



EdData II

Report on the Pilot Application of Lot Quality Assurance Sampling (LQAS) in Ghana to Assess Literacy and Teaching in Primary Grade 3



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Report on the Pilot Application of Lot Quality Assurance Sampling (LQAS) in Ghana to Assess Literacy and Teaching in Primary Grade 3

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Abbreviations

ASER	Annual Status of Education Report
ASU	Assessment Services Unit, GES
CRDD	Curriculum Research and Development Division
DR	decision rule (Table 1)
EdData II	USAID Education Data for Decision Making project
EGRA	Early Grade Reading Assessment
EMIS	education management information system
EQuALLS	USAID Education Quality and Access for Learning and Livelihood Skills project
FANTA	Food and Nutritional Technical Assistance
FPC	finite population correction
GES	Ghana Education Service
LQAS	lot quality assurance sampling
NALAP	National Literacy Acceleration Programme
NA	not applicable (Table 1)
NEA	National Education Assessment
NIB	National Inspectorate Board
P3	Primary Grade 3
PTA	parent-teacher association
RTI	RTI International (trade name of Research Triangle Institute)
SMC	school management committee
TOR	terms of reference
UPHOLD	Uganda Program for Human and Holistic Development
USAID	United States Agency for International Development

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Introduction¹

This report summarizes main findings and lessons learned from the piloting of lot quality assurance sampling (LQAS) in the education sector in Ghana. It also suggests next steps for applying LQAS more broadly for education program monitoring.

Background

It is a truism that ministry-run programs and donor-funded projects need to ensure maximum efficiency. As one tool to attain this end, information from routine monitoring ideally should be used to revise project approaches and/or provide additional support where ongoing programs are not as successful as hoped. However, evaluation of programs and projects can be quite costly and, as a result, may happen infrequently. Ministries often rely on in-person school inspections, which do not happen with optimal frequency due to financial and other resource constraints, and which focus primarily on school inputs and not on the quality of instruction. Also, school inspectors may not all use the same principles for assessment or have standardized assessment checklists. Similarly, projects routinely rely on baseline studies at the beginning of an activity and then midterm or end-of-project evaluations. When these evaluations are conducted, results often are not available for months and actions meant to address identified problems are not implemented for even longer amounts of time. In addition, traditional evaluation approaches tend to produce aggregate findings, making it difficult to target precise assistance where it is most needed. National assessment programs, for example, often do not provide precise measures at sub-regional levels such as the district and, thus, district managers do not have the data they need to guide management decisions, to target interventions, or to monitor progress. By contrast, lot quality assurance sampling is a technique that allows relatively low-cost, routine, and quick monitoring that provides disaggregated, actionable data needed to target needy areas or institutions in a timely manner.

The LQAS technique was first developed in the 1920s in the manufacturing industry as a way to monitor the quality of production. A small sample of items was randomly selected from each production lot and examined for any imperfections. If the number of defective items was greater than a pre-set threshold level, then the lot was rejected (Robertson et al., 1997, p. 199). Rejected lots were then “examined more closely and either repaired or discarded” (MEASURE *Evaluation* Project, 1998, p. 5). Application of the method has since spread far beyond manufacturing into other domains, including the social sciences. For example, the LQAS concept has been adapted for use in the health sector, and has been gaining popularity as a way to efficiently monitor health programs over time. LQAS has more recently been introduced into the education sector² as a way of monitoring program performance and identifying areas that need additional support.

¹ Portions of the introductory and background material in this report were adapted from a concept note prepared for USAID by RTI International during early discussions about a case study application of LQAS under the Education Data for Decision Making (EdData II) project.

² USAID’s Uganda Program for Human and Holistic Development (UPHOLD) project is an example.

Use of LQAS in Education

The argument for using LQAS in education can be stated quite logically. In short: Improving education practice in the classroom is a complex matter. It involves interactions between districts and head teachers, head teachers and teachers, and teachers and their students. Improvements in this complex system require fundamental changes in cultural and institutional habits. The only way to change is through frequent feedback, which must be collected using relatively low-cost methods and should be manageable at the local level. In addition, data from this feedback system should have the ability to be aggregated to higher levels. LQAS can do all this.

To elaborate further, LQAS is particularly appealing for the education sector as more and more governments strive to decentralize education responsibilities. District-level managers need a way to monitor the programs or communities in their district and determine which ones are “meeting particular targets and goals” (Robertson et al., 1997, p. 199). As just indicated, the LQAS method is relatively fast and inexpensive and yields *timely* data needed to identify subdivisions and schools that may have fallen behind and need additional support. And as we confirmed during our pilot, LQAS does also provide feedback on the overall implementation of a program. LQAS is, therefore, an ideal methodology for routine monitoring of subdistricts, districts, or schools.

The central characteristics of this approach as applied to the social sectors may be described as follows. First, LQAS divides populations into small, “administratively meaningful units (lots)” (Mabirizi, Orobato, David, & Nsabagasani, 2004, p. 5) where a local supervisor can influence or ensure quality of effective school management and instruction. In the case of education, these lots could be schools, districts, or subdistricts. Lots or subdivisions must be small enough to be homogeneous in nature, with similar socioeconomic characteristics (Mabirizi et al., 2004, p. 5). Second, rather than estimating the performance of districts, subdistricts, or schools, LQAS identifies which of these subdivisions are performing at expectations or better, and which are performing below expectations.³ Framing the analysis question in such stark terms (at, above, or below standard; meeting expectations or not; acceptable/not acceptable; or pass/fail) means that only a relatively small sample size is needed (Robertson et al., 1997, p. 199). Third, LQAS uses stratified random sampling rather than clustering to select small samples of individuals or institutions to assess within each of the subdivisions or lots (Espeut, 2000, p. 4; Robertson et al., 1997, p. 199). This sampling approach has the benefit of requiring an even smaller sample size.⁴ Fourth, aggregating findings from all the lots or subdivisions does yield aggregate performance estimates or average scores (Espeut, 2000, p. 4). Finally, LQAS provides simple data that can be almost immediately interpreted. In addition, data may be analyzed as soon as they are available for one subdivision or lot; one does not need to wait for data to be collected from all sampled

³ To further explain the reasoning behind the choice of limits: LQAS uses “one-sided hypothesis testing for analysis” of resulting data (Robertson et al., 1997, p. 199). The null hypothesis used in LQAS is that the number of defective items in the lot exceeds the allowable pre-set limit and the lot has to be rejected. In the social sector, “rejection” is not an option. Thus, rather than setting a limit as the number of defective items, the hypothesis requires setting the limit as the number of individuals or institutions that are performing below targeted expectations.

⁴ Random sampling, unlike clustering, does not introduce a design effect and, therefore, does not require as large a sample.

subdivisions before analyzing the data and making recommendations (Robertson et al., 1997, p. 207).

In the education field, a practical application of LQAS looks something like the following. A small set of key indicators is identified, based on curricular standards as well as expected school and teacher behavior and management. Examples of indicators might be student reading fluency, amount of reading time that teachers set aside for students in class every day, availability of textbooks for students, and frequency with which teachers carry out certain required class exercises. Current school practices and student performance levels are then used to set minimum target rates. Particular schools are chosen for the “supervision lot” and formally observed on those indicators. Supervisors or inspectors can collect data on these chosen indicators during routine supervision visits as long as the sample of schools to be visited has been selected randomly. Schools that fail to meet these minimum targets are found to be performing below expectations. These “below expectation” schools can then be targeted for additional support right away. Support for these schools could take the form of additional training to teachers and head teachers, more routine monitoring/coaching of teachers, and provision of needed pedagogical materials, for example.

More generally, LQAS would allow us to track the overall implementation of a program. By this we mean that with LQAS, we could monitor whether the various resources, actions, and steps we assumed were necessary to result in changed teacher behavior and student performance were in place. For example, LQAS would make it feasible to note whether books were delivered from districts to schools, from schools to classrooms, and from classrooms to pupils. LQAS would also allow us to evaluate the integrity of training; that is, are teachers implementing what they have learned? Similarly, the LQAS data could be used at the national level to identify districts or subdistricts that were performing “below expectations.” As with the schools, these districts and subdistricts could then be targeted for additional support. By being able to evaluate individual schools, districts, and/or subdistricts, LQAS could provide national, district, and subdistrict administrators with vital information needed to target schools or areas and improve overall student performance in an efficient manner.

Unlike annual or biannual assessments, routine, periodic LQAS monitoring would allow administrators to intervene in a timely manner wherever support was needed. When programs or projects rely only on annual or biannual assessments to measure the effectiveness of implementation, the information gets back to the key implementers too late to impact the program.

Rationale for LQAS Pilot in Ghana

Given the promising aspects and potential for LQAS in education, in 2012 USAID/Washington set aside funding under the Education Data for Decision Making (EdData II) project to further develop LQAS tools and methodologies and to further assess the cost efficacy of using LQAS to routinely monitor programs designed to improve performance in early grades. The results of this tool development and the accompanying pilot test are the subject of this report.

Ghana was approached as a pilot site, for two reasons. First, Ghana has gone to scale with the National Literacy Acceleration Programme (NALAP) but not all schools or subdistricts are

systematically applying this program. Second, and perhaps more importantly, in 2012, Ghana established a National Inspectorate Board (NIB). The NIB has since been building its staff and developing monitoring tools and protocols. Once the EdData II pilot discussions began, it was clear that this pilot would also provide an opportunity for the Ghana Education Service (GES) and the NIB to collaborate in developing the instruments and protocols as well as in conducting this pilot.

In addition to developing monitoring tools, the pilot was tasked with defining the local quality assurance “lots,” calculating appropriate sample sizes, determining random sampling techniques, and establishing the frequency of monitoring visits. School monitoring visits in selected pilot areas were to be carried out by NIB and GES staff.

The pilot had two primary goals. The first was to evaluate the viability of using LQAS as a tool to routinely monitor the quality of education in Ghana. Second, if the application proved successful, it was hoped that LQAS tools and methodologies would be integrated into the NIB and GES portfolio of tools used for routine monitoring. As the GES moves to further decentralize, it is hoped that the LQAS approach will be adopted by the districts for their monitoring, targeting of interventions, and support to schools and subdistricts. The LQAS methodologies piloted in Ghana would then be made available to other countries as an effective way to monitor education systems as well as donor-funded projects.

Pilot Activities and Funding

With pilot funding from USAID/Washington, representatives of the EdData II team traveled to Accra to meet with USAID, other donor representatives, the GES (Assessment Services Unit [ASU], Curriculum Research and Development Division [CRDD], General Inspectorate), and NIB to introduce the LQAS methodology and to discuss the pilot. An LQAS task force consisting of GES, NIB, USAID, and RTI EdData II representatives was subsequently formed. This task force was asked to review and revise preliminary indicator lists and later to review the resulting data collection tools and protocols. The task force also reviewed performance indicators and set threshold targets needed to classify schools, districts, and subdistricts as meeting or not meeting expectations.

The task force also participated in the selection of the pilot sample and identified the NIB and GES representatives who would participate in this pilot exercise.

A very simplified version of the Early Grade Reading Assessment (EGRA), an orally administered instrument, was developed and used to assess individual students’ reading skills.⁵ In addition to student performance, a small number of key indicators designed to gauge effective instructional approaches were identified for inclusion in the LQAS monitoring tool. Scoring of the LQAS results and simple reporting templates were also developed during the pilot study.

During February–March 2013, RTI International supported USAID and the Government of Ghana (in particular the GES, ASU, NIB, and CRDD) in the pilot application of LQAS approaches for monitoring and supervision of schools at the district level. As planned, the

⁵ For more information on the standard EGRA tool, please see the following page of the EdData II project website: <https://www.eddataglobal.org/reading/index.cfm>.

tools applied were developed with the perspective that the primary downstream users would be NIB inspectors and the Circuit Supervisors of the Ghana Education Service.

USAID/Washington funding covered the cost of all international technical assistance and travel, as well as the cost of design meetings and workshops, training of monitors, presentation of findings, finalization of instruments, and this final report summarizing the pilot findings.

Design of the LQAS Instruments

Selection of Classroom and School Indicators

To be useful for routine monitoring, LQAS instruments must collect information on key indicators quickly, easily, and reliably; also the results must easily interpreted and used. In selecting these indicators (see *Appendix A* for the unabridged initial list), the joint LQAS team took an ecological perspective—that is, identifying indicators that research and experience indicated were the most critical to contributing to early grade learning in Ghana. This pilot was designed to focus primarily on the quality of reading instruction in the classroom, and the indicator selection reflects this focus. We started with pupil engagement, or the degree to which pupils are involved in relevant learning tasks linked to the acquisition of reading and writing competencies. We then considered the activities and characteristics of the teachers; the conditions of the classroom; and the support and management of learning provided by the school, the head teacher, and the community. Although indicators related to student readiness are fundamentally important, they are not readily observable in a classroom setting, and therefore we excluded them.⁶

This schema placed the emphasis on the pupils' engagement in relevant learning tasks, with all other indicators contributing (or not) to that engagement. In other words, the indicators reflect consensus that pupils' regular and systematic engagement over time in relevant tasks leads to fluency in reading and writing, and from those proficiencies to other learning outcomes.

We outlined the key indicators supported by research and experience in Ghana (and other countries with similar socioeconomic and cultural contexts). We then reduced this list to indicators that may be readily observed in the classroom. Given the need for brevity in this routine monitoring approach, we reduced this list further to pinpoint the most critical indicators. Following the LQAS tradition, wherever possible, we used a binary choice for each indicator, whereby a condition or process is either present/not present (yes/no), rather than more nuanced scales and observational protocols.

The researchers applied the following three criteria to select the pilot indicators:

1. Strength of the indicator to predict literacy outcomes;
2. Relative ease in observing and collecting the data, and specifically in having a high level of reliability in a binary judgment (condition exists, does not exist);

⁶ In future pilot rounds, we could explore the option of a simple body-mass index proxy as a measure of student nutritional status, which would in turn affect student engagement/readiness.

3. Strength in contributing to an index with transparent meaning to stakeholders (including pupils, teachers, community members, and education officials).

The domain areas included in the LQAS pilot were:

- Pupil engagement
- Pupils' involvement in learning tasks linked to the acquisition of reading competencies
- Teacher characteristics
 - knowledge of subject matter
 - attendance
 - lesson planning
 - time on task
 - feedback to students
- Availability and use of teaching and learning materials.

All these domain areas fall under the NIB's Quality of Teaching and Learning & Standard of Academic Achievement Indicators. A preliminary indicator list was sent to the LQAS task force in Ghana and carefully reviewed. The indicator lists and the actual data collection tools—under development simultaneously—were subsequently revised to reflect the responses from this review.

Two data collection instruments (teacher questionnaire and classroom observation instrument), their matching protocols, and hand-tabulation tables were developed to capture the indicator data listed above. The teacher and classroom observation instruments were designed to sample one Primary Grade 3 (P3) teacher in each school, who then would be the subject of observation to assess his/her teaching of English and Akuapem Twi. Additional questions assessed teacher absenteeism and the presence and use of teaching materials.

In addition, the aforementioned EGRA tool was adapted to assess the oral reading skills and comprehension of a sample of P3 pupils in each school. The assessment combined features of the full EGRA as well as the Annual Status of Education Report (ASER) survey instrument,⁷ and was administered in English and in Akuapem Twi (the official language of instruction in the sampled schools). The assessment was designed to be brief and we had hoped would not take more than 5 minutes per child.

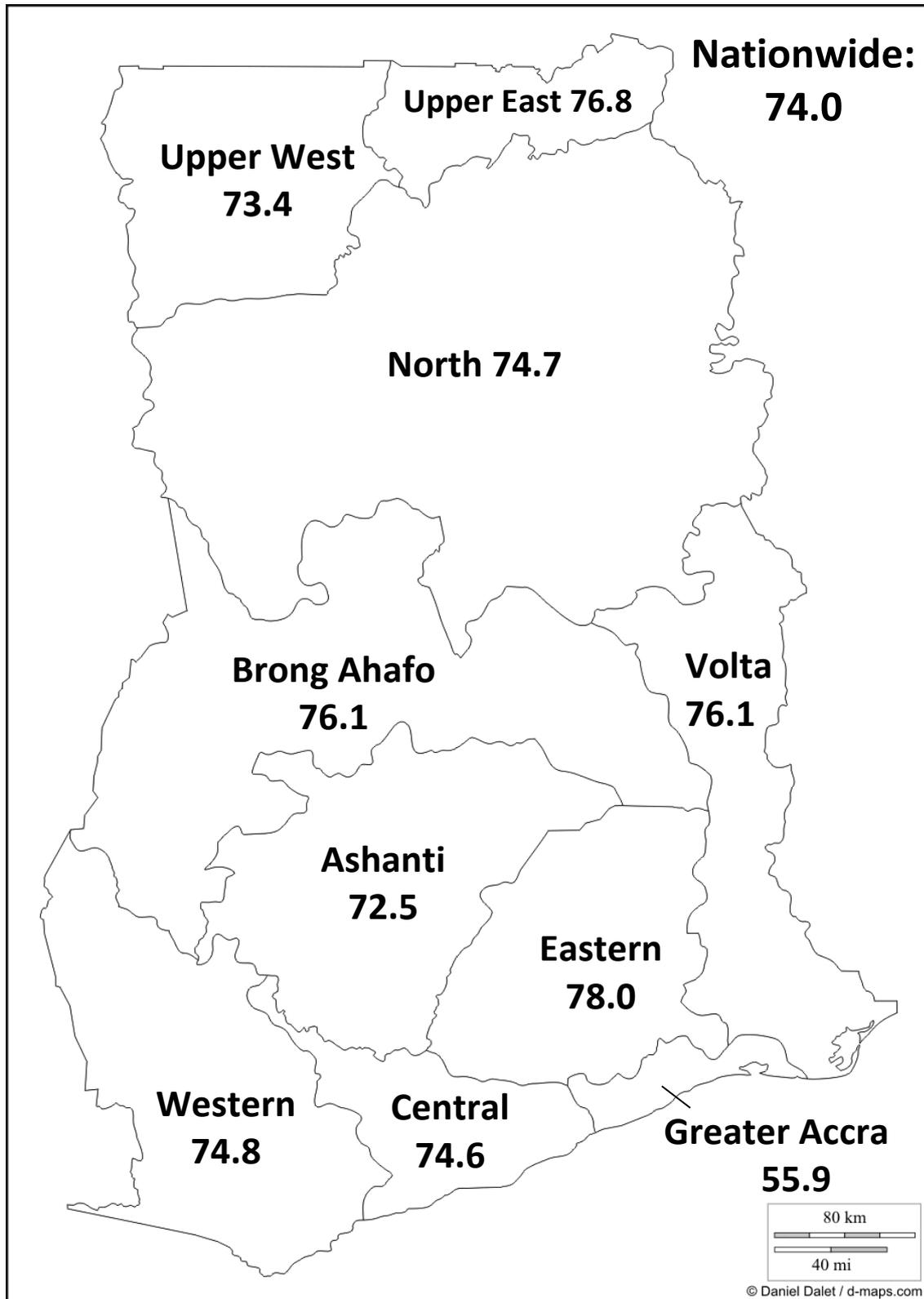
The initial concept for the student assessment instrument was limited to just a reading passage (60 word max) followed by five simple comprehension questions. However, results from both the 2011 National Education Assessment (NEA) and a simple EGRA conducted in a few schools in 2011 indicated that large proportions of students were unable to read at all.⁸ **Figure 1** shows the estimated proportions of nonreaders in each region based on six reading

⁷ For more about features and uses of EGRA, see RTI International (2009), the *Early Grade Reading Assessment Toolkit*, <https://www.eddataglobal.org/documents/index.cfm?fuseaction=pubDetail&id=149>. For ASER, see the website of the ASER Centre, <http://www.asercentre.org/p/p/141.html>.

⁸ This earlier assessment also was carried out under EdData II Task Order 7; the results are summarized in RTI International (2011).

questions contained in the 2011 NEA. In short, in all regions but Greater Accra, over 70% of the P3 students were unable to read.

Figure 1. Mean Percentages of P3 Pupils Unable to Read, Based on 2011 NEA Reading Questions



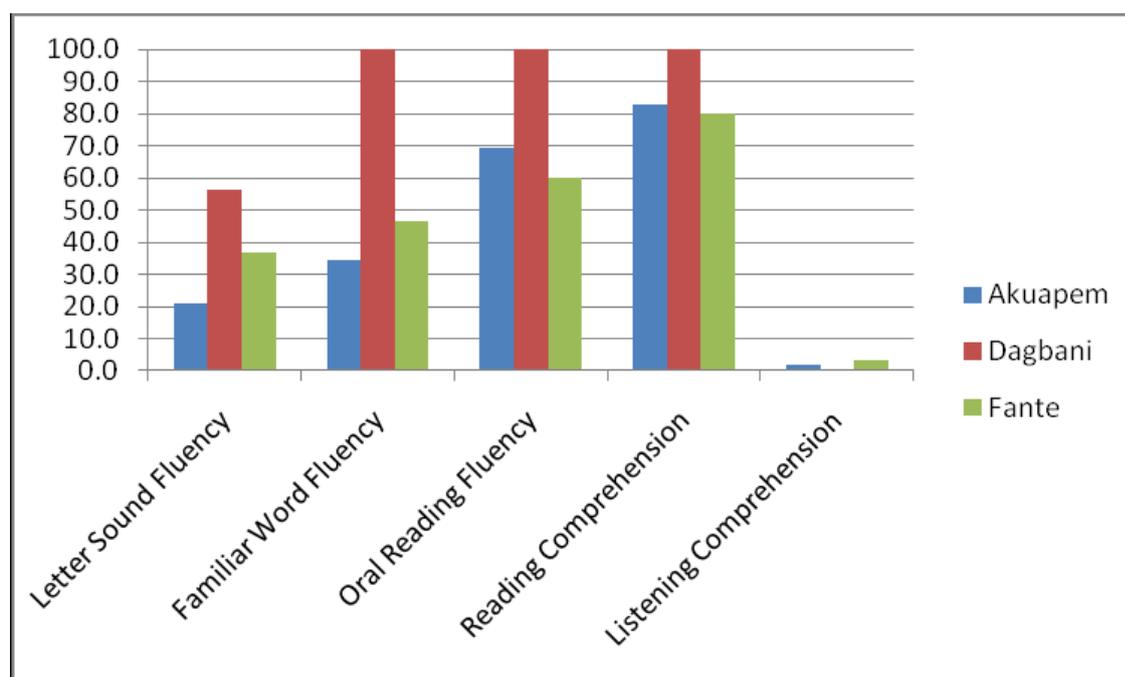
Note: Reading professionals identified questions 31–36 in the P3 NEA 2011 as measuring pupils’ ability to read. Pupils were defined as *readers* if they correctly answered at least three of the six reading questions, and as *nonreaders* if they correctly answered two or fewer questions.

