, prioritizing subjects, longer school days, and non-academic activities.

Figure 1: School assignment



## WORK PLAN

Staff	Role
Mauricio Romero (Researcher)	Lead Principal Investigator on quantitative and qualitative surveys
Wayne Sandholtz (Researcher)	Co- Principal Investigator on quantitative and qualitative surveys
Justin Sandefur (Researcher)	Co- Principal Investigator on quantitative and qualitative surveys
Karthik Muralidharan (Research Advisor)	Advisor on evaluation design and supervision, analysis, and reporting
Country Director (CD), Osman Siddiqi	Technical support, contracting, partner relations, budget oversight, evaluation implementation, report reviewing, dissemination activities
Research Manager (RM), Arja Dayal	Project management, data quality assurance, budget analysis, partner coordination, technical advice, report writing, dissemination activities

Research Associate or Research Coordinator (RA/RC)	Direct project management, data collection strategy, data quality implementation, programming, analysis of quant/qual results, reporting, training, report writing, field monitoring, coordination with researchers
Field Managers (FM), Dackermue Dolo Laura B.P. McCargo	Field implementation plan, hiring, training, in field management of enumerators, and reporting of challenges and progress to RA/RC
Launch Support Consultants (SC)	Staff from within IPA who have extensively worked in education sector research implementation to assist with the launch of the baseline in August 2016

Prof. Karthik Muralidharan will play a formal advisory role on this project and will also be the faculty member at UCSD who will sign off on the sub-contract from IPA to UCSD to cover the time and travel costs of the PIs (Romero and Sandholtz). While Prof. Muralidharan is not expected to be a co-author on the paper/report, he will provide close supervision and advice on the design and final reporting on the evaluation.

Justin Sandefur, a senior fellow at the CGD, provided technical input as a formal advisor to GoL and Ark's Education Partnership Group (EPG) during the inception of the PSL program. He will continue to be involved in the external evaluation as a co-PI, involved in all research activities such as research design and evaluation methodology, design of the study's primary research instrument(s); overseeing study procedures, including recruitment and retention of the study cohort.

## **ACTIVITIES UNDERTAKEN**

### **EVALUATION DESIGN & METHODOLOGY (JUNE – JULY 2016)**

To provide credible evidence on the cost-effectiveness and the impact of PSL schools, the study must have internal and external validity. The first allows us to identify the causal impact of PSL schools on key indicators, including learning outcomes. The second allows us to say something about what the impact of turning other schools into PSL schools would be. To achieve this, the study must have a credible control group. If there are differences in schools that become PSL schools and non-PSL schools – or their students – on either observable or unobservable characteristics, then any difference in outcomes cannot be directly attributed to the PSL program. Therefore, a Randomized Controlled Trial (RCT) was set in place, in which there was a random assignment of schools to the program. This ensures internal validity. To ensure external validity, randomization was done from a list of schools that could be easily turned into PSL schools.

To study spillover effects, we will use incidental variation generated by random assignment. Following Miguel and Kremer (2004), we will use the proportion of treated schools near control schools to see if the presence of nearby treatment schools affected control schools.

We intend to collect data on students' learning levels and intermediate inputs (teacher behavior, teacher attitudes, and school management) in order to provide insights on the mechanisms behind any treatment effect. Additionally, we will explore whether the treatment had a differential impact for some categories of students (e.g. females or older students).

### **RANDOMIZATION (JULY 2016)**

Based on criteria established by the evaluation team, MoE, and operators, 185 PSL-eligible schools were identified.<sup>3</sup> 92 schools across 12 counties were randomly selected for treatment.<sup>4</sup> Each treated school will be administered by one of the eight private operators: BRAC, Bridge, LIYONET, More than Me, Omega, Rising, Stella M, and Street Child. Since each operator has different criteria for the schools they are able to administer, each school submitted a set of criteria necessary for their schools. Based on these criteria, the universe of 185 experimental schools was split into 8 mutually exclusive groups corresponding to the 8 operators, with each operator's group containing twice the number of schools that operator will manage. Within each of these groups, half of the schools were randomly chosen to be treated, with the rest serving as controls.