Data source: NEA 2011

Outline map source: http://d-maps.com/carte.php?num_car=4675&lang=en

For the abbreviated EGRA in 2011, Akuapem Twi, Fante, and Dagbani versions of the instrument were developed and administered. Students’ familiarity with letter sounds, common words, reading fluency and comprehension were tested. **Figure 2** lists the percentage of students who scored zero on each of the EGRA tasks. The students tested with the Dagbani instrument were not able to read a single word. In Akuapem Twi, approximately 35% of students were unable to read any familiar words, and 70% were unable to read a single word in a short reading passage.

Figure 2. Percentage of Zero Scores, by Task and Language, 2011 Mini-EGRA



Source: RTI International (2011).

Given these results, the LQAS team was concerned that student assessment results would be quite poor across all the sampled schools if students were simply asked to read the text passage, and we would not be able to distinguish between one school and the next. Therefore, for the LQAS pilot test we decided to add some of the foundational reading skills also found in the full EGRA. Skills tested included students’ familiarity with letter names,⁹ common or familiar words, simple sentences, a reading passage, and comprehension questions. (**Appendix B** contains the student instruments used in the pilot.)

⁹ We considered testing pupils on letter *sounds* as this is such an essential foundational reading skill. However, given that the first task was to serve as a cutoff point, we were concerned that asking children to provide the letter sounds (considered slightly more advanced than letter names) would have been too difficult for most children and that too many tests would end before the assessors even got to the familiar-words task. It is generally recognized that most teachers in Ghana do not routinely teach letter sounds.

Like the standard EGRA, students progressed from simple to more difficult tasks. Unlike the standard EGRA, however, with the exception of the first task, students had to successfully complete each task before moving on to the next task. If a student was unable to complete a task successfully, the test ended. All more complex tasks were presumed to be unsuccessful as well. In this sense, this oral test resembled the ASER test, where students do not advance to a more difficult task if they cannot complete the previous/easier task.

Protocol

This LQAS approach was designed to classify a district as “performed at expectations” or “performed below expectations” based on whether 80% of schools achieved the traits of interest specified in a set of indicators related to teacher performance and P3 pupil achievement.

The Akwapim South Municipal District (Eastern Region) was chosen for the LQAS pilot. A list of all schools located in this district was provided by the Education Management Information System (EMIS) unit. After excluding private schools, schools with fewer than 18 P3 pupils, and schools known not to instruct in the Akuapem Twi language, 19 primary schools were then randomly selected.

Within each sampled school, 18 P3 pupils were randomly selected; 16 pupils were selected to participate and two pupils acted as a reserve if one or more of the pupils refused to participate in the assessment or was deemed unable to do so (e.g., one student was ill and vomited at the beginning of the assessment, so he was replaced with one of the reserve pupils).

From March 12 to 14, 2013, a team of seven inspectors and one supervisor visited the 19 selected schools. One inspector visited one school for one day. During the visit, inspectors observed one English class session and one Akuapem Twi class session. They then randomly selected the 18 P3 pupils and assessed 16 of them.



After all the sampled pupils were assessed, hand-tabulation tables (explained in more detail below under “Main Results”; see also *Appendix B*) were used to sum the total number of

literate children. Each school was then classified as “meeting the literacy expectation” or “not meeting the literacy expectation.” If six or more of the 16 pupils were able to read, the school was classified as meeting the literacy expectation. If only five or fewer pupils were literate, then the school was classified as not meeting the literacy expectation.

Finally, after all the schools were visited, the hand-tabulation tables were used to sum the total number of schools that met the literacy expectation. If 13 or more of the 19 schools met the literacy expectation, the district would be classified as “achieving the literacy standard.” If 12 or fewer schools met the literacy expectation, the district would be classified as not achieving the literacy standard.

Please see *Appendix C* for further information on the student and school sample sizes, and the decision rules used to classify schools as meeting the literacy expectation and classify districts as achieving the literacy standard.

Data Collectors

Initially, approximately 15 trainees were identified, comprising experienced teachers and staff of the NIB and CRDD. They received five days of training during the week of February 26, 2013, during which time the tools and protocols were pretested in two schools in Akwapim South. All 15 trainees were expected to collect data, but given the nascent nature of the NIB at the time of the pilot, it was possible to involve only the six permanent NIB lead inspectors and two CRDD staff.

As explained earlier, the pilot data were collected from 19 sampled schools in Akwapim South during March 12–14. Seven of the eight trained observers each visited one school per day, and the eighth observer took on a supervisory role, organizing observer assignments and traveling from school to school along with EdData II staff members to oversee the pilot data collection. Although all school directors were willing to participate in the pilot, some remarked that it would have been better to have had official notification beforehand. We noted in the inspectors’ instructions, however, that the exact date of the visit should not be announced. Unannounced observations help to give observers a more accurate sense of routine teacher and student attendance rates. Observers should travel to schools with official letters of introduction from the NIB and or the GES. Observers should also have official identification cards and should travel with shirts marked with their organizations’ logos.

One of the great benefits of the LQAS is that data are readily available locally as soon as the data have been collected. Observers are taught to tabulate their data without needing to rely on computers or sophisticated statistical analyses. The tabulation methodology was explained during a hands-on workshop during which the observers and supervisor quickly tabulated the pilot data. The workshop to train the assessors in hand tabulation took place over two days (March 19–20). Preparation of a summary presentation by the trainees and the presentation itself took another day (March 21).

Main Results

Table 1 shows the summary results for school and teacher performance developed during the hand-tabulation exercise. This table includes more information than the hand-tabulation summary table normally would include. That is, given that this was a pilot, we wanted a table

that would reveal both the school-level standard (or targets set) for this pilot exercise, and the mean or frequency result for each of the indicators. Normal hand-tabulation tables would not include the mean. When an indicator was an aggregate based on sub-indicators, the sub-indicators were also listed. During a pilot stage in particular, where prior data are not available, it is important to examine the disaggregated data to determine whether the standards used were appropriate or not. As noted above, for a district to pass, a minimum of 13 out of the 19 schools in the district had to meet the minimum school-based standards in addition to meeting the classroom-based standards for each of the indicators.

Student and Teacher Attendance

The attendance rate standard was set at 90% for both students and teachers. The teacher attendance data were recorded at 9 a.m. As shown in Table 1, most schools did not meet these requirements. Because the standards should be set to identify and target the weakest performing schools, the ministry may want to consider reducing this standard somewhat; a 75% minimum attendance may be a better option.

Table 1. School and Teacher Performance in One Ghanaian District

Indicator	Standard	Observed Average	Schools		District Status (DR = 13)
			Achieved Standard (80%)	Did Not Achieved Standard	
Teacher attendance at start of the school day	90%	71% (range 13%–100%)	6	13	Fail
Student attendance	90%	84% (range 64%–100%)	8	11	Fail
ENGLISH: Teaching					
Student engagement	Majority of pupils actively engaged	Not applicable (NA)	16	3	Pass
Time on task	Lesson had to last at least 30 minutes, and the teacher should be on an appropriate unit in the student reader for this time of the school year		8	8 ^a	Fail
English lesson lasted at least 30 minutes	Yes	Avg. 42 minutes (range 29–82 minutes)	17	2	
Teacher covered an appropriate unit for this time of year	Is the teacher on unit 7 or higher in the “Pupils Activity Book 3”? ^b	Lesson 7.7 (range unit 1–10)	9	10	
Reading practice	Students read aloud individually or in pairs Teacher asks students to read silently or asks comprehension questions	NA	11	8	Fail
Teacher had students read aloud	See rule for reading practice	NA	17	2	
Teacher asked the class to read silently	See rule for reading practice	NA	0	19	
Teacher asked the whole class to read aloud together	See rule for reading practice	NA	15	4	
Teacher asked pupils comprehension questions based on what was read	See rule for reading practice	NA	12	7	
Availability of teacher materials ^c	Teacher had P3 teacher’s guide and the English syllabus	11 had the P3 teachers guide, 14 had the English syllabus, 9 had both	9	10	Fail
Availability of pupil readers	Books available for at least 50% of students	Avg. books for 31% of students (range 0%–85%)	4	15	Fail
Availability of pupil exercise books (among students who were selected to participate in the student assessment)	Books available for at least 50% of students	98% of assessed students had their exercise books; of these, 92% had written comments from their teachers	19	0	Pass
Teacher materials used	Teacher used the P3 teacher’s guide or the English syllabus	8 used the teacher’s guide, 7 used the English syllabus	12	7	Fail

Indicator	Standard	Observed Average	Schools		District Status (DR = 13)
			Achieved Standard (80%)	Did Not Achieved Standard	
AKUAPEM TWI: Teaching					
Student engagement	Majority of pupils actively engaged in listed reading activities		16	3	Pass
Time on Task			4	15	Fail
Akuapem Twi lesson lasted at least 30 minutes		Avg. 42.5 minutes (range 11–78 minutes)	17	2	
Teacher covered an appropriate unit for this time of year	Is the teacher on unit 14 or higher? ^d	Avg. Unit 10 (range 1–17 minutes)	4	15	
Reading practice			15	4	Pass
Teacher had students read aloud	See rule for reading practice		17	2	
Teacher asked the class to read silently	See rule for reading practice		2 ^e		
Teacher asked the whole class to read aloud together	See rule for reading practice		12	7	
Teacher asked pupils comprehension questions based on what was read	See rule for reading practice		16	3	
Availability of teacher materials	Teacher had P3 teacher's guide and the English syllabus	11 had the P3 teacher's guide, 11 had the Akuapem Twi syllabus, and 6 had both	6	13	Fail
Availability of pupil readers	Books for at least 50% of students	Avg. books for 49% of students (range 18–85%)	9	10	Fail
Availability of pupil exercise books (among students who were selected to participate in the student assessment)	Books for at least 50% of students	98% of assessed students had their exercise books; of these, 94% had written comments from their teachers	19	0	Pass
Teacher materials used	Teacher used the P3 teacher's guide or the English syllabus	8 used the P3 teachers guide, 7 used the Akuapem Twi syllabus	12	7	Fail
TEACHER					
Has summary lesson plan and used it		16 had a lesson plan of which 12 followed their prepared plan	12	7	Fail
Has English reading skills	Teacher should be able to read the student reading passage and answer 4 out of the 5 comprehension questions		19	0	Pass

Indicator	Standard	Observed Average	Schools		District Status (DR = 13)
			Achieved Standard (80%)	Did Not Achieved Standard	
Has Akuapem Twi reading skills	Teacher should be able to read the student reading passage and answer 4 out of the 5 comprehension questions		18	1	Pass

DR = decision rule; NA = not applicable.

- ^a Three data points are missing, so the totals come to 16 rather than 19.
- ^b The following formula was used to determine what unit the teacher should be on, given that classes were observed during the week of March 11. Week of March 11 = 25th week in school year; $25 \text{ weeks} \div 41 \text{ weeks in school year} = 0.61$; $11 \text{ units} \times 0.61 = 6.7 = \text{unit } 7$. Note three schools used a different English reader with 24 units, so teachers in these schools should have been on unit 15 or higher.
- ^c Three missing data points. School still did not pass with altered decision rule.
- ^d The following formula was used to determine what unit the teacher should be on, given that classes were observed during the week of March 11. Week of March 11 = 25th week in school year; $25 \text{ weeks} \div 41 \text{ weeks in school year} = 0.61$; $24 \text{ units} \times 0.61 = 14.64 = \text{unit } 15$.
- ^e This information was recorded in only four of the two schools, as the question had been accidentally omitted in the printing of the pilot instruments. Just one individual noted this error and wrote in the response by hand.

Instruction

Student Engagement

In the majority of schools, more than half of the students were found to be engaged during the English portion of the language and literacy lesson. Activities that classified as engagement in the lesson included individual reading, pair or group reading, raising hands, standing in front of the class to read, or working on a writing assignment at their desk. Only three schools were found to have classrooms where the majority of pupils were not engaged.

Time on Task

Two indicators were selected to measure time on task. The first was simply the length of the lesson. According to the NALAP guidelines, the language and literacy lesson should last 90 minutes, with 45 minutes set aside for local language instruction and 45 minutes set aside for English. The traditional curriculum stipulated that each language lesson should last 30 minutes. The minimum standard was set at 30 minutes. All but three Akuapem Twi lessons and all but one English lesson met this standard. The observed English and Akuapem Twi lessons lasted on average 42 minutes. The length of the lessons varied, ranging from 11 to 82 minutes. In some cases, inspectors had the impression that teachers may have been making their lessons particularly long, given the presence of the inspectors.¹⁰ The second time-on-task indicator let us know whether or not the teacher was keeping up with the nationally set syllabus. If teachers have fallen too far behind, this is a strong indication that they are not spending sufficient time on task or that they are not using their time effectively or efficiently. During the schools visits, the inspectors noted that though some teachers used their lesson time effectively, not all did. The inspectors noted that more than half of the English lessons and more than three fourths of the Akuapem Twi lessons were behind where they should have been given the time of the school year.¹¹ In a few extreme cases, inspectors observed some teachers spending an entire lesson on just one word or one sentence. If this is typical for these classes, then teachers and their students would be able to make only very slow progress during the year. The ministry should confirm that the assumptions made regarding the anticipated progress matches curricular expectations. If not, the standard may have to be adjusted. If, on the other hand, the standard is deemed reasonable, this indicator makes it clear that teachers are not covering materials at a fast enough pace.

Reading Practice

As with time on task, reading practice is an aggregate indicator. This indicator in particular highlights the need to carefully select the sub-indicators included as well as the need to carefully set the performance standards. For reading practice, the standard required that

¹⁰ Given the fact that observers were in the classroom, we were not necessarily observing the teachers' normal teaching practice. That is, given the natural human tendency for reactivity, we may have been observing what the teachers believed they should be doing, and what they were capable of doing. That said, because LQAS tries to identify the weakest teachers, the issue of reactivity may not have been as bad as it normally would be. Regardless, however, mitigating reactivity by observing as unobtrusively as possible (from outside the classroom, for example) should be considered.

¹¹ Inspectors sometimes felt that teachers were going back to earlier lessons they had already covered because of the presence of the observers, perhaps because they felt they and their students would perform better on the familiar material. Revised instructions will make it clear to teachers that they are to present the lesson that they planned to teach on the day of the observation.

during the reading lesson the teacher should ask the students to read aloud either individually or in pairs; in addition, teachers should be observed asking student comprehension questions based on the reading *or* asking students to read silently. Inspectors also noted whether or not teachers asked students to read aloud as a group, since this is fairly standard practice in Ghana. This indicator was not included as part of the standard. During the English lesson, the majority of teachers had students read aloud, asked comprehension questions, and had some time for choral reading. None of the teachers had students read silently. Silent reading is a critical part of reading acquisition.¹² This practice does not appear to be part of standard classroom practice; even if this were part of standard teaching practice, it would be hampered by a lack of reading materials in the classroom.

Because only 11 of the 19 observed teachers passed the minimum standard for the English reading practice, the pilot district failed to meet the minimum standard for reading practice in English. The district did pass the minimum standard for Akuapem Twi reading practice because 15 of the 19 observed teachers met the minimum standard. The four teachers who did not meet the minimum Akwapim Twi reading practice standards also failed to meet the minimum requirement for the English reading practice. Of these teachers, one did not have students read at all during the language and literacy lesson in either language. It should be remembered that these are considered minimum standards. Meeting the standard does not necessarily indicate that this is a strong teacher; it simply indicates that the teacher has carried out some of the minimally required components of the reading lesson. It could be argued that silent reading, reading aloud (individually and or as a group), and comprehension questions should all four be considered required components of any reading lesson, but such a requirement would flag many more schools and districts as needing attention/assistance from district officials. This change may well be warranted, given the poor student performance.¹³ Alternatively, given that the majority of students were struggling to read at all, a different set of reading activities should be considered. These reading activities would be geared more to really nascent readers and would include activities such as letter sound recognition (and other phonemic awareness exercises), and activities to help students master familiar words.

The reading indicator practice also highlights that these indicators are, by design, quite simple and one-dimensional. The benefit of this simplicity is that the data should be fairly reliable. The limiting feature of these indicators is that they reveal nothing about the quality or the frequency of this reading practice. For example, it is unknown what type of comprehension questions the teacher asked. (Were these knowledge or inferential questions? Did the teacher ask many questions or just one?) Similarly, if teachers asked students to read aloud, the indicator reveals neither how much time was dedicated to this activity nor how many different students were involved. The indicators can point out the schools where students are not reading at all or where students are not engaged. So again, this tool is designed to identify just those schools that are most in need of assistance.

¹² We acknowledge, however, that silent reading may be too advanced for most of these students, given the level at which they were able to read.

¹³ If, for example, the reading practice standard required that in addition to having students read individually or in pairs, teachers should be observed carrying out at least two of the other reading activities (having students read silently, having students read as a group, asking comprehension questions), the number of schools meeting the minimum standard would drop from 11 to 8 for English and from 15 to 11 for Akuapem Twi.

Availability and Use of Teaching Reference Materials

Inspectors looked to see whether teachers had the P3 teacher's guide and the English and the Akuapem Twi syllabus. The standard set by the committee was that teachers should possess the teacher's guide and the syllabus for each language they teach. The district did not meet the minimum standard for English or Akuapem Twi teaching materials. Only nine schools had both the teacher's guide and English syllabus, and only six had both the teacher's guide and Akuapem Twi syllabus.

The standard required that teachers should use or reference the teacher's guide or the language syllabus during the reading lesson. The district did not meet the minimum standard, since only 12 of the 19 schools had teachers who consulted these reference materials during the observed lesson. The pattern of use for Akuapem Twi and English was the same.

Availability of Student Readers

Inspectors compared the number of available student readers to the number of enrolled students. To meet the standard, schools needed to have at least enough books for 50% of the enrolled students in the P3 class. The district did not meet this standard for English or Akuapem Twi student readers. Only four schools met the standard for English readers, and only nine met the standard for Akuapem Twi readers. On average, schools had English books for only 31% of their enrolled students and Akuapem Twi books for only 49% of their enrolled students. No schools had books for all of their students. In many classrooms, the English books were quite worn whereas the Akuapem Twi books looked relatively unused, suggesting that students were not accustomed to handling them regularly.

Availability of Student Exercise Books

Virtually all (98%) of the assessed students had English and Akuapem Twi student exercise books. Assessors examined these exercise books for teacher corrections or comments. The presence of such corrections or comments is a strong indicator of the feedback that students receive from their teacher. Among students with English and Akuapem Twi exercise books, 92% and 94%, respectively, had teacher comments on one or both of the last two completed pages. *Table 2* reflects the aggregate findings.

Although the assessors did not collect data on the number of pages completed, anecdotal observations made during the training visits to schools indicated that some of the examined exercise books had very few completed pages. If this finding is generalizable, it would indicate that very little independent written work was being done by students. Future versions of this assessment tool will include questions about whether the total number of completed pages in the exercise book align with a standard number of pages that should have been completed by that point in the school year.

Table 2. Exercise Books: Schools Meeting the Standard

Indicator	Schools		District Status
	Achieved Standard	Did Not Achieve Standard	
Available English exercise book	19	0	Pass
Comments/marks in English exercise book	19	0	Pass
Available Akuapem Twi exercise book	19	0	Pass
Comments/marks in Akuapem Twi exercise book	18	1	Pass

Teacher Preparedness

Inspectors asked to see the teacher’s lesson plan for the day. They then noted whether the teacher followed the lesson plan while teaching. The standard for teacher preparedness stipulated that teachers had to have a prepared lesson plan and to follow it during the observed literacy lesson. The district did not meet the minimum standard. Although 16 teachers did have lessons plans prepared, only 12 of these followed the lesson plan during the observed lesson.

Teacher Knowledge of Akuapem Twi and English

A simple evaluation of teachers’ familiarity with English and Akuapem Twi was included as part of the school visit. Teachers were asked to read the sample passage given to the students to read. The teachers were then asked to answer simple reading comprehension questions. The standard required that teachers should be able to read each passage (Akuapem Twi and English) in under one minute with no more than three errors. For comprehension, the standard required that they should be able to answer at least four out of the five simple questions. All the teachers were able to easily meet this standard. Given that the reading passage and questions were geared to second or third grade students, it is recommended in the future that teachers should be presented with a passage from a secondary school text. There had been concern that teachers would object to having to read these passages. However, inspectors let teachers know that we were asking them to read these passages to help identify any schools that might benefit from additional language instruction for their teachers. Teachers’ names were not recorded on the questionnaires. None of the teachers interviewed objected to having to read this passage.

To summarize, the classroom observation revealed several deficiencies: absenteeism of teachers and students, insufficient coverage of curricular material given the time of year, and insufficient availability of teacher materials and pupil readers (and as a result, insufficient use of teacher materials). During the observed lesson, teachers met the minimum standard for reading practice in Akuapem Twi but not English. However, the anecdotal evidence that the Akuapem Twi books often looked unused, combined with the fact that the teachers tended to be further behind in the Akuapem Twi curriculum, may indicate that the Akuapem Twi lessons are happening less frequently. These findings certainly merit some further investigation. On a more positive note, the majority of students appeared to be engaged in the observed classrooms, and teachers did demonstrate basic literacy in both English and Akuapem Twi (though, as previously noted, the test was quite simple).