### **POWER CALCULATIONS (JULY 2016)**

Using data from 2015 EGRA/EGMA assessments in Liberia, we estimate that the intra-cluster correlation in student's test scores ranges between 0.1 and 0.2 for different grades and skills (with most estimates between 0.15 and 0.25). For all power calculations we use a conservative estimate of ICC at 0.2. Similarly, we estimate the proportion of the variance that is explained by observable characteristics (age, gender, district, and grade) to be between 20-30% (without including baseline test scores). Thus, for all power calculations we conservatively assume that the R-squared of observable student characteristics is 30%.

Therefore, the minimum detectable effect size (MDE) with a power of 90%, at a 5% size, testing 10 students per school (in a total of 185 schools – 92 treated) is 0.22 standard deviations (Duflo, Glennerster & Kremer, 2007). Testing 20 students per school, we have an MDE of 0.2. These MDE are estimated under very conservative assumptions (high power, low size level, and conservative ICC and R2 from observable student/school characteristics).

According to EGMA data from 2015, students in third grade are able to answer, on average, 33.7% of addition questions correctly. Increasing test scores by 0.2 standard deviations would be equal to increasing the average test score from 33.7% to 37.4%.<sup>5</sup>

Details on our power calculations can be found in **Appendix 3**.

### **TREATMENT (SEPTEMBER 2016)**

Treatment happens at the school level; it consists of a private operator taking responsibility for the administration of a government school. Individual students will experience treatment if they attend one of the schools selected for treatment. Delivery of treatment will embrace a wide range of school management practices, and will vary by operator. All students in treated schools will receive schooling provided by a private operator authorized by the government, rather than by the government directly. Students who attend schools not selected for private operation will not experience treatment.

### **TIMELINE**

Surveys will be administered to students, teachers, school administrators, and households. The surveys will be administered at baseline (Sept 2016), at a one-year follow-up (May/June 2017), and a three-year follow up (May/June 2019).

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<sup>3</sup> Schools must: 1) have six or more classrooms, 2) have six or more teachers, 3) Have less than 65 students per classroom 4) be within 15 miles of the main road, and 5) Have 2G access (Only applies to Omega Academies, Rising Academies, and Bridge International Academies).

<sup>4</sup> Lofa, Nimba, Bomi, Bong, Grand Bassa, Grand Cape Mount, Margibi, Montserrado, River Cess, Sinoe, Grand Kru, and Maryland. Gbarpolu has a control school, but no treatment schools. Some of these counties (Great Kru, Sinoe, Gbarpolu, Maryland and River Cess) are generally considered remote counties with high poverty rates, low literacy, and little road access. See [http://www.lisgis.net/pg\\_img/2008%20Census%20Atlas.pdf](http://www.lisgis.net/pg_img/2008%20Census%20Atlas.pdf) for statistics on all the counties.

<sup>5</sup> The standard deviation of test scores was 18% (i.e., about 95% of students were able to answer between 0% and 70% of questions correctly). Therefore, increasing test scores by 0.2 standard deviations means test scores increased by  $0.18 \times 0.2 = 0.036 = 3.6\%$ .

## STAKEHOLDER MEETINGS FOR BASELINE (JULY - OCTOBER 2016)

In order to ensure smooth baseline data collection, IPA team has been involved in various level meetings:

- **MINISTRY OF EDUCATION MEETINGS:**

The Research Manager from IPA Liberia overseeing the PSL project was introduced to the Education Minister, Deputy Ministers and the PSL team stationed at MoE. This meeting facilitated the introduction of the IPA team to the county team and to also share the general program of activities for the baseline data collection. The meeting was scheduled before hand by our team via phone.

Lead researchers have been in constant communication with the MoE via phone or in-person meetings to support in randomization strategy, allocation of schools and finalization of treatment schools based on rejection criteria. Our lead researchers, Justin Sandefur and Mauricio Romero have been part of operators' meeting as well.

- **OPERATORS' MEETINGS:**

IPA Liberia team has been part of 4 operators' meetings. The first and second meeting facilitated introduction of the external evaluation team to all the 8 operators, introduction of operators' vision and model, PSL objectives and evaluation design.