Student Assessment Results

As previously mentioned, students were given an individually administered oral assessment in both English and Akuapem Twi. The assessment tools were designed to assess students' foundational literacy skills. As such, the students were asked to read letters, simple words, briefs sentences, and a short (approximately 60-word) story, followed by comprehension questions. After the letter section, if a student was not able to meet the minimum standard, the evaluator was instructed to stop testing the child in that language and move to the next language test or terminate the test if the first language had already been tested.

Letters: Students must name four out of five correctly.

English	Akuapem Twi
E s o t a	a M s ɔ o

Familiar Words: Students must answer four out of five correctly.

hen out with call bad	keɛ ase dwen ofie dodo
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Simple Sentences: Student must read fluently (not stopping at every word) while making no more than three errors.

This is a big fish. It lives in a river. It likes to swim. It eats little fish.	Oपुरo no sua. ɔda dua bi ase dinn. Ne ho ye fe papa. Ma no aduan na onni.
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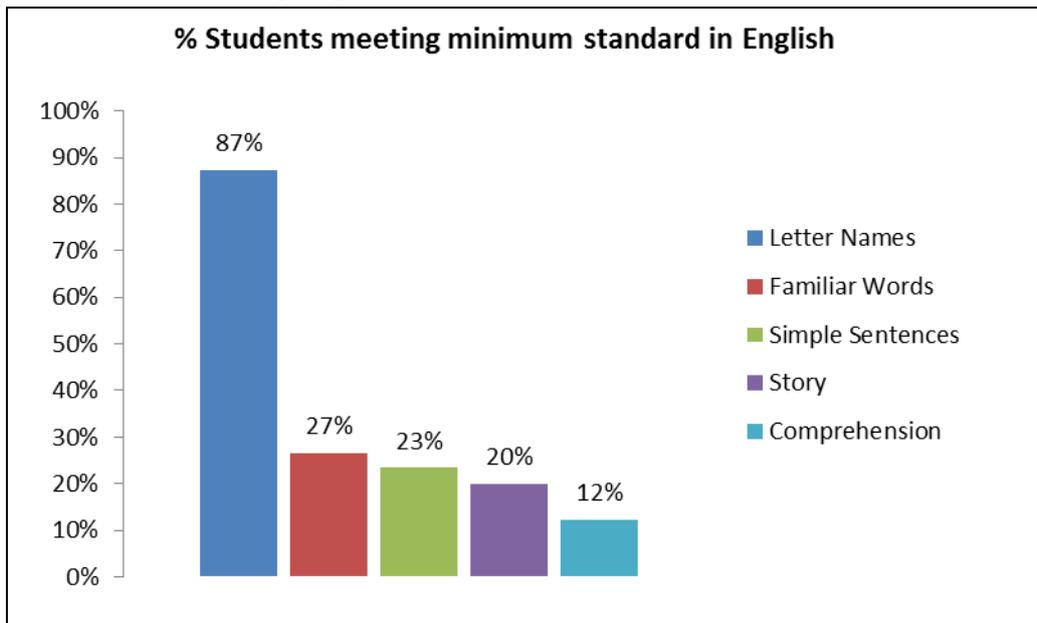
Story: Student must read fluently (not stopping at every word) while making no more than 10 errors.

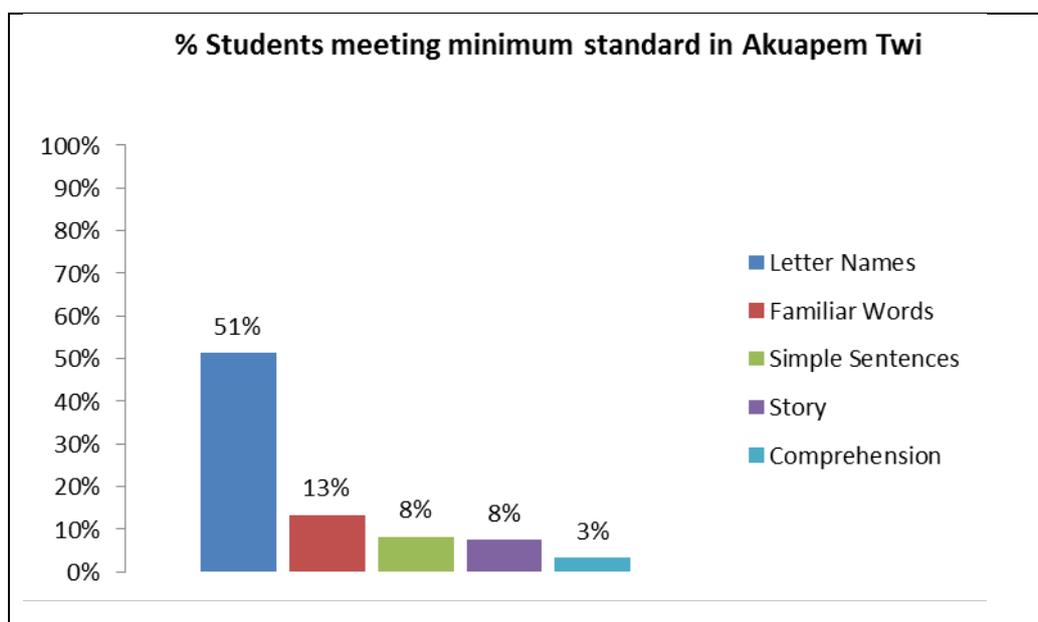
Musa had a black dog. The dog was fat. One day, Musa and the dog went out to play. The dog got lost. But after a while the dog came back. Musa took the dog home. When they got home, Musa gave the dog a big bone. The dog was happy so it slept. Musa also went to sleep
Nana Mansa ne ne nenanom baanu na ɛte. Wɔn mu panyin no adi mfe

asia. Kumaa no adi mfe anum. Mmofra nketewa yi taa sɔre ntɛm. Wɔn na wɔyɛ biribiara de boa aberewa no. Da bi, ɔbea bi bɛsraa aberewa no. Mmofra nketewa yi suban no sɔɔ ɔbea no ani. Ɔkamfoo wɔn. Ɔkaa se: “mekɔ m’akuraa a, menya bi aka akyerɛ me mma”.

Students struggled with the reading assessment. *Figure 3* indicates the percentage of students who were able to meet the minimum standard listed previously. After the letter name recognition section, student performance dropped precipitously, from 87% to 27% for English and from 51% to 13% for Akuapem Twi. The number of students meeting the minimum standard dropped as the tasks became more difficult. The drop in performance from letter naming to reading familiar words, combined with observations during the tests that students were unable to sound out unfamiliar words, suggests that a test on letter-sound recognition would be warranted.

Figure 3. Percentage of Students Meeting Minimum Standards, by Language





The minimum performance criterion set for schools was that at least 50% of their students must meet the standard for each of the literacy components. For the district to meet the criteria, 80% of its schools must have met this minimum performance standard. Given the poor student performance, it is not surprising that the district was able to meet this criterion only when evaluating students' ability to correctly name English letters. The sampled district failed on the basis of students' performance on all other basic reading skills; see *Table 3*.

Table 3. School Achievement by Pupil Performance in One Ghanaian District: Results of Oral Assessment

Indicator	Schools		District Status
	Achieved Standard	Did Not Achieve Standard	
English: Performance			
Letter recognition	19	0	Pass
Simple word recognition	5	14	Fail
Simple sentence reading	4	15	Fail
Reading a passage	4	15	Fail
Comprehension	2	17	Fail
Akuapem Twi: Performance			
Letter recognition	12	7	Fail
Simple word recognition	1	18	Fail
Simple sentence reading	0	19	Fail
Reading a passage	0	19	Fail
Comprehension	0	19	Fail

Deficiencies highlighted in the teacher and classroom observation tool can help to explain these poor results. The data from the student assessment and the classroom observation indicate a systemic problem in the pilot district that may require substantial reform to resolve.

Observations and Recommendations from This Pilot

This section focuses on the tools, the data collectors, use of data for decision-making, and the institutionalization of LQAS.

Tools

The pretested forms used in the pilot were easy for the data collectors to use. Nevertheless, several challenges were noted that could be overcome in subsequent applications.

First, the teacher observation tool requires the observer to silently observe the literacy lesson and not interrupt. Sometimes the teacher would spend more than one hour on the English and Akuapem Twi lessons. It is difficult for observers to remain attentive for that amount of time in a P3 literacy lesson. All observers questioned whether the observation portion of the tool could be shortened. They claimed that on many occasions the observers were able to complete their survey forms well before the lesson ended. As a result, the revised instrument limits the lesson observation time to 30 minutes per language. In future pilots we would recommend experimenting with different observation times to see how much and how different the information gathered is, and whether an even shorter observation period would suffice (i.e., would 15 minutes be enough?)

Second, the pilot applied two methods to sample the 16 students. The first method was prepared for the pilot by RTI. In this approach the children were organized in a line and then enumerated. Using a prepared random number table that was constructed to accommodate the differing numbers of children in the line, 18 positions were preselected (16 being student participants and 2 being alternates in case any of the 16 selected students was unwilling or unable to participate). These children were then interviewed for the pupil module (see *Appendix B*). This method functioned quite well, and no complications were noted. The Ghanaian participants developed an alternate method, however. Small number cards were used to represent the number of children in the classroom; if there were 43 students in the line, then 43 number cards were used. They were placed in a bag from which each child selected a card having a number. Using the prepared table of random numbers (as in the first method), 16 children were sampled. This method also functioned well in the pilot. We do note possible limitations—the major one being the necessity of preparing numbered cards and placing them in the bag for the exact number of children in the line. This process could be labor intensive. Also, if prepared numbers were used, then they had to be reordered so that the correct number could be added to the bag at each new school. This step has potential for error. Nevertheless, no problems were reported during the pilot. However, the majority of assessors seemed to prefer the originally proposed method in which the children are lined up and counted.

Student Assessment

The individually administered student assessment provided very useful insights into students' familiarity with foundational reading skills. Although the test was designed to be administered in 5 minutes, it took on average 10 minutes to apply each student assessment, with some assessors taking up to 20 minutes to assess one child. This means that on average, it will take an assessor a little over 2.5 hours to assess all 16 children and in extreme cases, it could take as much as 5 hours to assess all the sampled children in one school. This time

requirement would make it impossible for a single inspector to visit more than one school per day. In addition, this would be antithetical to the original idea of the LQAS as a fast and easy monitoring tool.

The individually administered test can be somewhat subjective and does require extensive training to ensure that the assessment is being scored in a uniform way by all assessors. For sustainability, as well as reliability, having an assessment instrument that requires less training to administer reliably would be better. In addition, a test that could evaluate all the students quickly would allow the assessor to visit multiple schools in one day.

For these reasons, the team decided to pilot a group-administered test in just two schools on the last day of the pilot program. A draft test was developed using content from the individually administered test. In the first two sections, the assessor would read a letter out loud to the students and the students would have to circle the corresponding letter on their paper. In the second task, the assessor would read a word and again the students would have to select the word that they had heard. In the third task, the students had to draw a line from a picture to the word that corresponded to that picture. Then the students were asked to read a reading passage silently, read a set of comprehension questions, and write the answers.

The students did fairly well circling the correct letter and words; recognizing a word is an easier skill than having to pronounce the word on your own. Similarly, the children did fairly well at matching the words to their pictures—although not universally so. In contrast, it was clear that the children did not understand the majority of the comprehension questions and did not know how to respond to them.

The test took only 25 minutes to administer to all 16 children and was easily scored. Given that the letter and word tasks were too simple for the students and the reading comprehension questions were far too difficult, future versions of the test would need to be adapted based on this pilot. Content recommendations are as follows: Letter sound (versus letter name) will be included in the first section. Letter groups will be more similar such that it will be more challenging for students to pick between these. Likewise, the familiar words in each group will be similar. For example, all may have the same starting letters: “cat,” “car,” “can.” An invented word task will be added as a measure of children’s ability to sound out unfamiliar words. An intermediate subtask will be added that is simpler than the reading passage. Future piloting will be needed both to enhance the design of the group-administered test and to ensure its proper calibration.

Data Collectors

Knowledgeable data collectors need to be trained for the role of observer. This pilot tended to use seasoned teachers who were employed by either the NIB or the CRDD, or who were retired. The NIB was to employ a cadre of inspectors but had no budget to do so. This limitation greatly hindered the pilot, since the scope of work was reduced from three districts to one. For an LQAS monitoring system to be viable, it will require an established, funded cadre of inspectors. Training could then be carried out to train master trainers in the LQAS method. These trainers would be responsible for training the inspectors.

Use of Data

While this LQAS monitoring produced interesting results, which were disseminated, the data must be better used. At least two additional phases of the protocol are envisaged.

First, the results may be too numerous to address simultaneously. Therefore, a prioritization tool needs to be developed to identify a smaller set that can be selected for action.

Second, once priorities are identified, a diagnostic tool is needed to determine the underlying causes for the problems. This step can include both qualitative approaches (e.g., focus groups) and quantitative approaches to understand the systemic reasons for the problems.

Third, a strategic planning step is needed that brings all of this information together to formulate work plans developed annually or semiannually by the GES.

Next Steps

The one-district pilot was very useful as a proof of principle that LQAS and the prototype tools function adequately and produce useful monitoring data rapidly. Now LQAS should be applied on a multi-district or multi-region basis. The main purposes will be to do the following:

- Formulate a planning process that can competently prepare a large-scale monitoring activity. This step may require engaging district or regional authorities, but in a manner that will be prejudicial to the data being collected.
- Develop training and management systems capable of preparing larger cadres of data collectors. This step may involve establishing a method to certify LQAS trainers.
- Standardize a training approach that is used reliably by multiple trainers.
- Establish a functioning supervision system to assure the quality of data collected in the field.
- Develop a data entry capacity to accurately prepare a database using multi-district and multi-region surveys. This component could be established within an educational institution such as the GES.
- Advance the statistical analysis of LQAS data to calculate regional rates for core indicators. This issue was not addressed in the pilot due to insufficient data.

Another next step to consider is the expansion of this work to an additional country. It is essential to include national variety early in the process to ensure that a generic approach is developed early on. Each country produces unique challenges, and from a variety of experiences a generic approach can be distilled.

Central to the success of the LQAS method is planned remediation or support activities to address inadequacies found in the system. In other words, consensus should be reached at the Ghana Education Service/Ministry of Education level regarding action to be taken when a school or district is found to be performing below expectations. More specifically, clear guidance regarding when and what support should be provided to the school or district should be defined and agreed upon. Without the follow-up support plan, the information generated by the LQAS will have little impact on school and student performance. In addition, to ensure the greatest possible impact of the LQAS data, the ministry should consider a system of

incentives. LQAS could, for example, provide data that would be used to identify and recognize the strongest as well as the weakest performing schools and districts. Systems of conditional district grants are being considered in some countries as a way to incentivize district and school performance.¹⁴ NIB and GES could be key counterparts to collaborate with the EdData II team in the development of these tools and methodologies. Initial meetings with GES and NIB representatives would give the LQAS team (RTI and NIB) the opportunity to share their planned monitoring approach and receive feedback. Training sessions would be provided to a limited number of NIB monitors for the administration of the pilot LQAS assessment, analysis, and reporting. Once the initial LQAS indicators and targets had been established and the initial pilot assessment conducted, another workshop would be held to review results, discuss lessons learned, identify needed modifications, and establish the follow-up support plan.

¹⁴ Ghana has implemented conditional district grants under the USAID Education Quality and Access for Learning and Livelihood Skills (EQuALLS) project. Senegal also has a history with these types of grants, and Zambia is planning to experiment with them in the near future.

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Appendix A: Overview of Predictive Indicators for Pupils' Literacy and Numeracy Performance

Below are the initial indicators assembled for discussion and selection.

- Pupil learning readiness
 - Health (e.g., worm burden)
 - Nutritional status (e.g., the biomass ratio is a simple, valid measure)
 - Physical readiness (pupils not overtired, hungry, thirsty...)
 - Socio-emotional “readiness” (no abuse, serious family conflict...)
 - Support of parents/guardian for pupil’s learning (attendance, diligence)
- Pupil engagement (in classrooms)
 - Comprehension of relevant task (in language pupil knows/speaks)
 - Shows interest, focus—motivation
 - Practice on relevant tasks
 - Use of notebook, texts, pen/pencil
 - Receives feedback on performance
- Teacher activity and characteristics
 - Present—daily, for each period
 - Curriculum/syllabus/teachers’ guide available
 - Teacher knowledgeable about subject (academic/professional qualification)
 - Lesson plan—current, follows scheme of work
 - Teacher organizes time on task for pupil engagement
 - Teacher presents, gives examples, discusses, sets tasks, provides feedback
 - Utilization of “appropriate” materials (texts, readers...)
 - Teacher provides feedback—on performance, next steps
- Classroom condition and resources
 - Pupils per classroom—i.e., space per pupil; allotted space allows engagement
 - Available instructional materials (books per pupil)
 - Furnishings—seats, writing surface for each pupil
 - Storage for instructional materials
 - Use of classroom for posters—literate environment (alphabet, numbers, pictures, pupils production)
- School condition and resources
 - Infrastructure/compound shows signs of caring, management
 - School has latrines (for girls and boys) and water supply nearby
 - School head present and provides leadership
 - School records in order, up to date (pupil register, teacher register)
 - School posts and enforces daily timetable—no tardiness

- School stock of texts, materials, teachers' guides available: Inventory record
- Community engagement
 - School management committee (SMC) or parent-teacher association (PTA) exists and is active (meets more than once per year)
 - Community (SMC and/or PTA) contributes to school improvements (infrastructure, materials, garden)
 - Community (SMC and/or PTA) participates in regular review of pupil/school performance and contributes to School Improvement Plan.

Appendix B: Instruments, Training Materials, and Presentation from the Pilot Study

B1. LQAS Assessor Training Agenda

B2. Instructions and Tools for Sampling 16 Children per School

B3. Head Teacher Introduction, Classroom Observation Instrument, and Teacher Assessment Instrument

B4. Student Assessment

B5. Agenda from the Hand-Tabulation Training Workshop

B6. Hand-Tabulation Worksheets

Appendix B1. LQAS Assessor Training Agenda

Agenda for Four-Five Day LQAS Course for Assessing Schools in Ghana

Feb 2013

Professor Joseph Valadez

This course will train data collectors and their supervisors in Ghana to use LQAS for the assessment of 19 schools in 2 to 3 districts. The course aims to give participants an understanding of what LQAS is, what results it can produce, and what is involved in carrying out a LQAS survey. It will also engage them in planning the pilot application of an LQAS survey. To do this, the course will cover the following topics:

- The LQAS Methodology – How to carry out LQAS sampling; How to select interview locations and respondents to survey
- LQAS in practice – Field exercises to put into practice the skills learned about selection of teachers and students, and about interviewing students.
- Planning a pilot use of LQAS

AGENDA

Tuesday 26th February 2013: LQAS Principles.

Time	Session	Other information/Responsible
8:00-8:30	Arrival, registration	
8:30-8:45	Welcome and Convening of the Workshop	An NIE representative, Emmanuel Sam Bossman and Amy Mulcahy-Dunn
8:45-9:15	Participant introduction	Joe Valadez Emmanuel Sam Bossman and Amy Mulcahy-Dunn
9:15-9:30	Administrative and Logistical Arrangements	Emmanuel Sam Bossman
9:30-10:00	Purpose of Workshop and Agenda: Skills to be learned	Joe Valadez
10:00-10:15	Coffee/Tea Break	
10:15-11:00	Why use a survey – Uses of surveys	
11:00-11:45	Random Sampling -Why use random sampling	Joe Valadez
11:45-12:45	Using LQAS for surveys <ul style="list-style-type: none"> • Usefulness of 19 as a Sample Size • LQAS Sampling Exercise • What a Sample of 19 Can and Cannot Do 	Joe Valadez
12:45-13:45	LUNCH BREAK	
13:45-14:30	Using LQAS with Surveys for Assessing Achievement	Joe Valadez
14:30-15:45	Identifying Schools for Assessment <ul style="list-style-type: none"> • How to Identify the 19 School for interviews • How to Choose a Random Number • How to Use a Random Number and to Identify Locations of 19 Schools for Interview 	Joe Valadez
15:45-16:00	Coffee/Tea Break	
16:00-17:00	What to do when you arrive in a School selected for assessment <ul style="list-style-type: none"> • Meeting the headmaster/mistress to obtain permission (Reviewing the first tool) • Obtaining information about the teachers in the school and absentees • Selecting a teacher to observe and interview • Selecting students to interview • Selecting 2 alternate or replacement students 	Emmanuel Sam Bossman and Amy Mulcahy-Dunn

Wednesday 27th February 2013: Field Practicum, Sampling in Villages

Time	Session	Other information
8:00-8:30	Recap of day 1	Joe Valadez
8.30-10:00	Practicing selecting 18 children to sample: <ul style="list-style-type: none"> • Introducing the tool used to list students • A roll play exercise 	

Time	Session	Other information
10:00-10:30	Coffee/tea break	
10:30-13:00	Reviewing the tools/questionnaires to be used in the survey: <ul style="list-style-type: none"> • Arriving at the school • We have already reviewed the "Introduction to the Headteacher" • Selecting the teacher • Selecting the students for interview • Observing the teacher • What venue is needed for interviewing the students • Interviewing the students • Leaving the school 	
13:00-14:00	LUNCH	
14:00-14:45	Continued review of the tools/questionnaires	
14:45-15:30	<u>Interview technique</u> <u>Roll Plays</u>	Joe Valadez
15:30-16:00	Coffee/tea break	
16:00-17:00	Continued roll play to practice interviewing Reviewing logistics for the field practicum <ul style="list-style-type: none"> • Number of teams and transport • Lunch plans • Reviewing the schedule for the field practicum 	

Thursday 28th February 2013

Time	Session	Other information
7:00	Transport departs for schools to practice use of all of the instruments <ul style="list-style-type: none"> • Approximately 6-10 observers per team leave in 3 -5 vehicles • Distribution of materials for use that day 	Supervisors: Joe Valadez Emmanuel Amy
8:00-17:00	Practicum on the use of the tools to: <ul style="list-style-type: none"> • Meet and interview the Head Master/Mistress • Identification of the index P3 teacher • Selection of the student • Full observation of the teacher • Interview of students • Return to Accra 	

Friday 29th February 2013: DIP Preparation and Budgeting

	Session	Other information
8:00-9:00	Debriefing of the field practicum <ul style="list-style-type: none">• Reviewing the results – agreements and disagreements of the observers• Refinements/clarifications of the tools	
9:00-10:30	Preparation of the plans for the following week <ul style="list-style-type: none">• Distribution of the sample of schools to each district team• Planning the data collection for the following week. 19 Schools in 1 week.	
10:00-10:30	Coffee/tea break	
10:30-13:00	Continued planning	
13:00-14:00	LUNCH	
14:00-15:30	Sharing the plans to the workshop participants	
15:30-16:00	Coffee/tea break	
16:00-16:30	Reviewing the role of data collectors and supervisors How the survey will be analyzed after the data collection	
16:30-17:00	Distributing materials to the data collectors Closure to the first part of the training workshop	

Materials to have on hand:

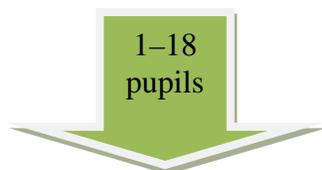
- Projector
- Flip chart
- Questionnaires needed for practice in the workshop (2 per person)
- Questionnaires needed for the field practicum (1 per person)
- English and Akuapem stimuli sheets for student and teacher assessments (1 per student) will want laminated copies for the actual pilot data collection
- Questionnaires needed for the data collection.
- Clip board
- Bag to carry the materials (if needed)
- 1 random number table (if needed)
- Notebooks
- Pencils

Contact Details:

Appendix B2. Instructions and Tools for Sampling 16 Children per School

LQAS PUPIL SAMPLING INSTRUCTIONS

This document explains how to randomly sample 18 P3 pupils across all P3 classes in the selected schools. Note that you will assess 16 of these students and the remaining 2 will be replacement students should any of the first 16 not wish to participate. **Note:** You must complete the Pupil Sampling Worksheet document at every school visited.