The third and fourth meeting was focused on randomization strategy, school allocation and rejection criteria, description of evaluation partners' responsibilities and operators' progress report.

## ASSESSMENT AND USE OF EXISTING DATA

We tried to use existing data to the extent possible. Unfortunately, administrative data in Liberia are not always accurate, and data on learning outcomes are not available until secondary school. Below is a short description of the (relevant) available data and how we plan to use it.

- **EMIS Data:** The Education Information Management System (EMIS) gathers information on schools across the country.<sup>6</sup> It collects data on schools' location, facilities, enrollment, and staffing. The EMIS data has been collected every year since 2012, with the latest data coming from 2016. This dataset was used to identify PSL eligible schools, and to stratify randomization using an index of school quality (constructed using principal component analysis from a list of variables that measure school infrastructure and resources). We will collect additional infrastructure information during our school visits, as well as enrollment rates in order to keep up to date records for treatment and control schools. We will compare our own measures of school resources with those from previous EMIS rounds to study the evolution of resources and infrastructure across treatment and control schools.
- **National Standardized Exams:** Liberia currently has three national standardized exams, all taken by students after primary school.<sup>7</sup> The Liberia Primary School Certificate Examination, taken by 6th graders, has been discontinued. Since our intervention is centered around primary schools, we cannot use any of the standardized exam results in our study.
- **National Census and Representative Surveys:** The last census in Liberia took place in 2008. Since then, there have been two major nationally representative surveys: the Demographic and Health

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<sup>6</sup> The EMIS data is maintained by FHI 360 ([fhi360bi.org/user/liberia2/](http://fhi360bi.org/user/liberia2/)). The MoE has granted us access to the data.

<sup>7</sup> The Liberia Junior High School Certificate Examination (LJHSCE) taken by 9th grades, the Liberia Senior High School Certificate Examination (LSHSCE) taken by 12 grades, and the West African Senior School Certificate Examination (WASSCE) taken by those who wish to pursue tertiary education.



Survey in 2013 and the Household Income and Expenditure Survey 2014-2015.<sup>8</sup> We will not use this data directly, except to measure district or county averages and control for them in our analysis. In order to draw a sample of households, we will approach the Liberia Institute of Statistics and Geo-Information Services (LISGIS) to study the possibility of using the 2008 National Population and Housing Census (NPHC) as a sampling frame. If this is infeasible/inappropriate, we will explore the possibility of using satellite images to draw a sample of households from the catchment area near each school.

- **The Liberia Teacher Training Program (LTTP) data:** USAID implemented a teacher training program (LTTP) between 2011 and 2015 in Liberia. To evaluate the effectiveness of the program, they collected data on over 3,000 students across the country in 2011, 2013, and 2015. Students were tested using the EGRA/EGMA assessments.<sup>9</sup> We will use this data set to complete our power calculations and to estimate possible ceiling and floor effects in our own assessments of students' learning outcomes. The LTTP program will also serve as a benchmark for our own results.

### **PRE-TEST (JULY 2016)**

The research team leveraged insights from past EGRA/EGMA pilots in Liberia - most notably USAID's EGRA+ and LTTP programs - as well as institutional knowledge from other IPA country teams while designing student assessment tools. The team also consulted various stakeholders for input, including representatives from the Ministry of Education, NGOs, and other education professionals working in Liberia. A pre-test exercise was carried out in Montserrado County. These instruments were piloted to check for understanding, grade level appropriateness, and length. IPA also surveyed school administrators, teachers, and households. These survey tools were similarly vetted and piloted before the start of data collection.

### **MODIFICATION & FINALIZATION OF QUESTIONNAIRES AND ASSESSMENTS (END JULY – AUGUST 2016)**

On the basis of the feedback of the tentative questionnaires used in the Pre-test, IPA together with Pls worked on modifying the questionnaires, taking into the consideration the local context in Liberia. IPA also coded the questionnaire into Survey CTO, the electronic surveying platform that we used for data collection.