Step	Instruction
1.	Make an announcement to the students: 🗣️ “I will randomly choose 18 of you to do some reading with us today. I would also like to look at your English and Akuapem Twi exercise books.”
2.	🗣️ “First I l’m going to count all of the P3 pupils in your class. Could all of the P3 students please form a line right outside of your classroom, any order is fine”
3.	Go down the line counting all of the P3 students.
4.	On the Pupil Sampling Worksheet, write down the total number of students lined up.



If there are 18 or fewer pupils in the line:
You will automatically select all students. Even if there are fewer than 16 students, still continue with the assessment.

Step	Instruction
5.	While the students are still lined up, write down all the students’ names on the Pupil Sampling Worksheet .
Note	If there are 17 or 18 students: Use the 17 th and 18 th students as replacement students if one or two of the previous students are not willing or able to be assessed.
6.	Have all the students sit back in their regular seats. Remind the selected students to please bring their English and Akuapem Twi exercise books when they come to read with you. Call the first student on your sampling worksheet.

If there are 19 or more pupils: You will need to randomly sample 18 pupils.

Step	Instruction	Example
5.	Using the Pupil Sample Table, find the row where the first column is equal to the total number of students in the class, or the N-value .	In the first column under “N,” search for the number 35 . (See Figure 1 below.)
6.	Using the specific row with the N-value, copy the numbers found in the columns labeled s1-s18 into the “Sampling Reference Number” column in the Pupil Sampling Worksheet.	According to the table, write out 2, 5, 8, 10, 13, 16, 17, 18, 19, 20, 21, 24, 25, 27, 28, 29, 32, and 34 into the Pupil Sampling Worksheet.
7.	Go down the row of students counting again and pointing out the children whose number is indicated by the sampling sheet. As you come to one of the sampled students, ask them to take two steps forward and write down their name on the Pupil Sampling Worksheet.	Ask the 2 nd , 5 th , 8 th , 10 th , 13 th , 16 th , 17 th , 18 th , 19 th , 20 th , 21 st , 24 th , 25 th , 27 th , 28 th , 29 th , 32 nd , and 34 th child to take 2 steps forward. Then you are finished with this phase!
8.	Have all the students sit back in their regular seats. Remind the selected students to please bring their English and Akuapem Twi exercise books when they come to read with you. Call the first student on your sampling worksheet.	

Figure 1: How to sample students using the pupil sample table if there are a total of 35 P3 pupils

N	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18
32	1	3	4	5	6	7	8	11	12	13	14	17	18	20	23	25	27	31
33	1	3	4	6	7	8	10	11	12	13	14	15	23	24	26	27	28	30
34	1	4	5	7	9	11	12	13	14	15	19	21	23	25	26	27	32	34
35	2	5	8	10	13	16	17	18	19	20	21	24	25	27	28	29	32	34
36	1	2	3	4	5	6	8	9	11	13	14	15	19	21	22	23	25	28
37	2	6	7	8	10	11	15	17	20	23	24	27	28	30	32	33	34	36
38	1	3	6	7	8	11	12	15	16	18	23	24	25	27	29	34	35	36

LQAS Random Sample Table

N	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	19	20
21	1	2	3	4	5	6	8	9	10	11	12	14	15	16	17	19	20	21
22	2	3	4	5	6	9	10	11	12	13	14	16	17	18	19	20	21	22
23	1	2	4	5	6	7	8	9	11	12	13	14	15	17	18	19	21	22
24	4	5	6	7	10	11	12	13	14	15	16	17	18	20	21	22	23	24
25	3	4	5	7	8	10	11	12	13	15	16	18	19	20	21	22	23	24
26	2	3	4	5	7	8	9	11	12	13	14	15	18	19	21	22	25	26
27	1	2	3	4	5	6	7	9	12	13	16	17	19	20	21	22	26	27
28	2	3	4	5	7	9	10	11	15	16	17	19	20	21	22	23	27	28
29	1	2	3	4	7	8	10	11	13	14	15	16	20	21	24	27	28	29
30	2	5	7	8	9	10	11	12	13	14	16	17	19	20	22	25	27	28
31	1	3	4	5	6	10	11	12	13	14	16	17	19	23	24	26	29	30
32	1	3	4	5	6	7	8	11	12	13	14	17	18	20	23	25	27	31
33	1	3	4	6	7	8	10	11	12	13	14	15	23	24	26	27	28	30
34	1	4	5	7	9	11	12	13	14	15	19	21	23	25	26	27	32	34
35	2	5	8	10	13	16	17	18	19	20	21	24	25	27	28	29	32	34
36	1	2	3	4	5	6	8	9	11	13	14	15	19	21	22	23	25	28
37	2	6	7	8	10	11	15	17	20	23	24	27	28	30	32	33	34	36
38	1	3	6	7	8	11	12	15	16	18	23	24	25	27	29	34	35	36
39	3	4	6	8	11	17	18	19	21	25	26	27	29	30	31	32	37	38
40	4	5	10	13	14	19	20	21	22	24	25	26	29	30	32	37	38	40
41	3	4	6	7	8	11	14	22	23	24	26	27	29	32	33	36	37	40
42	3	8	9	10	11	13	16	18	20	23	26	28	29	32	36	39	40	41
43	1	3	7	10	11	13	18	19	20	25	26	28	30	32	39	40	41	43
44	1	2	3	4	6	7	9	12	14	16	22	25	26	29	32	37	39	43
45	1	2	4	6	7	8	9	10	13	14	15	18	22	28	30	33	34	43
46	1	2	4	6	15	16	17	26	29	30	33	34	37	38	41	42	45	46
47	12	13	16	17	21	22	23	25	26	30	31	33	35	36	42	44	45	46
48	1	3	5	6	8	10	19	26	27	30	31	32	33	36	44	46	47	48
49	1	3	5	8	10	12	14	15	17	22	27	29	31	35	38	39	43	44
50	3	6	7	12	16	18	21	24	26	27	31	34	36	37	42	45	47	50
51	1	4	5	6	7	10	11	12	26	28	30	37	39	40	45	46	49	50
52	1	3	10	12	14	19	21	22	24	28	32	33	36	40	42	46	48	50
53	12	14	15	18	20	21	26	28	29	31	33	36	37	38	43	44	48	49
54	1	6	8	10	11	17	18	22	23	25	29	32	33	34	35	39	44	48
55	2	4	7	8	19	20	22	32	33	34	35	36	37	39	40	51	52	55
56	2	5	6	13	14	18	19	22	27	28	29	34	37	41	43	45	54	56
57	7	9	12	13	17	19	20	22	24	28	37	38	43	46	53	54	55	56
58	1	4	8	10	12	17	20	25	26	30	34	36	38	39	42	43	45	47
59	2	4	5	10	17	19	20	21	29	30	34	37	38	39	48	51	57	59
60	1	4	5	6	9	17	20	23	25	27	30	34	35	41	42	45	54	59
61	8	18	19	20	22	23	24	29	31	33	39	43	45	46	48	50	53	60
62	5	10	11	12	13	19	36	38	43	45	51	52	54	56	57	59	60	62
63	1	2	6	13	16	18	20	21	24	25	33	47	48	49	57	59	60	61
64	5	7	10	12	13	17	23	28	33	43	44	48	50	51	58	60	61	64
65	3	4	5	9	15	22	24	27	31	33	35	36	37	41	42	46	59	63
66	1	7	10	19	20	27	28	31	34	37	38	39	40	43	46	47	51	54
67	2	4	5	14	18	27	30	38	45	46	51	52	57	58	59	60	65	66
68	2	10	15	16	18	20	21	30	31	33	36	46	51	52	57	62	63	65
69	7	9	13	24	28	32	33	34	35	42	44	49	54	56	57	60	61	66
70	1	7	13	20	23	25	26	30	34	36	39	40	54	57	64	66	67	69

N	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18
71	9	11	15	18	19	21	22	23	25	32	39	41	45	48	51	52	60	65
72	7	8	12	14	18	19	20	21	25	29	33	36	50	58	65	66	68	72
73	6	7	10	12	23	27	30	31	32	33	38	43	46	52	54	59	60	71
74	7	10	14	15	16	27	34	36	37	39	45	46	55	58	60	63	66	67
75	1	2	4	5	14	15	19	26	27	35	49	50	51	52	55	67	69	70
76	3	4	6	7	14	16	23	27	29	32	35	38	42	49	53	65	66	74
77	15	21	29	32	33	38	39	42	43	46	50	53	61	63	69	70	72	77
78	2	5	7	17	18	29	43	44	46	47	58	63	67	68	69	70	75	77
79	1	2	4	19	20	24	30	33	36	38	44	50	56	58	59	67	69	74
80	1	9	13	16	17	20	21	26	33	40	45	52	53	54	57	69	71	78
81	1	9	21	22	26	31	40	42	45	47	57	58	59	62	63	66	71	79
82	9	11	24	27	30	33	35	43	46	50	52	56	58	60	61	64	65	69
83	7	8	14	19	28	29	30	34	39	41	42	53	54	57	59	72	74	77
84	6	7	11	13	16	17	28	31	33	35	49	52	63	65	70	71	78	82
85	1	8	9	23	24	37	38	41	46	49	52	55	56	60	65	76	82	84
86	7	8	18	20	24	25	36	37	39	40	64	69	71	72	76	77	84	85
87	21	25	31	34	35	38	40	41	44	45	48	51	55	59	79	80	83	85
88	1	22	29	33	37	40	45	49	50	59	61	63	69	71	72	76	78	81
89	2	9	11	26	27	35	36	41	44	52	53	55	58	75	80	82	87	89
90	1	3	13	20	22	29	32	35	45	47	55	59	65	74	80	85	87	90
91	2	7	8	16	17	25	27	30	37	40	41	53	62	64	78	80	84	88
92	9	12	16	18	19	34	43	45	52	57	63	68	77	79	81	82	84	86
93	1	7	9	10	12	16	17	37	38	50	54	59	65	70	80	83	84	90
94	4	14	19	21	24	30	41	42	46	50	51	56	62	63	67	81	88	93
95	2	5	6	7	17	18	24	30	44	45	46	62	64	66	71	80	86	90
96	11	14	27	29	30	36	41	45	48	53	59	61	62	75	80	81	85	90
97	7	11	16	20	27	31	35	41	47	60	62	69	72	76	82	95	96	97
98	2	3	5	8	11	17	26	30	32	35	44	48	53	65	70	72	74	75
99	2	4	6	12	41	42	48	49	52	55	56	60	65	69	81	95	97	98
100	1	3	4	6	26	28	32	35	39	52	60	67	72	73	77	78	84	96
101	26	27	30	33	37	39	41	44	49	51	52	54	67	80	82	85	87	98
102	6	9	13	32	36	40	50	54	60	62	66	68	69	76	77	87	98	102
103	20	22	24	40	42	49	53	56	64	65	70	72	75	78	83	91	92	103
104	6	10	14	24	26	36	37	45	48	65	75	77	85	87	88	89	92	98
105	7	8	11	15	17	37	38	48	52	54	64	66	70	91	93	101	103	105
106	4	8	22	33	43	53	55	56	71	72	80	88	95	96	100	103	105	106
107	5	6	29	34	47	48	49	57	58	73	75	82	83	93	97	98	100	103
108	15	17	18	19	20	25	35	49	50	61	66	73	77	88	97	101	105	107
109	8	14	19	21	23	24	30	33	38	39	47	51	63	67	71	78	89	97
110	3	8	10	15	21	41	43	44	55	64	65	80	97	100	102	105	108	110
111	4	6	9	11	13	22	27	32	41	57	61	62	64	68	72	74	87	105
112	7	12	16	17	18	19	23	28	29	31	43	44	56	59	80	88	93	106
113	1	17	18	24	31	34	49	54	56	63	70	85	86	89	90	91	105	111
114	3	9	16	17	32	34	46	50	51	56	63	64	79	82	83	92	98	110
115	2	25	26	31	36	39	45	54	58	72	73	75	79	95	99	103	111	114
116	5	15	19	28	36	39	50	53	56	59	60	62	68	77	83	108	109	115
117	7	10	14	30	38	55	65	69	73	80	81	86	100	102	107	111	114	116
118	13	18	24	30	33	35	46	51	55	56	63	79	88	91	97	106	113	114
119	11	15	28	38	43	53	60	63	75	84	86	93	100	101	108	110	111	118
120	10	28	38	43	61	63	71	72	76	83	89	90	93	100	103	113	115	117
121	5	12	16	19	30	35	37	49	57	65	66	77	84	95	100	118	119	120
122	4	10	26	39	41	47	49	57	64	67	72	76	86	88	89	90	101	106
123	2	5	10	21	23	27	33	36	42	60	65	67	73	74	87	101	109	120
124	7	18	25	26	31	43	46	50	51	58	65	67	82	83	93	95	102	112
125	17	26	33	42	45	53	58	61	82	83	93	98	103	107	111	118	119	124

N	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18
126	1	5	13	17	30	31	35	51	69	79	83	87	94	97	103	109	114	118
127	3	5	16	18	48	50	79	81	88	95	96	102	118	120	122	123	124	126
128	2	8	20	25	26	29	38	52	65	71	72	73	87	98	108	113	114	128
129	5	9	17	32	35	48	57	81	90	99	102	104	108	113	116	117	118	119
130	5	16	22	23	27	35	54	62	63	70	71	74	81	82	86	111	114	123
131	9	12	14	15	16	22	43	44	60	65	70	76	80	87	99	108	115	120
132	23	25	29	34	43	55	56	58	63	66	75	81	95	105	107	113	114	125
133	1	4	11	34	39	43	53	68	73	86	89	92	100	108	109	119	123	126
134	5	11	13	15	17	25	30	54	58	60	64	78	81	83	92	116	120	125
135	4	7	12	33	46	48	61	67	76	95	101	108	110	112	123	124	130	134
136	2	11	20	38	39	55	57	60	74	75	82	84	86	90	92	93	97	110
137	1	4	9	12	15	27	37	41	61	69	77	78	83	84	97	98	109	123
138	5	9	10	14	20	24	35	39	42	43	71	78	83	91	92	109	124	131
139	4	7	17	21	23	24	47	65	69	72	83	85	98	102	103	104	111	130
140	14	17	18	31	33	36	43	52	64	74	79	88	92	109	113	115	122	126
141	4	7	28	31	40	41	63	73	87	94	99	103	105	112	116	131	136	141
142	11	16	22	35	40	45	52	64	69	73	76	81	82	117	125	127	132	134
143	8	10	26	30	38	41	58	68	72	90	96	98	102	104	107	120	137	142
144	3	12	18	21	22	24	46	50	65	106	112	119	125	129	132	138	139	144
145	3	11	24	29	31	35	40	48	49	58	64	90	99	105	118	127	130	134
146	8	18	27	35	43	59	60	63	64	67	70	84	85	86	95	102	103	130
147	9	10	20	23	40	47	80	91	92	94	95	100	103	104	112	121	140	146
148	12	14	16	22	36	41	47	49	51	52	53	91	94	109	114	117	144	146
149	4	16	22	31	51	52	62	77	89	92	103	104	106	112	120	127	133	142
150	5	12	13	22	25	38	45	48	58	75	84	89	99	108	124	125	127	138
151	3	4	15	18	37	39	54	78	83	92	93	101	106	109	113	127	144	146
152	1	29	34	37	47	67	92	96	99	102	105	110	115	121	127	128	134	141
153	2	12	20	34	39	47	59	71	76	89	98	110	112	114	119	127	131	132
154	6	39	57	62	64	75	77	81	89	90	91	96	101	125	132	138	144	154
155	7	9	19	23	26	41	42	43	49	56	60	63	67	74	90	114	124	135
156	1	7	11	12	37	41	43	46	55	73	91	96	108	120	123	125	129	137
157	9	11	12	13	21	30	44	56	60	91	93	105	107	111	112	114	129	143
158	15	33	34	37	41	56	63	71	79	90	93	98	130	131	132	134	138	146
159	2	30	34	42	47	57	66	80	90	92	102	124	140	145	153	154	155	156
160	5	6	8	10	16	22	27	31	38	42	68	74	96	113	118	119	145	154
161	3	5	9	17	22	28	34	51	53	71	78	83	91	127	134	137	142	145
162	11	13	17	35	49	58	68	69	79	91	100	102	106	109	126	136	140	156
163	3	13	18	37	38	42	45	51	60	61	70	74	82	107	126	147	154	155
164	10	19	34	59	65	79	88	102	103	108	117	120	123	128	135	136	158	162
165	20	33	35	39	54	67	78	80	94	95	96	107	116	118	131	133	135	141
166	10	18	27	33	61	64	67	78	80	93	97	112	119	123	125	138	144	153
167	8	11	15	38	39	47	54	59	60	62	88	95	135	137	138	145	147	156
168	17	24	32	34	35	41	45	51	87	100	112	119	124	138	143	147	161	166
169	6	12	18	57	67	68	77	90	94	120	129	138	145	158	159	164	165	168
170	1	5	13	35	73	93	96	98	103	104	111	114	137	139	145	153	157	158
171	7	17	25	43	50	59	60	95	99	118	123	125	135	138	141	149	165	171
172	27	32	34	43	48	55	62	64	72	88	90	94	129	143	157	161	166	168
173	6	18	29	30	36	50	53	56	71	92	93	112	129	131	132	146	160	165
174	18	20	21	29	32	36	46	49	58	63	79	97	119	141	151	155	156	173
175	11	27	34	37	74	93	94	108	112	115	127	138	154	157	161	167	171	172
176	1	9	38	59	75	77	92	102	113	117	126	127	131	133	139	145	153	176
177	29	44	53	62	64	79	81	82	84	86	90	93	107	116	119	120	137	138

N	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18
178	6	9	14	22	49	58	61	82	83	89	109	111	119	120	151	162	170	173
179	33	35	50	52	59	68	69	92	97	102	103	105	116	126	131	139	162	164
180	37	41	45	50	51	60	69	76	79	85	92	100	135	138	149	158	160	168
181	22	24	27	40	42	43	50	75	78	91	105	130	140	156	157	158	163	181
182	1	4	12	19	23	37	43	52	59	80	109	110	122	128	130	147	148	182
183	9	22	32	38	39	47	59	63	88	96	99	132	147	155	158	160	172	177
184	4	23	32	41	44	51	57	68	76	88	90	104	132	135	160	177	181	183
185	2	12	15	19	23	31	32	55	75	77	92	111	137	142	153	166	175	181
186	19	27	80	86	87	90	10	10	11	117	123	135	137	142	159	171	177	184
187	5	7	13	14	18	21	48	55	59	71	92	110	132	146	157	171	181	182
188	6	15	36	37	56	66	98	11	11	127	130	149	154	163	169	176	181	186
189	1	5	26	29	30	41	48	53	72	74	88	90	95	115	145	167	172	179
190	29	30	54	57	61	66	70	72	10	105	106	143	156	164	170	174	178	189
191	14	16	18	19	23	28	31	32	68	77	95	114	128	141	144	152	174	190
192	3	12	32	36	43	54	67	71	90	110	121	146	151	154	161	171	178	190
193	3	5	11	19	21	26	31	59	63	70	74	84	96	104	144	146	167	178
194	4	17	18	19	22	24	45	58	86	96	102	119	126	144	146	166	179	192
195	5	14	17	27	63	71	85	95	99	102	105	109	116	124	140	175	177	180
196	9	12	22	31	35	43	52	67	79	81	106	108	110	116	129	148	171	177
197	9	20	26	34	44	46	72	85	11	114	117	126	129	132	135	152	180	189
198	7	38	65	80	89	10	10	10	11	123	127	129	133	154	158	167	175	186
199	31	36	38	54	80	89	93	10	12	148	151	158	163	172	181	187	191	192
200	1	5	21	23	44	51	69	70	76	81	141	151	162	163	177	184	185	190

LQAS PUPIL & TEACHER SAMPLING WORKSHEET

*NOTE: This worksheet is to be used to assist you in your sample selection. Please **discard** this sheet prior to leaving the school. Do not record the student or the teacher names on the questionnaires.*

Region: _____ **District:** _____

School Name: _____

Selected P3 Teacher Name: _____

Date: ____/____/____
dd / mm / yyyy

Total number of P3 pupils in the school on day of sampling

NOTE: Select 2 pupils as alternates if needed.