The project contains the following instruments:

#### **a. School Level Administration**

- **School or Head Teacher Survey** - We will complete a 1 hour 30 minutes survey of the respective Principal survey/Head Teacher survey for 1 person per school; ideally the Principal or Head Teacher.
- **School Observations Survey** – This entails a brief school observation followed by 15 minutes unobserved classroom observations and observed classroom observations of school and teachers.

#### **b. Teachers**

- **Teachers' survey** – 30 minutes survey for 6 teachers within each of the schools assuming 1 teacher per level from grade 1 to grade 6.

#### **c. Students**

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<sup>8</sup> The DHS database is available here <http://dhsprogram.com/what-we-do/survey/survey-display-435.cfm>; the Household Income and Expenditure Survey is available here <http://microdata.worldbank.org/index.php/catalog/2563>

<sup>9</sup> The LTTP EGRA/EGMA assessment data is available here <https://www.eddataglobal.org/>

- **Student Survey** – 5 to 10 minutes survey with each of the 10 randomly listed students from grade 2 and grade 4 for each school within the 184 study schools.
- **Student assessment** - 10 students within grade 2 and 4 for each of the 184 study schools spread within 13 Counties of Liberia. The student level assessment will comprise of a 30 minutes literacy and 30 minutes numeracy test administered on campus if students are still in school or within households if students are not at school for the term of the assessment.

#### **IMPLEMENTATION OF BASELINE (SEPTEMBER – OCTOBER 2016)**

We intend to survey students, teachers, households, and school level administration.

#### **Principal Survey/head Teacher Survey**

We will conduct survey with the Principal or the Head Teacher of the school, We will collect data on school management, school expenditures, school funding, and time allocation from existing administrative data as well as from PSL operating partners. This will allow us to measure whether PSL schools are administered differently than government-run public schools, providing insights on the mechanisms behind any treatment effects. Additionally, it will allow us to estimate whether PSL schools truly run on the same budget as other government schools, or whether other sources of income (such as parents and other NGOs) change after the shift to PSL status. This data is vital to understand the cost-effectiveness of PSL schools.

#### **Student survey**

For students, we plan to create a panel data set that follows students across time. Specifically, we plan to test 10 students per grade at baseline and test these same students yearly at the end of the school year. We intend to capture a baseline for students in Grade 2 and Grade 4. This is done for two reasons. First, there is evidence that the foundational skills taught in the younger grades serve as binding constraints, necessary for the accumulation of later knowledge. Second, these students won't graduate from primary school before the end of the three-year scope of the study, allowing us to minimize attrition and tracking costs.

For early grades (Grade 2 and Grade 4) we plan to use the EGRA and EGMA assessments for numeracy and literacy. We will also ask students about school perception, teacher behavior, and classroom environment. This will take place in 2016, 2017, and 2019 as highlighted in the RFP.

The survey team is expected to survey and test all 20 students during school hours between 8 am to 1pm except for students who are not enrolled in the current school term; those students will be sought after and survey in the households.

#### **Teacher survey and Observation**

For teachers, we will collect five rounds of data between 2016 and 2019 on motivation, time per task, teaching techniques, training, and perceptions toward PSL. This will allow us to see how teachers perceive the program, how they react to it, and whether any of the effects can be explained by changes in teacher behavior. The teacher perception and performance data of PSL schools is important for policy makers if the program is to expand in the future. However, for this baseline, we will conduct observation and survey 6 Teachers from each of the 185 schools. The observation of the teachers will be done for the first five minutes unobservable; that is without the teachers' knowledge, the rest will be done while sitting with in the class. If the teacher is not in class, mark it as absent and move to the next class.

It is obvious that the teacher observation will be done during school time and likely the survey will be done during his free time.

### **HIRING AND TRAINING FIELD TEAM (JULY-AUGUST 2016)**

The process of hiring of field team by IPA began at the mid of July and was completed by the end of July. Hiring of enumerators commenced in end of July based on the revision of revised proposal. Currently, we are hiring 70 enumerators for baseline data collection.

The training for the project team is scheduled for end of August for 10 days, from 29<sup>th</sup> August 2016 to 9<sup>th</sup> September 2016. The training is focused on the following elements: the purpose of the survey, the content of the questionnaire, training on the Survey CTO form, and the operational and logistical set up of the project.

- 1. Training of Enumerators:** IPA Liberia has an extensive database from which to hire enumerators for each phase of the PSL project. All enumerators will undergo rigorous training, covering topics such as: research design and methods; survey instruments; enumerator ethics and code of conduct; and use of PDAs for electronic data collection. Training will also include a “false launch”, during which time enumerators will be dispatched to a pilot community for practice data collection. For each training, we will invite more enumerators than are required for that phase of data collection in order to guarantee that the most highly skilled enumerators are in the field, as well as to create a standby list in the case of enumerator drop-out.
- 2. Field Management:** There is a tiered management structure to monitor enumerator performance. Enumerators will be divided into teams, overseen by Team Leaders (TLs). TLs will be managed by Field Coordinators (FCs) who, in turn, will be accountable to a Field Manager (FM). The FM, FC and TL roles will be filled by former enumerators who have extensive field research experience. They will be responsible for providing on the spot guidance and training; troubleshooting challenges; ensuring data quality; allocating and accounting for team resources; and meeting targets within a given timeframe and budget. Through the hiring process, one Senior Field Manager, one Field Manager and one Field Coordinator were contracted throughout the baseline data collection period.
- 3. Accompaniments:** FCs and TLs will randomly accompany enumerators throughout data collection. This will be particularly important during the first few days of any data collection period. FCs and TLs should accompany as many surveys and assessments as possible (at minimum 10 percent).
- 4. Back-checking:** IPA will employ back-checkers to re-survey at least 10 percent of all respondents. Back-checkers will re-administer part of the survey questionnaire to a random sample of respondents to check for enumerator accuracy. The research team will compare back-check responses to those in the original surveys. This process will allow the team to quickly catch any falsified data and re-conduct surveys as necessary. All back-checks will be completed within at least one week of original data collection.
- 5. Data Monitoring:** Throughout data collection, the research team will run daily and weekly high frequency checks in order to pinpoint data outliers, calculate enumerator productivity, and monitor routing and logic checks. All checks, programmed as Stata do-files, will output a Stata-log as documentation of any errors.
- 6. Use of Electronic Data Collection:** The IPA team has extensive experience utilizing electronic instruments for data collection. Electronic data collection reduces the potential for enumerator errors by: imposing hard and soft constraints on answer choices; requiring responses to important data fields; automating skip logic; computing complex equations; and pre-populating data fields. Furthermore, electronic data collection eliminates the need for paper surveys and the corresponding potential for data entry error.
- 7. Backup and Security of Data**

To ensure data privacy, IPA will permanently maintain copies of all final, raw datasets on encrypted hard drives. All data cleaning and analysis will be carried out on duplicate datasets using Stata do-files to document changes and ensure uniform data manipulation.

#### **8. Expected Difficulties in Data Sharing**

All personally identifiable information (including names, addresses, and phone numbers) will be stripped from datasets before public release. During baseline data collection, all respondents will be assigned a unique ID for tracking purposes. After endline data collection, all personally identifying information will be removed from the dataset before analysis. IPA will maintain an encrypted document connecting respondents' names and IDs.

#### **TEAM STRUCTURE**

In a bigger picture the entire team for the PSL project will be overseen by the Research Manager a Senior Research Associate and a Senior Field Manager to ensure IPA protocol and minimum must dos is implemented.

The rest of the field team will include the following listed below;

- 1 Field Manager
- 1 Field Coordinator
- 10 Team Leaders
- 40 Enumerators
- 20 Advance team members
- 2 Back checkers

The study will have 2 large teams controlled by the two Field Managers (FMs) and a Field Coordinator alongside. The 2 large teams each will be further sub-divided into three smaller teams. We will therefore have in total ten teams of 4 enumerators each including a Team Leader. The new IPA Field Manager will be assisted by the Field Coordinator and 5 Team Leaders to effectively manage field activities in Lower/southern Liberia while the Sr. Field Manager assisted by 5 Team Leaders will be assigned to upper/Northern Liberia to manage data collection activities.