	Sampling Reference Number	P3 Pupil's Name
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17. Alt.1		
18. Alt.2		

**Appendix B3. Head Teacher Introduction, Classroom Observation Instrument, and
Teacher Assessment Instrument**

Pilot version

1. Head Teacher Introduction and Consent

🗣️ Good morning. My name is _____ and I work with the Ministry of Education. We are conducting a pilot study to evaluate a new way to monitor schools in order to identify schools that are in the greatest need of additional support. This exercise not meant to penalize schools.

In today's visit, we are particularly interested in examining language and literacy practice in P3 classrooms. For this reason, we would like to observe one of your P3 teachers teaching their typical reading lesson. If your teacher normally teaches just one language (English or Akuapem Twi), then we will observe the language that they normally teach. If they normally teach both languages, then we would like to observe both lessons. We will ask to see the teacher's lesson plan, their syllabus, and the teacher's guide. We will then ask your teacher to read a simple English and Akuapem Twi reading passage geared to P2 and P3 pupils. We will ask the teacher a few simple comprehension questions based on the passages they read. The reading passage and questions for the teacher should take only 2–5 minutes.

Once we are done with the observation and assessment of your P3 teacher, we would like to sample 18 of your P3 pupils. Sixteen (16) of these pupils will participate in a simple English and Akuapem Twi reading assessment. The remaining 2 pupils will act as replacement pupils in case any of the 16 is unwilling to participate in the assessment. The pupil assessment includes questions about letters, words, simple sentences, and a short passage. The student assessment should take between 5 and 10 minutes per student. We will try to be as fast as we can so as to minimize the disruption to your school.

I will not write any names on the questionnaires because the survey is not meant to check up on individual teachers or pupils. However, I will record names of selected students and the P3 teacher on a sample section sheet to help me identify the selected students and teacher. Before, I leave the school today, I will destroy this sheet.

The pupil reading assessment is an oral test and it's important to have a quiet place so that I can hear the pupils. It would also be best for the teacher reading assessment to take place away from the pupils.

Finally, we are also interested in documenting the percentage of teachers who arrived on time at your school today. Participation in this pilot study is voluntary however, we hope that you will participate so that we can learn from this assessment and improve this new monitoring tool to support schools. Do you have any questions you would like to ask me? Do you agree to participate in this survey and allow your teachers and pupils to participate?

1.1 YES NO

If you have any follow-up questions, please feel free to call Dr. Tawiah at the MOE's National Inspectorate Board (phone number # 0242501196)

If no, mark this head teacher as a refusal. Then proceed to another school. Reuse this same introduction and questionnaire.

THANK YOU

Section 2: Teacher Attendance

Fill in this section as soon as you have met the head teacher and they have agreed to the monitoring visit. Ideally, your introductory visit with the head teacher will take place just before school starts. Please note the number of teachers employed at the school (this should include teachers that are employed by the PTA, the community as well as the ministry). This information is best obtained from the head teacher's **duty roster (staff list)**. Observe the actual number of teachers in attendance by quickly walking through the school and counting the number of teachers in their classrooms at the school's **official start time** in the morning. If you have time before the school's official start time, go ahead and complete the other sections while you wait for the school's start time.



I will need to walk around your school to observe how many teachers are in their classrooms this morning. I will then need to compare this with the number of teachers on your duty roster (staff list). May I please see your duty roster? Thank you.

No.	Questions and Filters	Coding Categories	Skips (if any)
2.1	How many teachers are in their classroom at the school's official start time? <i>(observe this by walking around to all the classrooms)</i>	<input type="text"/> NUMBER OF TEACHERS	
2.2	How many teachers are employed at the school <i>(include MOE, PTA, and Community teachers – anyone listed on the duty roster/staff list)</i> ?	<input type="text"/> NUMBER OF TEACHERS	
2.3	What per cent of teachers are in attendance (1A/1B x100)? TO BE COMPLETED DURING TABULATIONS WORKSHOP	<input type="text"/> PER CENT OF TEACHERS	
2.4	Were 90 per cent of teachers in attendance at the school's official start time? TO BE COMPLETED DURING TABULATIONS WORKSHOP	YES 1 NO 0	

Section 3. Selecting a quiet place to conduct the pupil assessment

Explain to the head teacher that you will need to find a quiet place to assess the pupils. This could be outside under a tree or on a veranda. Ideally, you will be close enough to the classroom to see students coming and going to their class but not so close that students in the class can hear you or be distracted by you.



Could you please suggest a quiet place where I could assess the pupils? Could you also please have your pupils help us set up a table and two chairs or even just two chairs under a tree or on a veranda. Ideally, we would assess the children from a spot that's close enough to the school so that we can see the classroom whose students will be participating in the test but far enough so that it is quiet and we don't distract the students in the classroom.

Section 4. P3 Teacher Selection for the Language and Literacy Lesson Observation and Teacher Reading Assessment

If the school has more than one P3 teacher, explain to the head teacher the need to randomly select just one P3 teacher. If there is only one P3 teacher, then observe that teacher.



I will need to randomly select a P3 teacher to observe teaching a language and literacy lesson and evaluate their reading skills. In order to pick a teacher, I'll need to see your duty roster or stafflist.

Identify the total number of P3 teachers that are listed in duty roster or staff list. Select the random number box below that corresponds to the number of teachers on the duty roster or staff list.

Without looking, hold your pencil over the appropriate random number box and pick the P3 teacher whose number your pencil lands on. If your pencil lands on a 2, then pick the second teacher on the duty roster or staff list.

Random number boxes for selection of teacher

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 4 TEACHERS				
2	3	1	2	3
1	2	4	1	1
3	3	2	1	2
1	1	1	2	2
4	2	2	1	1
1	3	2	4	4
1	3	1	4	1
3	4	1	3	1
4	3	2	2	1
1	3	4	2	3

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 3 TEACHERS				
3	2	1	2	2
3	2	1	1	3
2	1	1	1	3
1	3	3	3	3
2	2	3	1	1
1	1	3	2	2
2	2	2	2	3
3	2	1	3	2
2	1	1	3	1
3	2	3	3	1

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 2 TEACHERS				
2	2	1	2	1
1	2	2	2	1
2	2	1	1	2
1	1	1	2	2
2	2	2	2	1
2	2	1	1	1
2	2	1	2	2
1	1	2	1	2
1	1	2	1	1
1	1	2	1	2

Ask the head teacher to confirm that the selected P3 teacher is in attendance today, and record the teacher's name at the top of the sampling worksheet. If the selected teacher is not in attendance today, then repeat the process. If you are working in a school that only has two teachers in their registry and one of the teachers is absent, then observe the only P3 teacher that is in attendance.

Section 5. P3 Teacher Introduction and Consent

Informed Consent for the P3 Teacher Who Will Be Observed

Good morning. My name is _____ and I work with the Ministry of Education. We are conducting a pilot study to evaluate a new way to monitor and support schools and teachers improve student performance. In our visit today, we are particularly interested in examining reading practice in P3 classrooms. Your classroom was randomly selected to participate in this monitoring visit. We would like to ask you about some of the teaching and student materials that you have and use in your routine teaching. We would also like to quietly observe your reading lesson or lessons.

Once we have observed your reading lesson, we would like to randomly select 18 children in your classroom. Sixteen of these children will take part in a brief English and Akuapem Twi reading and comprehension assessment and the remaining two will be assessed in case any of the 16 isn't willing to participate. Finally, in order for the MOE to assess which schools may benefit from additional language training for their staff, we would like to ask you to read a brief passage in English and in Akuapem Twi and have you answer some simple questions about this passage. This is the same passage that we will use when assessing your pupils. This reading will take 2-5 minutes.

We will not record names on any questionnaires because the survey is not meant to check up on individual teachers or pupils. Rather, it is meant to help the MOE and district plan how to best support schools and teachers. We will record names on a sampling sheet to help us identify selected students but this sheet will be destroyed before we leave your school today. The pupil assessment includes questions about letters, words, simple sentences and a reading passage so it should take 5-10 minutes per student. We will try to be as fast as we can so as to minimize the disturbance to your class.

Participation in this pilot study is voluntary however, we hope that you will participate so that we can learn from this assessment and improve this new monitoring tool. Do you have any questions you would like to ask me? Do you agree to participate in this survey and allow your pupils to participate?

5.1 YES NO

If you have any follow-up questions, please feel free to call Dr. Tawiah at the MOE's National Inspectorate Board (phone number # 0242501196)

If "no," mark this teacher as a refusal in the table on the cover page. Then proceed to another teacher or school. Reuse these same instructions and questionnaire.

THANK YOU



Could you please show me your P3 Teacher's Guide, the Akuapem Twi syllabus, the English syllabus, and your lesson plan for today?

In your notebook, note what content and activities are planned for today's Reading lesson. After the lesson observation, you will need to note whether teacher has or hasn't followed their lesson plan for the day.

Section 6: Availability of Teacher Materials

No.	Questions and Filters	Coding Categories	Skips (if any)
6.1	Does the teacher have the P3 Teacher's Guide in his/her classroom that you can see?	YES 1 NO 0	
6.2	Does the teacher have a summary lesson plan for the day in the lesson notebook? <i>Note what the main focus of the lesson is today and what activities are planned. Use this information when observing the lesson.</i>	YES 1 NO 0	
6.3	Does the teacher have the Akuapem Twi language syllabus?	YES 1 NO 0	
6.4	Does the teacher have the English language syllabus?	YES 1 NO 0	

Ask the P3 teacher to show you the readers and ask what unit they are currently working on in the readers.



Could you please show me your English and Akuapem readers? I would like to count how many you have? Also, could you please tell me what unit or chapter you are currently working on in the readers?

Section 7: Availability of Pupil Materials : ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
7.1	How many P3 English readers are there in the class?	<input type="text"/> NUMBER OF BOOKS	If 0, → 8.1
7.2	What is the title of the English Reader?		
7.3	How many units or chapters are there in this P3 English reader?	<input type="text"/> TOTAL NUMBER OF UNITS	
7.4	What unit in the English reader is the teacher working on during this lesson?	<input type="text"/> UNIT	

Section 8: Availability of Pupil Materials : AKUAPEM TWI

No.	Questions and Filters	Coding Categories	Skips (if any)
8. 1	How many P3 Akuapem Twi readers are there in the class?	<input type="text"/> NUMBER OF BOOKS	If 0, → 9.1
8. 2	What is the title of the Akuapem Twi Reader?		
8. 3	How many units or chapters are there in this P3 Akuapem Twi reader?	<input type="text"/> TOTAL NUMBER OF UNITS	
8. 4	What unit in the Akuapem Twi reader is the teacher working on during this lesson?	<input type="text"/> UNIT	

Let the P3 teacher know that you would like to observe her normal reading lesson. If he or she normally teaches English and Akuapem Twi, then you would like to observe both lessons. If the teacher normally teaches only one language, then you would like to observe the reading lesson that he or she normally teaches. Do not try to influence the content of the lessons nor the duration of the lessons. Be a quite observer.



As part of this visit, I would like to observe you teaching the reading lesson you had planned for today. If you normally teach an Akuapem Twi and English lesson then I would like to observe both lessons. If you normally just teach one lesson, then I would like to observe the lesson that you normally teach.

Section 9: Time on Task: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
9. 1	Did the teacher teach the English language portion of the Reading lesson?	YES 1 NO 0	If no, → 12.1
9.2	How long did the English portion of the lesson last?		
9. 3	Did the English portion of the lesson last at least 30 minutes?	YES 1 NO 0	

Section 10: English Reading Practice: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
10. 1	Did the teacher ask pupils to read aloud individually or in pairs during the Reading lesson?	YES..... 1 NO 0	
10. 2	Did the teacher ask the class to read silently during the Reading lesson?	YES..... 1 NO 0	
10. 3	Did the teacher ask the whole class to read a passage together during the Reading lesson?	YES..... 1 NO 0	
10. 4	Did the teacher ask pupils comprehension questions based on what was read?	YES..... 1 NO 0	

Section 11: English Pupil Engagement: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
11. 1	Did the majority of pupils (more than half) practice any of the following activities: individual reading, pair or group reading, raising their hands, coming up to the front of the class to read, write, or writing seat work for at least ½ of the Reading lesson?	YES..... 1 NO 0	

Section 12: Time on Task: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
12. 1	Did the teacher teach the Akuapem Twi language portion of the Reading lesson?	YES..... 1 NO 0	If no, → 15.1
12. 2	How long did the Akuapem lesson last?		
12. 3	Did the Akuapem lesson last at least 30 minutes?	YES..... 1 NO 0	

Section 13: Reading Practice: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
13. 1	Did the teacher ask pupils to read aloud individually or in pairs during the Reading lesson?	YES..... 1 NO 0	
13. 2	Did the teacher ask the class to read silently during the Reading lesson?	YES..... 1 NO 0	

13.3	Did the teacher ask the whole class to read a passage together during the Reading lesson?	YES..... 1 NO 0	
13.4	Did the teacher ask pupils comprehension questions based on what was read?	YES..... 1 NO 0	

Section 14: Pupil Engagement: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
14.1	Did the majority of pupils (more than half) practice any of the following activities: individual reading, pair or group reading, raising their hands, coming up to the front of the class to read, write, or writing seat work for at least ½ of the Reading lesson?	YES..... 1 NO 0	

Section 15: Teacher Material Use

No.	Questions and Filters	Coding Categories	Skips (if any)
15.1	Did the teacher use or consult the Teacher’s Guide during the Reading lesson?	YES..... 1 NO 0 NA 0	
15.2	Did the teacher use or consult the Akuapem Twi language syllabus during the Reading lesson?	YES..... 1 NO 0 NA 0	
15.3	Did the teacher use or consult the English language syllabus during the Reading lesson?	YES..... 1 NO 0 NA 0	

Section 16: Teacher Preparedness

No.	Questions and Filters	Coding Categories	Skips (if any)
16.1	Is the teacher following the lesson plan during the observed Reading lesson/s? (if the teacher did not have a lesson plan, select “Not Applicable”)	YES 1 NO 0 Not Applicable 0	

After you have observed the reading lesson/s, let the teacher know that you would like to see the class register to get the number of pupils that are enrolled in this P3 class. Also, let the teacher know that you

would like to count the pupils that are currently in attendance and conduct your sampling exercise. Finally let the teacher know that you will be asking one student at a time to come for the assessment.



Thank you for allowing me to observe your reading lesson/s today. It was very interesting. As the next phase of our visit today, I would like to see your class register to see how many pupils are enrolled in your class. I would also like to count the pupils that are here today and then conduct an exercise to randomly select 18 students. Could we do this now? Once we've selected the students I will call the first student to be assessed and then sit outside to have them read to me. Once this student is done, I will ask them to return to class and let the next selected student know that they should come. I would like all of the selected students to bring their English and Akuapem exercise books when they come to read with me.

Section 17: Pupil Attendance

No.	Questions and Filters	Coding Categories	Skips (if any)
17. 1	How many P3 pupils have you counted during your sampling exercise?	<input style="width: 100px; height: 20px;" type="text"/> NUMBER OF PUPILS	
17. 2	How many P3 pupils are registered in the class?	<input style="width: 100px; height: 20px;" type="text"/> NUMBER OF PUPILS	

Once all of the students have been assessed, return to the classroom and ask the teacher if he/she could join you outside of the classroom to read the English and Akuapem reading passages. Be sure that that you are far enough from the classroom such that the students can't hear the assessment. Please take out and present the stimulus sheet which includes the English reading passage.

Section 18: Teacher Knowledge: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
18. 1	Is the teacher able to read the English language passage in less than 1 minute and with not more than 3 errors? <i>Please use a timer or your watch.</i>	YES 1 NO 0	
18.2	Who had a dog? [Musa]	CORRECT 1 INCORRECT..... 0	
18.3	Was the dog brown or black? [black]	CORRECT 1 INCORRECT..... 0	
18.4	Was the dog thin or fat? [Fat]	CORRECT 1 INCORRECT..... 0	
18.5	Why was the dog happy? [It was given a big bone]	CORRECT 1 INCORRECT..... 0	
18.6	What did Musa do at the end of the story? [He went to sleep]	CORRECT 1 INCORRECT..... 0	
18.7	Is the teacher able to correctly answer 4 or more of the English language reading	YES..... 1 NO 0	

	comprehension questions?		
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Section 19: Teacher Knowledge: AKUAPEM

Please pull out the teacher stimulus sheet which includes the Akuapem Twi reading passage.

No.	Questions and Filters	Coding Categories	Skips (if any)
19.1	Is the teacher able to read the Akuapem Twi language passage in less than 1 minute and with not more than 3 errors? <i>Please use a timer or your watch.</i>	YES..... 1 NO 0	
19.2	Mmofra no ne hena na ɛte? [Nana Mansa]	CORRECT 1 INCORRECT 0	
19.3	Bobo nneɛma abien a wugye di sɛ mmofra nketewa tumi ye ma aberewa no? [wɔnoa aduan, wɔkɔ asu,/wɔpra fie ho, wɔhoro ne nneɛma, wɔne no kasa]	CORRECT 1 INCORRECT 0	
19.4	Hena na ɔbeɛraa aberewa no? [ɔbea bi]	CORRECT 1 INCORRECT 0	
19.5	Aɔɛn nti na ɔbea no kamfoo mmofra no? [ɛfise n'ani soɔ mmofra no adeye]	CORRECT 1 INCORRECT 0	
19.6	Dɛn na wugye di sɛ ɔbea no beka akyerɛ ne mma? [mmofra no adeye, mmofra no suban pa]	CORRECT 1 INCORRECT 0	
19.7	Is the teacher able to correctly answer 4 or more of the Akuapem Twi language reading comprehension questions?	YES..... 1 NO 0	

Note the time the visit at the school end:

_____ : _____
(Use 24 hour time)

THANK YOU – THE END

COMMENTS

Post-pilot version

1. Head Teacher Introduction and Consent

☞ Good morning. My name is _____ and I work with the Ministry of Education. We are conducting a pilot study to evaluate a new way to monitor schools in order to identify schools that are in the greatest need of additional support. This exercise not meant to penalize schools.

In today's visit, we are particularly interested in examining language and literacy practice in P3 classrooms. For this reason, we would like to observe one of your P3 teachers teaching their typical reading lesson. If your teacher normally teaches just one language (English or Akuapem Twi), then we will observe the language that they normally teach. If they normally teach both languages, then we would like to observe both lessons. We will ask to see the teacher's lesson plan, their syllabus, and the teacher's guide. We will then ask your teacher to read a simple English and Akuapem Twi reading passage geared to P2 and P3 pupils. We will ask the teacher a few simple comprehension questions based on the passages they read. The reading passage and questions for the teacher should take only 2–5 minutes.

Once we are done with the observation and assessment of your P3 teacher, we would like to sample 18 of your P3 pupils. Sixteen (16) of these pupils will participate in a simple English and Akuapem Twi reading assessment. The remaining 2 pupils will act as replacement pupils in case any of the 16 is unwilling to participate in the assessment. The pupil assessment includes questions about letters, words, simple sentences, and a short passage. The student assessment should take about 25 minutes . We would need to use the selected classroom to administer this test but we could do this during the class's break time so as to minimize disruption to the class's normal activities. should take between 5 and 10 minutes per student. We will try to be as fast as we can so as to minimize the disruption to your school.

I will not write any names on the questionnaires because the survey is not meant to check up on individual teachers or pupils. However, I will record names of selected students and the P3 teacher on a sample section sheet to help me identify the selected students and teacher. Before, I leave the school today, I will destroy this sheet.

It would also be best for the teacher reading assessment to take place away from the pupils.

Finally, we are also interested in documenting the percentage of teachers who arrived on time at your school today. Participation in this pilot study is voluntary however, we hope that you will participate so that we can learn from this assessment and improve this new monitoring tool to support schools. Do you have any questions you would like to ask me? Do you agree to participate in this survey and allow your teachers and pupils to participate?

1.1 YES NO

If you have any follow-up questions, please feel free to call Dr. Tawiah at the MOE's National Inspectorate Board (phone number # 0242501196)

If no, mark this head teacher as a refusal. Then proceed to another school. Reuse this same introduction and questionnaire.

THANK YOU

Section 2: Teacher Attendance

Fill in this section as soon as you have met the head teacher and they have agreed to the monitoring visit. Ideally, your introductory visit with the head teacher will take place just before school starts. Please note the number of teachers employed at the school (this should include teachers that are employed by the PTA, the community as well as the ministry). This information is best obtained from the head teacher's **duty roster (staff list)**. Observe the actual number of teachers in attendance by quickly walking through the school and counting the number of teachers in their classrooms at the school's **official start time** in the morning. If you have time before the school's official start time, go ahead and complete the other sections while you wait for the school's start time.



I will need to walk around your school to observe how many teachers are in their classrooms this morning. I will then need to compare this with the number of teachers on your duty roster (staff list). May I please see your duty roster? Thank you.

No.	Questions and Filters	Coding Categories	Skips (if any)
2.1	How many teachers are in their classroom at the school's official start time? <i>(observe this by walking around to all the classrooms)</i>	<input type="text"/> NUMBER OF TEACHERS	
2.2	How many teachers are employed at the school <i>(include MOE, PTA, and Community teachers – anyone listed on the duty roster/staff list)</i> ?	<input type="text"/> NUMBER OF TEACHERS	
2.3	What per cent of teachers are in attendance (1A/1B x100)? TO BE COMPLETED DURING TABULATIONS WORKSHOP	<input type="text"/> PER CENT OF TEACHERS	
2.4	Were 90 per cent of teachers in attendance at the school's official start time? TO BE COMPLETED DURING TABULATIONS WORKSHOP	YES 1 NO 0	

Section 3. Selecting a quiet place to conduct the pupil assessment

Explain to the head teacher that you will need to find a quiet place to assess the pupils. This could be outside under a tree or on a veranda. Ideally, you will be close enough to the classroom to see students coming and going to their class but not so close that students in the class can hear you or be distracted by you.



Could you please suggest a quiet place where I could assess the pupils? Could you also please have your pupils help us set up a table and two chairs or even just two chairs under a tree or on a veranda. Ideally, we would assess the children from a spot that's close enough to the school so that we can see the classroom whose students will be participating in the test but far enough so that it is quiet and we don't distract the students in the classroom.

Section 4. P3 Teacher Selection for the Language and Literacy Lesson Observation and Teacher Reading Assessment

If the school has more than one P3 teacher, explain to the head teacher the need to randomly select just one P3 teacher. If there is only one P3 teacher, then observe that teacher.



I will need to randomly select a P3 teacher to observe teaching a language and literacy lesson and evaluate their reading skills. In order to pick a teacher, I'll need to see your duty roster or stafflist.

Identify the total number of P3 teachers that are listed in duty roster or staff list. Select the random number box below that corresponds to the number of teachers on the duty roster or staff list.

Without looking, hold your pencil over the appropriate random number box and pick the P3 teacher whose number your pencil lands on. If your pencil lands on a 2, then pick the second teacher on the duty roster or staff list.

Random number boxes for selection of teacher

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 4 TEACHERS				
2	3	1	2	3
1	2	4	1	1
3	3	2	1	2
1	1	1	2	2
4	2	2	1	1
1	3	2	4	4
1	3	1	4	1
3	4	1	3	1
4	3	2	2	1
1	3	4	2	3

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 3 TEACHERS				
3	2	1	2	2
3	2	1	1	3
2	1	1	1	3
1	3	3	3	3
2	2	3	1	1
1	1	3	2	2
2	2	2	2	3
3	2	1	3	2
2	1	1	3	1
3	2	3	3	1

RANDOM NUMBER TABLE TO SELECT ONE P3 TEACHER FROM AMONG 2 TEACHERS				
2	2	1	2	1
1	2	2	2	1
2	2	1	1	2
1	1	1	2	2
2	2	2	2	1
2	2	1	1	1
2	2	1	2	2
1	1	2	1	2
1	1	2	1	1
1	1	2	1	2

Ask the head teacher to confirm that the selected P3 teacher is in attendance today, and record the teacher's name at the top of the sampling worksheet. If the selected teacher is not in attendance today, then repeat the process. If you are working in a school that only has two teachers in their registry and one of the teachers is absent, then observe the only P3 teacher that is in attendance.

Section 5. P3 Teacher Introduction and Consent

Informed Consent for the P3 Teacher Who Will Be Observed

Good morning. My name is _____ and I work with the Ministry of Education. We are conducting a pilot study to evaluate a new way to monitor and support schools and teachers improve student performance. In our visit today, we are particularly interested in examining reading practice in P3 classrooms. Your classroom was randomly selected to participate in this monitoring visit. We would like to ask you about some of the teaching and student materials that you have and use in your routine teaching. We would also like to quietly observe your reading lesson or lessons. Please teach the lesson or lessons that you had planned for today as I would like to note the unit you are currently working on. It's fine if this material is new to the students. I won't be evaluating student performance during the lesson.

Once we have observed your reading lesson, we would like to randomly select 18 children in your classroom. Sixteen of these children will take part in a brief English and Akuapem Twi reading and comprehension assessment and the remaining two will be assessed in case any of the 16 isn't willing to participate. Finally, in order for the MOE to assess which schools may benefit from additional language training for their staff, we would like to ask you to read a brief passage in English and in Akuapem Twi and have you answer some simple questions about this passage.

This reading will take 2-5 minutes.

We will not record names on any questionnaires because the survey is not meant to check up on individual teachers or pupils. Rather, it is meant to help the MOE and district plan how to best support schools and teachers. We will record names on a sampling sheet to help us identify selected students but this sheet will be destroyed before we leave your school today. The pupil assessment includes questions about letters, words, simple sentences and a reading passage so it should take about 25 minutes. We would need to use your classroom to administer this test but we could do this during your break time so that we minimize disruption to your normal activities.

Participation in this pilot study is voluntary however, we hope that you will participate so that we can learn from this assessment and improve this new monitoring tool. Do you have any questions you would like to ask me? Do you agree to participate in this survey and allow your pupils to participate?

5.1 YES NO

If you have any follow-up questions, please feel free to call Dr. Tawiah at the MOE's National Inspectorate Board (phone number # 0242501196)

If "no," mark this teacher as a refusal in the table on the cover page. Then proceed to another teacher or school. Reuse these same instructions and questionnaire.

THANK YOU



Could you please show me your P3 Teacher’s Guide, the Akuapem Twi syllabus, the English syllabus, and your lesson plan for today?

In your notebook, note what content and activities are planned for today’s Reading lesson. After the lesson observation, you will need to note whether teacher has or hasn’t followed their lesson plan for the day.

Section 6: Availability of Teacher Materials

No.	Questions and Filters	Coding Categories	Skips (if any)
6.1	Does the teacher have the P3 Teacher’s Guide in his/her classroom that you can see?	YES 1 NO 0	
6.2	Does the teacher have a summary lesson plan for the day in the lesson notebook? <i>Note what the main focus of the lesson is today and what activities are planned. Use this information when observing the lesson.</i>	YES 1 NO 0	
6.3	Does the lesson plan refer to the teachers guide, syllabus or scheme of work?	YES 1 NO 0	
6.4	Does the teacher have the Akuapem Twi language syllabus?	YES 1 NO 0	
6.5	Does the teacher have the English language syllabus?	YES 1 NO 0	

Ask the P3 teacher to show you the readers and ask what unit they are currently working on in the readers.



Could you please show me your English and Akuapem readers? I would like to count how many you have? Also, could you please tell me what unit or chapter you are currently working on in the readers?

Section 7: Availability of Pupil Materials : ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
7. 1	How many P3 English readers are there in the class?	<div style="text-align: center;"> <input style="width: 100px; height: 20px; border: 1px solid black;" type="text"/> NUMBER OF BOOKS </div>	
7. 2	What is the title of the English Reader? <i>If no P3 English readers are available, write down the title of the teacher's guide or other book that the teacher is using as the basis of the lesson</i>		
7. 3	How many units or chapters are there in this P3 English reader? <i>Again if no P3 English readers are available, then write down the total number of units there are in the teacher's guide or book that the teacher is using.</i>	<div style="text-align: center;"> <input style="width: 100px; height: 20px; border: 1px solid black;" type="text"/> TOTAL NUMBER OF UNITS </div>	
7. 4	What unit in the English reader is the teacher working on during this lesson? <i>If no P3 English readers are available, then write down the unit in the teacher's guide or book that the teacher is using during this lesson.</i>	<div style="text-align: center;"> <input style="width: 100px; height: 20px; border: 1px solid black;" type="text"/> UNIT </div>	

Section 8: Availability of Pupil Materials : AKUAPEM TWI

No.	Questions and Filters	Coding Categories	Skips (if any)
8. 1	How many P3 Akuapem Twi readers are there in the class?	<input type="text"/> NUMBER OF BOOKS	
8. 2	What is the title of the Akuapem Twi Reader? <i>If no Akuapem Twi readers are available, write down the title of the teacher's guide or other book that the teacher is using as the basis of the lesson</i>		
8. 3	How many units or chapters are there in this P3 Akuapem Twi reader? <i>Again if no P3 Akuapem Twi readers are available, then write down the total number of units there are in the teacher's guide or book that the teacher is using.</i>	<input type="text"/> TOTAL NUMBER OF UNITS	
8. 4	What unit in the Akuapem Twi reader is the teacher working on during this lesson? <i>If no P3 Akuapem Twi readers are available, then write down the unit in the teacher's guide or book that the teacher is using during this lesson.</i>	<input type="text"/> UNIT	

Let the P3 teacher know that you would like to observe her normal reading lesson. If he or she normally teaches English and Akuapem Twi, then you would like to observe both lessons. If the teacher normally teaches only one language, then you would like to observe the reading lesson that he or she normally teaches. Do not try to influence the content of the lessons nor the duration of the lessons. Be a quite observer.



As part of this visit, I would like to observe you teaching the reading lesson you had planned for today. Again, please teach the lesson you had planned for today as I would like to note the unit you are currently working on. It is fine if the material planned for today is new to your students. If you normally teach an Akuapem Twi and English lesson then I would like to observe both lessons. If you normally just teach one lesson, then I would like to observe the lesson that you normally teach. I may or may not observe your entire lesson. Please conduct your lesson as you normally would.

Section 9: Time on Task: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
9. 1	Did the teacher teach the English language portion of the Reading lesson?	YES 1 NO 0	If no, ➔ 12.1
9. 2	Did the English lesson last at least 30 minutes?	YES 1 NO 0	
9.3	Did the teacher cover at least one paragraph during the English lesson?	YES 1 NO 0	

Section 10: English Reading Practice: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
10.1	Did the teacher ask pupils to read aloud individually or in pairs during the Reading lesson?	YES..... 1 NO 0	
10.2	Did the teacher ask the class to read silently during the Reading lesson?	YES..... 1 NO 0	
10.3	Did the teacher ask the whole class to read a passage together during the Reading lesson?	YES..... 1 NO 0	
10.4	Did the teacher conduct any phonemic awareness exercises?	YES..... 1 NO 0	
10.5	Did the teacher ask pupils comprehension questions based on what was read?	YES..... 1 NO 0	

Section 11: English Pupil Engagement: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
11.1	Did the majority of pupils (more than half) practice any of the following activities: individual reading, pair or group reading, raising their hands, coming up to the front of the class to read, write, or writing seat work for at least ½ of the Reading lesson?	YES..... 1 NO 0	

Section 12: Time on Task: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
12.1	Did the teacher teach the Akuapem Twi language portion of the Reading lesson?	YES 1 NO 0	If no, → 15.1
12.2	Did the Akuapem Twi lesson last at least 30 minutes?	YES 1 NO 0	
12.3	Did the teacher cover at least one paragraph during the Akuapem Twi lesson?	YES 1 NO 0	

Section 13: Reading Practice: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
13. 1	Did the teacher ask pupils to read aloud individually or in pairs during the Reading lesson?	YES..... 1 NO 0	
13. 2	Did the teacher ask the class to read silently during the Reading lesson?	YES..... 1 NO 0	
13. 3	Did the teacher ask the whole class to read a passage together during the Reading lesson?	YES..... 1 NO 0	
13. 4	Did the teacher ask pupils comprehension questions based on what was read?	YES..... 1 NO 0	
13.5	Did the teacher conduct any phonemic awareness exercises during the lesson?	YES..... 1 NO 0	

Section 14: Pupil Engagement: AKUAPEM

No.	Questions and Filters	Coding Categories	Skips (if any)
14. 1	Did the majority of pupils (more than half) practice any of the following activities: individual reading, pair or group reading, raising their hands, coming up to the front of the class to read, write, or writing seat work for at least ½ of the Reading lesson?	YES..... 1 NO 0	

Section 15: Teacher Material Use

No.	Questions and Filters	Coding Categories	Skips (if any)
15. 1	Did the teacher use or consult the Teacher’s Guide reader or syllabus during the Reading lesson?	YES 1 NO..... 0 NA..... 0	

Section 16: Teacher Preparedness

No.	Questions and Filters	Coding Categories	Skips (if any)
16.1	Is the teacher following the lesson plan during the observed Reading lesson/s? (if the teacher did not have a lesson plan, select "Not Applicable")	YES1 NO0 Not Applicable.....0	

After you have observed the reading lesson/s, let the teacher know that you would like to see the class register to get the number of pupils that are enrolled in this P3 class. Also, let the teacher know that you would like to count the pupils that are currently in attendance and conduct your sampling exercise. Finally let the teacher know that you will be asking one student at a time to come for the assessment.



Thank you for allowing me to observe your reading lesson/s today. It was very interesting. As the next phase of our visit today, I would like to see your class register to see how many pupils are enrolled in your class. I would also like to count the pupils that are here today and then conduct an exercise to randomly select 18 students. Could we do this now? During your break period I would like the selected students to remain in the classroom to take the reading assessment while the other students go out to break. I will space the 16 students in the classroom so that they cannot see each other's tests.. I would like all of the selected students to have their English and Akuapem exercise books with them. Once the test is done, I'll ask each student to bring me their exercise books one by one so that I can review them. Once that is done, the children can go out to break..

Section 17: Pupil Attendance

No.	Questions and Filters	Coding Categories	Skips (if any)
17.1	How many P3 pupils have you counted during your sampling exercise?	<input type="text"/> NUMBER OF PUPILS	
17.2	How many P3 pupils are registered in the class?	<input type="text"/> NUMBER OF PUPILS	

Once the students have been assessed, ask the teacher if he/she could join you outside of the classroom to read the English and Akuapem reading passages. Be sure that that you are far enough from the classroom such that the students can't hear the assessment. Please take out and present the stimulus sheet which includes the English reading passage.

Section 18: Teacher Knowledge: ENGLISH

No.	Questions and Filters	Coding Categories	Skips (if any)
18.1	<p>Is the teacher able to read the English language passage in less than 1 minute and with not more than 3 errors?</p> <p><i>Please use a timer or your watch.</i></p>	<p>YES 1</p> <p>NO 0</p>	
18.2	<p>Who had a dog? [Musa]</p>	<p>CORRECT 1</p> <p>INCORRECT 0</p>	
18.3	<p>Was the dog brown or black? [black]</p>	<p>CORRECT 1</p> <p>INCORRECT 0</p>	
18.4	<p>Was the dog thin or fat? [Fat]</p>	<p>CORRECT 1</p> <p>INCORRECT 0</p>	
18.5	<p>Why was the dog happy? [It was given a big bone]</p>	<p>CORRECT 1</p> <p>INCORRECT 0</p>	
18.6	<p>What did Musa do at the end of the story? [He went to sleep]</p>	<p>CORRECT 1</p> <p>INCORRECT 0</p>	
18.7	<p>Is the teacher able to correctly answer 4 or more of the English language reading comprehension questions?</p>	<p>YES 1</p> <p>NO 0</p>	

Section 19: Teacher Knowledge: AKUAPEM

Please pull out the teacher stimulus sheet which includes the Akuapem Twi reading passage.

No.	Questions and Filters	Coding Categories	Skips (if any)
19.1	Is the teacher able to read the Akuapem Twi language passage in less than 1 minute and with not more than 3 errors? <i>Please use a timer or your watch.</i>	YES 1 NO 0	
19.2	Mmofra no ne hena na ete? [Nana Mansa]	CORRECT 1 INCORRECT 0	
19.3	Bobo nneɛma abien a wugye di sɛ mmofra nketewa tumi ye ma aberewa no? [wɔnoa aduan, wɔko asu,/wɔpra fie ho, wɔhoro ne nneɛma, wɔne no kasa]	CORRECT 1 INCORRECT 0	
19.4	Hena na ɔbɛsraa aberewa no? [ɔbea bi]	CORRECT 1 INCORRECT 0	
19.5	Adɛn nti na ɔbea no kamfoo mmofra no? [ɛfise n'ani sɔɔ mmofra no adeyeɛ]	CORRECT 1 INCORRECT 0	
19.6	Dɛn na wugye di sɛ ɔbea no bɛka akyerɛ ne mma? [mmofra no adeyeɛ, mmofra no suban pa]	CORRECT 1 INCORRECT 0	
19.7	Is the teacher able to correctly answer 4 or more of the Akuapem Twi language reading comprehension questions?	YES 1 NO 0	

Note the time the visit at the school end:

____:____
(Use 24 hour time)

THANK YOU – THE END

COMMENTS

Appendix B4. Student Assessment

Student Assessment

GHANA LQAS SIMPLE ENGLISH AND AKUAPEM TWI READING ASSESSMENT

Administrator Instructions and Protocol

LQAS SURVEY 2013

	Codes (OFFICE USE ONLY)
Questionnaire identification	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Student LQAS number out of 16: _____	<input type="text"/> <input type="text"/>
District _____	<input type="text"/> <input type="text"/>
School _____	<input type="text"/> <input type="text"/>
Inspector _____	<input type="text"/> <input type="text"/>
Date of Interview ____/____/____ dd / mm / yyyy	<input type="text"/> <input type="text"/>
Interview start time (HH:MM) __: __ (Use 24 hour time)	
Interview end time (HH:MM) __: __ (Use 24 hour time)	
This questionnaire was reviewed by: _____ (Supervisor name and signature)	

Student Refusal Record

	Reason for Refusal	Date/Time of Refusal
1 st selected student		
2 nd selected student		
3 rd selected student		

ENGLISH

General Instructions

*Once you have finished your observation of the entire language and literacy or reading lesson and have assessed the teacher, let the teacher know that you would like to assess the sampled student and that you would like all the selected student to bring their English and Akuapem Twi exercise books when you ask them to come up for their assessment. When you are meeting with the student to be assessed, it is important to establish a playful and relaxed rapport with them via some simple initial conversation among topics of interest to the student (see example below). The student should perceive the following assessment almost as a game to be enjoyed rather than an exam. It is important to read **ONLY** the sections in boxes aloud slowly and clearly. **HOLD YOUR CLIP BOARD UP- DO NOT ALLOW STUDENTS TO SEE YOUR SHEET.***

☞ **Good morning. My name is ____ and I live in _____. I'd like to tell you a little bit about myself. (Number and ages of student; pets; sports; etc.)**

1. Could you tell me a little about yourself and your family? (Wait for response; if student is reluctant, ask question 2, but if they seem comfortable, continue to verbal consent.)

2. What do you like to do when you are not in school?

Oral Consent

- ☞
- **Let me tell you why I am here today. I work with the Ministry of Education and we are trying to understand how student learn to read. You were picked by chance, like in a raffle or lottery.**
 - **We would like your help in this. But you do not have to take part if you do not want to.**
 - **First I would like to look at your English and Akuapem Twi exercise books. Then we will play a reading game in English and Akuapem Twi. I am going to ask you to read letters, words, sentences and a short story aloud.**
 - **This is NOT a test and it will not affect you or your grade in any way.**
 - **I will NOT write down your name so no one will know these are your answers.**
 - **Once again, you do not have to take part in if you do not wish to. Once we begin, if you would rather not answer a question, that's all right.**
 - **Do you have any questions? Do you want to take part?**

Yes

No

If the student says "no," thank them, fill in the refusal form and move onto the next student.

Section 1. Student Readers and Exercise Books

Draw a circle around the correct response number

<u>S1</u>	🗨️ Now, could you please show me your English exercise book?	Pupil has English exercise book1	Pupil doesn't have English exercise book0 ➔SKIP to S3
<u>S2</u>	Does one of the last two completed exercises of the English exercise book have any teacher marks or comments?	Exercise book has teacher marks or comments on one or more of the last two completed English exercises1	Exercise book does not have teacher marks or comments on one or more of the last two completed English exercises0

<u>S3</u>	🗨️ Now, could you please show me your Akuapem Twi exercise book?	Pupil has Akuapem Twi exercise book1	Pupil doesn't have Akuapem Twi exercise book0 ➔SKIP to Section 2
<u>S4</u>	Does one of the last two completed exercises of the Akuapem Twi exercises have any teacher marks or comments?	Exercise book has teacher marks or comments on one or more of the last two completed Akuapem Twi exercises1	Exercise book does not have teacher marks or comments on one or more of the last two completed Akuapem Twi exercises0

Section 2. Letter Name Knowledge

Show the student the list of English letters in the student stimuli booklet. Say:

☛ Here are letters from the English alphabet. Please tell me the NAMES of as many letters as you can. Not their sounds, but their English name.

For example, the name of this letter (point to the letter X on the student stimulus sheet) is “X.” When I say “Begin,” start here (point to first letter) and go across the row (point). Point to each letter and tell me the name of that letter in a loud voice. Read as quickly and carefully as you can. If you come to a letter you do not know, go on to the next letter. Put your finger on the first letter. Ready? Begin.

Follow along as the student reads the letters. Stay quiet, except if the student hesitates at a letter for 3 seconds, then point to the next letter and say, “Please go on.” The skipped letter will count as incorrect. If the student gives you the letter SOUND, rather than the name, say: “Please tell me the NAME of the letter.” This prompt may be given only once during the letter-name section. If the student gives you the Akuapem Twi name of the letter, ask the student to give you the English name of the letter. This prompt may be given only once during the section.

☞ (/) On this sheet, mark any incorrect or skipped letters with a slash.

~~G~~

(Ø) If the student self-corrects after you have already marked the letter incorrect with a slash, circle the letter and the slash.

~~G~~

Example: X

E s o t a

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “Good effort!” and then move on to the next section.
- If the # of mistakes is more than 1, give the student a score of 0. Tell the student, “Good effort!” and then move on to the next section.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-1 →	<input type="checkbox"/> 1	→ next English section
More than 1 →	<input type="checkbox"/> 0	→ next English section

Section 3. Familiar Words

Show the student the list of familiar words. Say,

👁️ Here are five English words. I would like you to read as many of these words as you can. For example, this word is “cat” (point to the sample word on the student stimulus sheet).

When I say “Begin,” start here (point to first word) and read across the row (point). Point to each word and read it in a loud voice. Read as quickly and carefully as you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

Follow along as the student reads the words. Stay quiet, except if the student hesitates at a word for 3 seconds, then point to the next word and say, “**Please go on.**” The skipped word will count as incorrect. Count self-corrections as correct.

✂️ (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~PIE~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

PIE

Example: CAT

hen out with call bad

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “**Good effort!**” and then move on to the next section.
- If the # of mistakes is more than 1, give the student a score of 0, tell the student “**Good effort!**” and move onto the Akuapem Twi test.

Total Incorrect

Total Incorrect: Circle range	Score: Check correct box	Next step ?
0-1 →	<input type="checkbox"/> 1	→ next English section
More than 1 →	<input type="checkbox"/> 0	→ Akuapem Twi test

Section 4. Simple Sentences

Show the student the list of simple sentences. Say,

🔊 Here are four sentences in English (point to the sentences on the stimulus sheet). I want you to read them aloud, quickly but carefully. When I say “Begin,” read the sentences as best you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready?

Follow along as the student reads the sentences. Note with a slash on the student results sheet the number of incorrect words the student reads. Stay quiet, except if the student hesitates for 3 seconds, then point to the next word and say, “Please go on.” The skipped word will count as incorrect. If the student self-corrects and gives the right answer, count the self-correction as correct.

✂ (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~PIE~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

~~PIE~~

This is a big fish.

It lives in a river.

It likes to swim.

It eats little fish.

SCORING:

- If the student reads fluently (not stopping at every word) and is able to read the whole story with no more than 3 errors, then give the student a score of 1, tell the student, “**Good effort!**” and then move on to the next section.
- If the student is unable to read fluently or makes more than 3 errors, give the student a score of 0, tell the student, “**Good effort!**” and move onto the Akuapem Twi test.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-3 →	<input type="checkbox"/> 1	→ next English section
More than 3 →	<input type="checkbox"/> 0	→ Akuapem Twi test

Section 5. Story

Show the student the story in the student stimuli booklet. Say,

👤 Here is a short story. I want you to read it aloud, quickly but carefully. When you finish, **I will ask you some questions about what you have read.** When I say “Begin,” read the story as best you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

Follow along as the student reads the story. Stay quiet, except if the student hesitates for 3 seconds, then point to the next word and say, “**Please go on.**” The skipped word will count as incorrect. Count self-corrections as correct.

👤 (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~PIE~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

~~PIE~~

Musa had a black dog. The dog was fat. One day, Musa and the dog went out to play. The dog got lost. But after a while the dog came back. Musa took the dog home. When they got home, Musa gave the dog a big bone. The dog was happy so it slept. Musa also went to sleep.

SCORING:

- If the student reads fluently (not stopping at every word) and is able to read the whole story with no more than 10 errors, give the student a score of 1. Tell the student, “**Good effort!**” and then move on to the next section.
- If the student is unable to read fluently or makes more than 10 errors, give the student a score of 0. Tell the student, “**Good effort!**” and move onto the Akuapem Twi test. Do not ask any of the English comprehension questions.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-10 →	<input type="checkbox"/> 1	→ next English section
More than 10 →	<input type="checkbox"/> 0	→ Akuapem Twi test

Section 6. Comprehension Questions

Before asking the comprehension questions, put away the stimulus sheet containing the passage. Say,

Now I am going to ask you a few questions about the story you just read. Try to answer the questions as well as you can. You can answer in whichever language you prefer.

Read each question once, slowly and clearly. Do not translate the questions, but read only the original English version. If the student does not respond after 10 seconds, say “**Let’s move on**” and continue to the next question. Note that you may repeat a question *ONLY* if there was significant noise or some kind of severe interruption that might have impeded the student’s ability to hear the question. Mark as correct only responses that match, or are similar in meaning, to the answers provided for each question. If the student says “I don’t know” or does not respond, mark the response as incorrect. Note that you should accept responses in either Akuapem Twi or English, as we are testing the student’s comprehension now and not language ability. Put a slash through any skipped or incorrect responses given.

☞ Check (✓) the appropriate box indicating whether the response was correct or incorrect.

Who had a dog? [Musa]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Was the dog brown or black? [black]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Was the dog thin or fat? [Fat]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Why was the dog happy? [It was given a big bone]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
What did Musa do at the end of the story? [He went to sleep]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “**Good effort!**” and then and go to the Akuapem Twi test.
- If the # of mistakes is more than 1, give the student a score of 0, tell the student, “**Good effort!**” and move onto the Akuapem Twi test.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-1 →	<input type="checkbox"/> 1	→ <i>Akuapem Twi test</i>
More than 1 →	<input type="checkbox"/> 0	→ <i>Akuapem Twi test</i>

AKUAPEM TWI

Section 7. Letter Name Knowledge

Show the student the list of Akuapem Twi letters in the student stimuli booklet. Say:

👂 Here are letters from the Akuapem Twi alphabet. Please tell me the NAMES of as many letters as you can.

For example, the name of this letter (point to the letter P on the student stimulus sheet) is “P.” When I say “Begin,” start here (point to first letter) and go across the row (point). Point to each letter and tell me the name of that letter in a loud voice. Read as quickly and carefully as you can. If you come to a letter you do not know, go on to the next letter. Put your finger on the first letter. Ready? Begin.

Follow along as the student reads the letters. On the student results sheet, put a slash through any skipped or incorrectly read letters. Stay quiet, except if the student hesitates at a letter for 3 seconds, then point to the next letter and say, “**Please go on.**” The skipped letter will count as incorrect. . If the student gives you the English name of the letter, ask the student to give you the Akuapem Twi name of the letter. This prompt may be given only once during the section.

☞ (/) On the student results sheet, mark any incorrect or skipped words with a slash



(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.



Example: **P**

a M s ɔ o

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “**Good effort!**” and then move on to the next section.
- If the # of mistakes is more than 1, give the student a score of 0. Tell the student, “**Good effort!**” and then move on to the next section.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-1 →	<input type="checkbox"/> 1	→ <i>next Akuapem Twi Section</i>
More than 1 →	<input type="checkbox"/> 0	→ <i>next Akuapem Twi Section</i>

Section 8. Familiar Words

Show the student the list of familiar words. Say,

👂 Here are five Akuapem Twi words. I would like you to read as many of these words as you can. For example, this word is “mu” (point to word on student stimulus sheet).

When I say “Begin,” start here (point to first word) and read across the row (point). Point to each word and read it in a loud voice. Read as quickly and carefully as you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

Follow along as the student reads the words. Stay quiet, except if the student hesitates at a word for 3 seconds, then point to the next word and say, “**Please go on.**”

✂ (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~SUA~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

~~SUA~~

Example: MU

kɛtɛ ase dwen ofie dodo

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “**Good effort!**” and then move on to the next section.
- If the # of mistakes is more than 1, give the student a score of 0. Tell the student, “**Good Effort, thank you for taking part in this activity today!**” and end the test.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-1 →	<input type="checkbox"/> 1	→ next Akuapem Twi Section
More than 1 →	<input type="checkbox"/> 0	→ End the test, thank the student

Section 9. Simple Sentences

Show the student the list of simple sentences. Say,

👂 Here are four sentences in Akuapem Twi. I want you to read them aloud, quickly but carefully. When I say “Begin,” read the sentences as best as you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready?

Follow along as the student reads the sentences. Stay quiet, except if the student hesitates for 3 seconds, then point to the next word and say, “**Please go on.**”

👂 (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~SUA~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

~~SUA~~

Oपुरo no sua..

Ɔda dua bi ase dinn.

Ne ho ye fe papa.

Ma no aduan na onni.

SCORING:

- If the student reads fluently (not stopping at every word) and is able to read the whole story with no more than 3 errors, give the student a score of 1. Tell the student, “**Good effort!**” and then move on to the next section.
- If the student is unable to read fluently or makes more than 3 errors, give the student a score of 0. Tell the student, “**Good effort, thank you for taking part in this activity today!**” and end the test.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-3 →	<input type="checkbox"/> 1	→ next Akuapem Twi section
More than 3 →	<input type="checkbox"/> 0	→ End test, thank the student

Section 10. Story

Show the student the story in the student stimuli booklet. Say,

👁️ Here is a short story. I want you to read it aloud, quickly but carefully. **When you finish, I will ask you some questions about what you have read.** When I say “Begin,” read the story as best you can. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

Follow along as the student reads the story. Stay quiet, except if the student hesitates for 3 seconds, then point to the next word and say, “Please go on.”

🗨️ (/) On the student results sheet, mark any incorrect or skipped words with a slash

~~SUA~~

(Ø) If the student self-corrects after you had already marked the word incorrect with a slash, circle the word and the slash.

~~SUA~~

Nana Mansa ne ne nenanom baanu na εte. Wɔn mu panyin no adi mfe asia. Kumaa no adi mfe anum. Mmofra nketewa yi taa sore ntεm. Wɔn na wɔye biribiara de boa aberewa no. Da bi, ɔbea bi bεsraa aberewa no. Mmofra nketεwa yi suban no sɔɔ ɔbea no ani. ɔkamfoo wɔn. ɔkaa se: “mekɔ m’akuraa a, menya bi aka akyere me mma”.

SCORING:

- If the student reads fluently (not stopping at every word) and is able to read the whole story with no more than 10 errors, then give the student a score of 1, tell the student, “**Good effort!**” and then move on to the next section.
- If the student is unable to read fluently or makes more than 10 errors, give the student a score of 0, tell the student, “**Thank you for taking part in this activity today!**” and end the test. Do not ask any comprehension questions.

Write Total Incorrect

Total Incorrect : <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-10 →	<input type="checkbox"/> 1	→ next Akuapem Twi section
More than 10 →	<input type="checkbox"/> 0	→ End test, thank the student

Section 11. Comprehension Questions

Before asking the comprehension questions, put away the stimulus sheet containing the passage. Say,

Now I am going to ask you a few questions about the story you just read. Try to answer the questions as well as you can. You can answer in whichever language you prefer.

Read each question once, slowly and clearly. Do not translate the questions, but read only the original Akuapem Twi version. If the student does not respond after 10 seconds, say “**Let’s move on**” and continue to the next question. Note that you may repeat a question **ONLY** if there was significant noise or some kind of severe interruption that might have impeded the student’s ability to hear the question. Mark as correct only responses that match, or are similar in meaning, to the answers provided for each question. If the student says “I don’t know,” mark the response as incorrect. Note that you should accept responses in either Akuapem Twi or English as we are testing the student’s comprehension now and not language ability.

☒ Check (✓) the appropriate box indicating whether the response was correct or incorrect.

Mmofra no ne hena na εte? [Nana Mansa]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Bobo nneεma abien a wugye di se mmofra nketewa tumi ye ma aberewa no? [wɔnoa aduan, wɔkɔ asu, /wɔpra fie hɔ, wɔhoro ne nneεma, wɔne no kasa]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Hena na ɔbesraa aberewa no? [ɔbea bi]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Adɛn nti na ɔbea no kamfoo mmofra no? [εfise n’ani sɔɔ mmofra no adeyeε]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect
Dɛn na wugye di se ɔbea no beka akyerε ne mma? [mmofra no adeyeε, mmofra no suban pa]	<input type="checkbox"/> Correct	<input type="checkbox"/> Incorrect

SCORING:

- If the # of mistakes is 0 or 1, give the student a score of 1. Tell the student, “**Thank you for taking part in this activity today!**” and end the test.
- If the # of mistakes is more than 1, give the student a score of 0. Tell the student, “**Thank you for taking part in this activity today!**” and end the test.

Total Incorrect

Total Incorrect: <i>Circle range</i>	Score: <i>Check correct box</i>	Next step ?
0-1 →	<input type="checkbox"/> 1	→ End test, thank the student
More than 1 →	<input type="checkbox"/> 0	→ End test, thank the student

COMMENTS

B5. Agenda from the Hand-Tabulation Training Workshop

Agenda from the Hand-Tabulation Training Workshop

Day 1

Time	Topic	Responsible
9:00 – 9:15 a.m.	Opening: Welcome Back	Amy and Joe
9:15 – 9:30 a.m.	Logistical Arrangements	Emmanuel
9:30 – 9:50 a.m.	Reviewing The Agenda For The Tabulation Workshop	Joe
9:50 – 10:00 a.m.	Reviewing The Training Flow Chart	Joe
10:00 – 10:30 a.m.	Fieldwork Debriefing <ul style="list-style-type: none"> • Number Of Teacher Assessment Survey Tools That Have Been Completed And Brought To The Workshop • How Many Of The Original Sample Of 19 Schools Were Replace With Alternates? Why? • Number Of Pupil Questionnaires Completed Per School And Brought To The Workshop • How Many Of The Original Sample Of 16 Students Were Replaced With Alternates? Why? • Contingency Plan For Finishing Remaining Schools (If Necessary) 	Amy and Joe
10:30 – 10:45 a.m.	• Tea/Coffee Break	
10:45 – 11:30 a.m.	• Lesson Learned During Data Collection: What Went Well And What Was Challenging	Amy and Joe
11:30 a.m. – 12:00	• Purpose Of Tabulation • Agreement On Correct Answers To The Questionnaires	Joe
12:00 – 12:30 p.m.	How To Use The Tabulation Tables: Reviewing The: <ul style="list-style-type: none"> • Student Assessment Table • School Assessment Table 	Joe
12:30 – 1:00 p.m.	Lunch	
1:00 – 1:40 p.m.	<ul style="list-style-type: none"> • How LQAS Can Be Used Recurrently By The NIB • How To Calculate Average Achievement When Several Districts Are Assessed • Why Is It Important? To Identify Decision Rules • How This Pilot Differs And Why Average Achievement Should Not Be Calculated • What Targets And Decision Rules Are Used For This Pilot 	Amy and Joe
1:40 – 2:40 p.m.	Exercises: Using The Tabulation Tables To: <ul style="list-style-type: none"> • Enter Results For One Indicator For One Teacher Assessment 	Joe

Time	Topic	Responsible
	<ul style="list-style-type: none"> Reviewing The Work Of Each Observer Repeating The Above Three Steps With A Second Indicator 	
2:40 – 3:45 p.m.	<p>Tabulation Starts In Stages In Teams Of 2 To 3 People</p> <ul style="list-style-type: none"> Completing The Student Assessment Table Identifying Schools That Do Not Pass For The Student Assessment Completing The Assessment Of The Data Collected In The Group Review Of Pupils 	Amy, Emmanuel and Joe
3:45 – 4:00 p.m.	Tea/Coffee Break	
4:00 – 5:00 p.m.	Continue Tabulation In Stages	

Day 2

Time	Topic	Responsible
9:00 – 10:30 a.m.	Continue Tabulation In Stages	
10:30 – 10:45 a.m.	Tea/Coffee Break	
10:45 – 12:30 p.m.	Continue Tabulation In Stages	
12:30 – 1:30 p.m.	Lunch	
1:30 – 3:30 p.m.	Continue Tabulation In Stages	
3:30 – 3:45 p.m.	Tea/Coffee Break	
3:45 – 5:00 p.m.	<p>How To Analyze LQAS Data And Identify Priorities Using The School Assessment Table</p> <ul style="list-style-type: none"> Priorities Within A School Priorities Within A District 	Joe

Day 3

Time	Topic	Responsible
9:00 – 10:30 a.m.	Continued Analysis	
10:30 – 10:45 a.m.	Tea/Coffee Break	
10:45 – 12:30 p.m.	<p>Presenting the findings:</p> <ul style="list-style-type: none"> Purpose Basic Outline Setting Priorities Setting Annual Goals 	Amy and Joe
12:30 – 1:30 p.m.	Lunch	
1:30 – 2:30 p.m.	<ul style="list-style-type: none"> Practice Presentation Of Findings To The NIB And USAID 	Amy
2:00 – 3:30 p.m.	<p>Presentation Of The Findings To The NIB And USAID</p> <p>Discussion</p>	Amy and Joe
3:30 – 3:45 p.m.	Tea/Coffee Break	
3:45 – 5:00 p.m.	<ul style="list-style-type: none"> Evaluation of the LQAS for School Inspectors Next Steps with LQAS in Ghana Workshop Evaluation 	Amy, Emmanuel and Joe

Appendix B6. Hand-Tabulation Worksheets

Appendix B6. Hand-Tabulation Worksheets – One School

GHANA LQAS SURVEY RESULT TABLE FOR A SINGLE TEACHER/SCHOOL SURVEY			
REGION:		DISTRICT:	SCHOOL:
INSPECTOR:		TEACHER CLASSROOM #:	DATE OF ASSESSMENT:
RESPONSE KEY: CORRECT=1 NOT CORRECT=0 SKIPPED=S MISSING=X			
N ^o	Indicator	Code for a Correct / Appropriate Response or Observation	SCORE (Correct=1 Not Correct=0)
TEACHER ATTENDANCE			
2.1, 2.2	% of Teachers employed by the school who are present on the day of the survey at the start of the school day. (2.1/2.2)X100 = _____%	90% or more of teachers must be observed present at start of the school day = 1	
STUDENT ATTENDANCE			
17.1, 17.2	% of registered students in selected P3 class that are in attendance on the day of the visit at the time of the sampling. (17.1/17.2)X100 = _____%	90% or more of students must be observed present on the day of the school visit = 1	
STUDENT ENGAGEMENT: ENGLISH			
11.1	Majority of pupils actively engaged in listed reading	Must have minimum score of 1 on STUDENT ENGAGEMENT ENGLISH = 1	
TIME ON TASK: ENGLISH			
9.3, 7.3, 7.4	Did the English reading lesson last at least 30 minutes and did the teacher cover an appropriate unit for this time of the school year? FORMULA Week of March 11 = 25th week in school year. 25 ÷ 41 weeks in school year = 0.61 11 units x 0.61 = 6.7 = unit 7	Must have a score of 1 for 9.3. See 7.3 for the total number of units or chapters in P3 English Reader. If the total number of chapters should be 11, during the week of March 11 the classes should be using unit 7 at least. If 9.3=1 and unit unit being taught is 7 or more then TIME ON TASK ENGLISH = 1,	
ENGLISH READING PRACTICE			
10.1, 10.2, 10.4	Teacher carries out reading practice appropriately	Must have, at a minimum, a 1 for 10.1 and a 1 for 10.2 or 10.4 on ENGLISH READING PRACTICE	
AVAILABILITY OF ENGLISH TEACHER MATERIALS			
6.1, 6.4	Teacher has P3 Teacher's Guide and the English syllabus	Must have minimum score of 1 for 6.1 and 1 for 6.4 on TEACHER MATERIALS = 1	
AVAILABILITY OF ENGLISH PUPIL MATERIALS			
7.1, 17.2	School met decision rule for availability of English pupil (7.1/17.2)X100 = _____%	There are sufficient English readers for at least 50% of registered pupils = 12	

USE OF ENGLISH TEACHER MATERIALS			
15.1, 15.3	Teacher uses the P3 Teacher's Guide, or the English syllabus	Must have minimum score of 1 for 15.1 or 1 on 15.3 on TEACHER MATERIALS USE = 1	
STUDENT ENGAGEMENT:AKUAPEM			
14.1	Majority of pupils actively engaged in listed reading activities	Must have minimum score of 1 on STUDENT ENGAGEMENT = 1	
TIME ON TASK: AKUAPEM			
12.3, 8.3, 8.4	Did the Akuapem reading lesson last at least 30 minutes and did the teacher cover an appropriate unit for this time of the school year FORMULA Week of March 11 = 25th week in school year. 25 ÷41 weeks in school year = 0.61 24 units x 0.61 = 14.63 = unit 15	Must have a score of 1 for 12.3. See 8.3 for the total number of units or chapters in P3 English Reader. The total number of chapters should be 11. During the week of March 11 the classes should be using unit 15 at least. If 12.3=1 and unit being taught is 15 or more then TIME ON TASK AKUAPEM = 1,	
AKUAPEM READING PRACTICE			
13.1,13 .2, 13.4	Teacher carries out reading practice appropriately	Must have, at a minimum, a 1 for 13.1 and a 1 for 13.2 or 13.4 on READING PRACTICE ENGLISH	
AVAILABILITY OF AKUAPEM TEACHER MATERIALS			
6.1, 6.3	Teacher has P3 Teacher's Guide and the Akuapem syllabus	Must have minimum score of 1 for 6.1 and for 6.3 on TEACHER MATERIALS = 1	
USE OF AKUAPEM TEACHER MATERIALS			
15.1, 15.2	Teacher uses the P3 Teacher's Guide, or the Akuapem syllabus	Must have minimum score of 1 for 15.1 or 1 on 15.2 on TEACHER MATERIALS USE = 1	
AVAILABILITY OF AKUAPEM PUPIL MATERIALS			
8.1, 17.2	% of students having access to an AKUAPEM READER $(8.1/17.2) \times 100 = \underline{\quad\quad} \%$	There are sufficient Akuapem readers for a at least 50% of pupils = 1	
TEACHER PREPAREDNESS			
6.2, 16.1	Teacher has and uses a summary lesson plan in the reading lesson	Must have minimum score of 1 on 6.2 and 1 on 16.1 on TEACHER PREPAREDNESS = 1	
TEACHER KNOWLEDGE: ENGLISH			
18.1, 18.7	Teacher demonstrates adequate English reading skills	Must have minimum score of 1 on 18.1 and 1 on 18.7 for TEACHER KNOWLEDGE: ENGLISH subsection = 1	
TEACHER KNOWLEDGE: AKUAPEM			
19.1, 19.7	Teacher demonstrates adequate Akuapem reading skills	Must have minimum score of 1 on 19.1 and 1 on 19.7 for TEACHER KNOWLEDGE: Akuapem subsection = 1	
	TOTAL SCORE		

**GHANA LQAS SURVEY
RESULT TABLE FOR STUDENTS AT A SINGLE SCHOOL**

REGION:		DISTRICT:				SCHOOL:															
INSPECTOR:		DATE OF ASSESSMENT:																			
RESPONSE KEY:		CORRECT=1		NOT CORRECT=0		SKIPPED=S		MISSING=X													
N ^o	Indicator	STUDENT NUMBER																TOTAL	MINIMUM ACHIEVEMENT	DECISION RULE	MET? (met=1 not met=0)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
ENGLISH STUDENT MATERIALS																					
Section 1: S1	Student has his/her English exercise book																		50%	6	
ENGLISH FEEDBACK																					
Section 1: S2	Teacher marks/comments on one or more of the last two exercises in the student's English reading comprehension exercise book																		50%	6	
AKUAPEM STUDENT MATERIALS																					
Section 1: S3	Student has his/her Akuapem Twi exercise book																		50%	6	
AKUAPEM FEEDBACK																					
Section 1: S4	Teacher marks/comments on one or more of the last two exercises in the student's Akuapem Twi reading																		50%	6	

GHANA LQAS SURVEY
RESULT TABLE FOR STUDENTS AT A SINGLE SCHOOL Page 2

RESPONSE KEY: **CORRECT=1** **NOT CORRECT=0** **SKIPPED=S** **MISSING=X**

N°	Indicator	STUDENT NUMBER																TOTAL	MINIMUM ACHIEVEMENT	DECISION RULE	DECISION RULE MET? (met=1 not met=0)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
ENGLISH STUDENT ASSESSMENT																					
sect 2	Student able to correctly read 4 or more letters																		50%	6	
sect 3	Student able to correctly read 4 or more familiar words																		50%	6	
sect 4	Student able to correctly read the 4 simple sentences with no more than 3 errors																		50%	6	
sect 5	Student able to read the reading passage in under 3 minutes and with no more than 10 errors																		50%	6	
sect 6	Student able to correctly answer 4 or more of the reading comprehension questions																		50%	6	

GHANA LQAS SURVEY

RESULT TABLE FOR STUDENTS AT A SINGLE SCHOOL

RESPONSE KEY: CORRECT=1 NOT CORRECT=0 SKIPPED=S MISSING=X

N°	Indicator	STUDENT NUMBER																TOTAL	MINIMUM ACHIEVEMENT	DECISION RULE	DECISION RULE MET? (met=1 not met=0)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
AKUAPEM TWI STUDENT ASSESSMENT SUMMARY																					
sect 7	Student able to correctly read 4 or more letters																		50%	6	
sect 8	Student able to correctly read 4 or more familiar words																		50%	6	
sect 9	Student able to correctly read the 4 simple sentences with no more than 3 errors																		50%	6	
sect 10	Student able to read the reading passage in under 3 minutes and with no more than 10 errors																		50%	6	
sect 11	Student able to correctly answer 4 or more of the reading comprehension questions																		50%	6	

GHANA LQAS SURVEY

		TEACHER ATTENDANCE																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
2.1, 2.2	School met decision rule for teacher attendance on the day of	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	1	0	1	80%	13	
STUDENT ATTENDANCE																							
17.1, 17.2	School met decision rule for student attendance rate in selected P3 class on the day of the visit.	1	1	0	1	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	80%	13	
STUDENT ENGAGEMENT: ENGLISH																							
11.1	School met decision rule for student engagement	1	1	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	80%	13	
TIME ON																							
9.3, 7.3, 7.4	School met decision rule for time on tasks. English reading lesson lasted at least 30 minutes and the teacher covered an appropriate unit for this time of the school year	1	0	0	1	X	X	1	1	0	0	1	x	1	0	1	0	0	1	1	80%	13	
READING																							
10.1,10.2, 10.4	School met decision rule for Teachers who carry out reading practice appropriately	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	0	1	1	80%	13	

GHANA LQAS SURVEY

AVAILABILITY ENGLISH TEACHER MATERIALS																						
6.1, 6.4	School met decision rule for availability of English teacher materials	0	1	0	0	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	80%	13
AVAILABILITY OF ENGLISH PUPIL MATERIALS																						
7.1, 17.2	School met decision rule for availability of English pupil readers	0	1	0	0	0	0	1	0	1	0	0	x	0	1	0	0	0	0	0	80%	13
USE OF ENGLISH TEACHER MATERIALS																						
15.1, 15.3	School met decision rule for use of English teacher materials	0	1	0	0	1	1	0	1	1	1	1	1	1	0	0	0	1	1	1	80%	13
STUDENT ENGAGEMENT:AKUPEM																						
14.1	School met decision rule for student engagement	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	80%	13
TIME ON																						
12.3, 8.3, 8.4	School met decision rule for time on tasks. Akuapem reading lesson lasted at least 30 minutes and the teacher cover an appropriate unit for this time of the school year	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	80%	13
AKUPEM READING PRACTICE																						
13.1,13.2, 13.4	Teacher carries out reading practice appropriately	1%	1		1	1	1	1	1	1	1	1	0	1	0	0	0	1	1	1	80%	13
AVAILABIL																						
6.1, 6.3	School met decision rule for availability of Akuapem teacher materials	0	1	0	0	1	0	1	0	1	1	0	0	1	0	0	0	0	1	0	80%	13
USE OF																						
15.1, 15.2	School met decision rule for use of Akuapem teacher materials	0	1	0	0	1	1	0	0	1	1	1	1	1	0	0	0	1	1	1	80%	13
AVAILABIL																						

GHANA LQAS SURVEY

8.1, 17.2	School met decision rule for availability of Akuapem pupil readers	1	1	0	0	1	1	0	0	1	1	1	1	0	0	0	0	0	1	0	80%	13	
TEACHER PREPAREDNESS																							
6.2, 16.1	School met decision rule for teacher preparedness (Teacher has summary lesson plan for today and follow the plan during the observed lesson)	1	1	0	0	1	1	1	1	0	1	1	0	1	0	1	0	1	1	0	80%	13	
TEACHER KNOWLEDGE: ENGLISH																							
18.1, 18.7	School's teacher met decision rule for adequate English reading skills	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	80%	13	
TEACHER KNOWLEDGE: AKUAPEM																							
19.1, 19.7	School's teacher met decision rule for adequate Akuapem reading skills	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	80%	13	

GHANA LQAS SURVEY

GO TO PUPIL ASSESSMENT SHEETS		###																			ACHIEVE- MENT	DECI- SION		
ENGLISH STUDENT MATERIALS																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			190	
Sect1: S1	School met decision rule for availability of English exercise book																					80%	13	
ENGLISH FEEDBACK																								
Sect1: S2	School met decision rule for Teacher marks/comments student's English exercise books																					80%	13	0
AKUAPEM TWI STUDENT MATERIALS																								
Sect1:S3	School met decision rule for availability of Akuapem Twi exercise book																					80%	13	0
AKUAPEM TWI FEEDBACK																								
Sect1: S4	School met decision rule for Teacher marks/comments student's Akuapem Twi exercise books																					80%	13	0
ENGLISH																								
section 2	School met decision rule for student performance on letter recognition																					80%	13	0
section 3	School met decision rule for student performance on familiar word recognition																					80%	13	0

**GHANA LQAS SURVEY
RESULT TABLE FOR A SINGLE TEACHER/SCHOOL SURVEY**

REGION:		DISTRICT:	SCHOOL:
INSPECTOR:		TEACHER CLASSROOM #:	DATE OF ASSESSMENT:
RESPONSE KEY:		CORRECT=1 NOT CORRECT=0 SKIPPED=S MISSING=X	
N°	Indicator	Code for a Correct / Appropriate Response or Observation	SCORE (Correct=1 Not Correct=0)
TEACHER ATTENDANCE			
2.1, 2.2	% of Teachers employed by the school who are present on the day of the survey. (2.1/2.2)X100 = _____%	90% or more of teachers must be observed present at start of the school day = 1	
STUDENT ATTENDANCE			
17.1,17.2	% of registered students in selected P3 class (17.1/17.2)X100 = _____%	90% or more of students must be observed present on the day of the school visit = 1	
STUDENT ENGAGEMENT: ENGLISH			
11.1	Majority of pupils actively engaged in listed reading activities	Must have minimum score of 1 on STUDENT ENGAGEMENT ENGLISH = 1	
TIME ON TASK: ENGLISH			
9.3, 8.3, 8.4	Did the English reading lesson last at least 30 minutes and did the teacher cover an appropriate unit for this time of the school year?	Must have a score of 1 for 9.3 on TIME ON TASK ENGLISH = 1 , THIS INDICATOR MAY BE ADJUSTED AFTER WE LOOK AT THE DATA AND KNOW BETTER HOW TO SCORE 8.3 AND 8.4	
ENGLISH READING PRACTICE			
10.1,10.2, 10.4	Teacher carries out reading practice appropriately	Must have, at a minimum, a 1 for 10.1 and a 1 for 10.2 or 10.4 on ENGLISH READING PRACTICE = 1	
AVAILABILITY OF ENGLISH TEACHER MATERIALS			
6.1, 6.4	Teacher has P3 Teacher's Guide and the English syllabus	Must have minimum score of 1 for 6.1 or 1 for 6.4 on TEACHER MATERIALS = 1	
AVAILABILITY OF ENGLISH PUPIL MATERIALS			
7.1, 17.1	School met decision rule for availability of Akuapem pupil readers		
USE OF ENGLISH TEACHER MATERIALS			
15.1, 15.3	Teacher uses the P3 Teacher's Guide, and the English syllabus	Must have minimum score of 1 for 15.1 or 1 on 15.3 on TEACHER MATERIALS USE = 1	
STUDENT ENGAGEMENT: AKUAPEM			
14.1	Majority of pupils actively engaged in listed reading activities	Must have minimum score of 1 on STUDENT ENGAGEMENT = 1	
TIME ON TASK: AKUAPEM			
12.3	Did the Akuapem reading lesson last at least 30 minutes	Must have a score of 1 for 12.3 on TIME ON TASK AKUAPEM = 1	
AKUAPEM READING PRACTICE			
13.1,13.2, 13.4	Teacher carries out reading practice appropriately	Must have, at a minimum, a 1 for 13.1 and a 1 for 13.2 or 13.4 on READING PRACTICE ENGLISH = 1	
AVAILABILITY OF AKUAPEM TEACHER MATERIALS			
6.1, 6.3	Teacher has P3 Teacher's Guide and the Akuapem syllabus	Must have minimum score of 1 for 6.1 or 1 for 6.3 on TEACHER MATERIALS = 1	
USE OF AKUAPEM TEACHER MATERIALS			
15.1, 15.2	Teacher uses the P3 Teacher's Guide, and the Akuapem syllabus	Must have minimum score of 1 for 15.1 or 1 on 15.2 on TEACHER MATERIALS USE = 1	
AVAILABILITY OF AKUAPEM PUPIL MATERIALS			
8.1, 17.1	% of students having access to an AKUAPEM READER (7.1/17.1)X100 = _____%	There are sufficient readers for 50% of pupils = 1	
TEACHER PREPAREDNESS			
6.2, 16.1	Teacher has and uses a summary lesson plan in the reading lesson	Must have minimum score of 2 on TEACHER PREPAREDNESS = 1	
TEACHER KNOWLEDGE: ENGLISH			
18.1, 18.7	Teacher demonstrates adequate English reading skills	Must have minimum score of of 1 on 18.1 and 1 on 18.7 for TEACHER KNOWLEDGE: ENGLISH subsection = 1	
TEACHER KNOWLEDGE: AKUAPEM			
19.1, 19.7	Teacher demonstrates adequate Akuapem reading skills	Must have minimum score of of 1 on 19.1 and 1 on 19.7 for TEACHER KNOWLEDGE: Akuapem subsection = 1	

**GHANA LQAS SURVEY
RESULT TABLE FOR STUDENTS AT A SINGLE SCHOOL**

REGION:		DISTRICT:					SCHOOL:														
INSPECTOR:		TEACHER OR CLASSROOM #:					DATE OF ASSESSMENT:														
RESPONSE KEY:		CORRECT=1	NOT CORRECT=0	SKIPPED=S	MISSING=X																
N°	Indicator	STUDENT NUMBER																TOTAL	MINIMUM ACHIEVEMENT	DECISION RULE	MET? (met=1 not met=0)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
ENGLISH STUDENT MATERIALS - ADD IN A SECTION NUMBER																					
Section 1: S2	Student has his/her English exercise book																		50%	6	
ENGLISH FEEDBACK																					
Section 1: S2	Teacher marks/comments on one or more of the last two exercises in the student's English reading comprehension exercise book																		50%	6	
AKUAPEM STUDENT MATERIALS																					
Section 1: S3	Student has his/her Akuapem Twi exercise book																		50%	6	
AKUAPEM FEEDBACK																					
Section 1: S4	Teacher marks/comments on one or more of the last two exercises in the student's Akuapem Twi reading comprehension exercise																		50%	6	

GHANA LQAS SURVEY

RESULT TABLE FOR STUDENTS AT A SINGLE SCHOOL

REGION: _____ DISTRICT: _____ SCHOOL: _____

INSPECTOR: _____ TEACHER OR CLASSROOM #: _____ DATE OF ASSESSMENT: _____

RESPONSE KEY: CORRECT=1 NOT CORRECT=0 SKIPPED=S MISSING=X

N ^o	Indicator	STUDENT NUMBER																TOTAL	MINIMUM ACHIEVEMENT	DECISION RULE	DECISION RULE MET? (met=1 not met=0)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				

ENGLISH STUDENT ASSESSMENT

section 2	Student able to correctly read 4 or more letters																				50%	6	
section 3	Student able to correctly read 4 or more familiar words																				50%	6	
section 4	Student able to correctly read the 4 simple sentences with no more than 3 errors																				50%	6	
section 5	Student able to read the reading passage in under 3 minutes and with no more than 10 errors																				50%	6	
section 6	Student able to correctly answer 4 or more of the reading comprehension questions																				50%	6	

AKUAPEM TWI STUDENT ASSESSMENT SUMMARY

section 7	Student able to correctly read 4 or more letters																				50%	6	
section 8	Student able to correctly read 4 or more familiar words																				50%	6	
section 9	Student able to correctly read the 4 simple sentences with no more than 3 errors																				50%	6	
section 10	Student able to read the reading passage in under 3 minutes and with no more than 10 errors																				50%	6	
section 11	Student able to correctly answer 4 or more of the reading comprehension questions																				50%	6	

Appendix B6: Hand-Tabulation Worksheets – All District

GHANA LQAS SURVEY

GHANA LQAS SURVEY

SUMMARY TABLE FOR TEACHERS AND STUDENT ASSESSMENTS IN A SINGLE DISTRICT

REGION:

DISTRICT:

INSPECTOR:

DATE OF ASSESSMENT:

RESPONSE KEY: CORRECT=1 NOT CORRECT=0 SKIPPED=S MISSING=X

Question	TEACHER ATTENDANCE	Schools Sampled in the Pilot District																			ACHIEVE-MENT TARGET	DECI-SION RULE	DR Met
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
2.1, 2.2	School met decision rule for teacher attendance on the day of the survey.																						
	STUDENT ATTENDANCE																						
17.1, 17.2	School met decision rule for student attendance rate in selected P3 class on the day of the visit.																						
	STUDENT ENGAGEMENT: ENGLISH																						
11.1	School met decision rule for student engagement																						
	TIME ON TASK: ENGLISH																						
9.3, 8.3, 8.4	School met decision rule for time on tasks. English reading lesson lasted at least 30 minutes and the teacher covered an appropriate unit for this time of the school year																						
	READING PRACTICE: ENGLISH																						
10.1,10.2, 10.4	School met decision rule for Teachers who carry out reading practice appropriately																						

AVAILABILITY ENGLISH TEACHER MATERIALS																
6.1, 6.4	School met decision rule for availability of English teacher materials															
AVAILABILITY OF ENGLISH PUPIL																
7.1, 17.1	School met decision rule for availability of Akuapem pupil readers															
USE ENGLISH TEACHER MATERIALS																
15.1, 15.3	School met decision rule for use of English teacher materials															
STUDENT ENGAGEMENT:AKUPEM																
14.1	School met decision rule for student engagement															
TIME ON TASK: AKUPEM																
12.3	School met decision rule for time on tasks. Akuapem reading lesson lasted at least 30 minutes and the teacher cover an appropriate unit for this time of the school year															
AKUPEM READING PRACTICE																
13.1,13.2, 13.4	Teacher carries out reading practice appropriately															
AVAILABILITY AKUPEM TEACHER MATERIALS																
6.1, 6.3	School met decision rule for availability of Akuapem teacher materials															
AVAILABILITY OF AKUPEM PUPIL MATERIALS																

GO TO PUPIL ASSESSMENT SHEETS																				ACHIEVE-MENT TARGET	DECI-SION RULE	DR Met		
ENGLISH STUDENT MATERIALS																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				
Sect1: S1	School met decision rule for availability of English exercise book																							
ENGLISH FEEDBACK																								
Sect1: S2	School met decision rule for Teacher marks/comments student's English exercise books																							
AKUAPEM STUDENT MATERIALS																								
Sect1:S3	School met decision rule for availability of Akuapem Twi exercise book																							
AKUAPEM FEEDBACK																								
Sect1: S4	School met decision rule for Teacher marks/comments student's Akuapem Twi exercise books																							

GHANA LQAS SURVEY

ENGLISH STUDENT ASSESSMENT																	
section 2	School met decision rule for student performance on letter recognition																
section 3	School met decision rule for student performance on familiar word recognition																
section 4	School met decision rule for student performance on simple sentences																
section 5	School met decision rule for student performance on reading passage																
section 6	School met decision rule for student performance on reading comprehension																
AKUAPEM TWI STUDENT ASSESSMENT SUMMARY																	
section 7	School met decision rule for student performance on letter recognition																
section 8	School met decision rule for student performance on familiar word recognition																
section 9	School met decision rule for student performance on simple sentences																
section 10	School met decision rule for student performance on reading passage																
section 11	School met decision rule for student performance on reading comprehension																

Appendix C: Determining the Sample Sizes and Decision Rules for Students and Schools

Determine Size of Student Sample

This section of the appendix explains the process we used for selecting the number of students (16, plus 2 reserve students) for the Ghana early education LQAS study. Because this was the first pilot study of its kind, limited data were available to assist us with the necessary inputs needed to derive the sample sizes. Therefore, now that the initial pilot data have been collected and a more concrete definition of a “literate student” and a “low literacy” school have been established, the question of sample size should be revisited using the strategy described below, but with updated estimates.

Step 0: Recall the objectives.

First, recall that the main goal of the LQAS study was to determine which schools were in the most urgent need of help or intervention. Ideally, we wanted to be able to flag these schools so that help could be provided right away. Since literacy is an integral part of a quality education, the LQAS task force decided to use the school’s grade 3 literacy rate to determine if a school was in urgent need of help. Any school with a low literacy rate (schools performing far below expectation), for grade 3 pupils, would qualify as being in urgent need of help or intervention.

Step1: Define “low literacy rate.”

Our first step was to quantitatively define “low literacy rate.” For instance, if only 2% of the grade 3 pupils in a school could read, should that school be considered low literacy? What about a school that had only a 20%, 50%, or 75% literacy rate? Where would the line be drawn to say that any school where less than X% of the grade 3 pupils could read would be considered a low-literacy school (and therefore be flagged to receive the intervention)?

It was important that this cut-point be chosen wisely because we were trying to determine the schools in most urgent need. We did not want to set the bar too high. For instance, if we were to say “*Any school where less than 90% of the grade 3 pupils can read will be considered a ‘low literacy school,’*” than we would end up classifying nearly all schools as low-literacy schools and flagging nearly all of them as “most urgent need.” This would have been neither practical nor useful, since our priority was to identify the worst performing schools.

If, however, we were to say that any school where less than 20% of the grade 3 pupils could read would be considered a low-literacy school, then we would be flagging the schools most in need. For the pilot, we believed that about 45% of all schools in Ghana would be classified as low literacy. In essence, we would be flagging the bottom 45% of schools nationwide for urgent intervention. The conclusion that we reached for this definition was as follows:

Conclusion 1: Define schools with “low literacy rate” as any school where 20% or fewer of the students can read. Therefore set our lower threshold of low literacy to 20% or (0.20).

Step 2: Determine our upper threshold for school literacy.

Step 1 defined our low level of literacy as schools where less than 20% of the students could read (i.e., 80% of the students could not read). Next, we needed to determine an upper threshold for school literacy rate, where a school should be seen as having a low level of literacy and needing assistance, but the literacy rate was **not so low as to require urgent help**. We determined that this proportion should be about 30 percentage points more than the “most urgent” literacy rate (i.e., 20%). Therefore we set the upper threshold at 50%:

Conclusion 2: Set the upper threshold of the literacy rate to 30 percentage points more than the low literacy (“most urgent”) rate—that is, 50% (or 0.5).

Step 3: Determine to sample students or take a census.

After we decided to use 20% as our cut-point to define a low-literacy school, we needed to determine how we would correctly conclude whether a school was truly low literacy. The only way to be absolutely sure that a school was correctly classified would have been to test all the students. This method would have been problematic, however, if a school had many grade 3 pupils, because it would have been very time consuming and costly, and would have taken away from the assessors’ ability to evaluate more than one school. Also, we did not need to test all students to get an idea of the school’s literacy rate. Rather, we could take a sample of students—unless the school’s grade 3 enrollment was very small (16 or less). The corresponding conclusion was as follows:

Conclusion 3: If the school has a very small enrollment of grade 3 pupils, take a census of all the students. If there are many students, randomly sample students.

Step 4: Determine an acceptable level of “certainty” in correctly classifying a school.

When we randomly sample students in a school, there will be some level of uncertainty that we incorrectly classified the school as we are sampling and not testing every single student. As we are sampling, there are two errors we can make. First, the school might have a low literacy level but we incorrectly conclude it does not; this would be a problem because interventions would not be provided to those who truly needed them. Second, the school might *not* have a low literacy level but we conclude that it does; this would be a problem because the funds and resources would be allocated to a school that does not need them. **Table C-1** shows the four possible outcomes when we sample students from a school.

Table C-1: Possible conclusions about classifying schools when we sample students

	School <u>truly</u> is at low literacy	School <u>truly</u> is not low literacy
Conclude school is low literacy (by sampling students)	Correctly conclude a school is low literacy (1 – beta) [Properly intervene]	Error 2: (beta, or β) [Producer risk] Incorrectly conclude a school is low literacy when in fact it is not [Intervene when we should not]
Conclude school is not low literacy (by sampling students)	Error 1: (alpha, or α) [Consumer risk] Incorrectly conclude a school is not low literacy when in fact it is low literacy. [Should intervene but do not]	Correct conclude school is not low literacy (1 – alpha) [Properly do not intervene]

Our challenge was to determine *What was a tolerable proportion of error we would be willing to accept in misclassifying a school?* We used the Greek letter, alpha (α), to indicate the risk of misclassifying a school as not low literacy when in fact it was; this is also known as “consumer risk.” We used the Greek letter beta (β) (also known as “producer risk”) to indicate the risk of misclassifying a school as low literacy when in fact it was not. Setting alpha and beta was not too difficult in this case because we could follow previous survey research projects’ decisions of tolerable error rates. Many sample surveys set the maximum tolerable error rates below 10%.¹⁵ Thus, if we were to follow suit, we would want to make sure that all schools that were truly low literacy were correctly classified as such more than 90% of the time, and that truly not-low-literacy schools were correctly classified more than 90% of the time.

The terms *consumer risk* and *producer risk* are often used in public health and industrial classifications to refer to these errors. In this instance, consumer risk meant the risk that the students would be left exposed to a low-literacy school rather than the school being flagged as needing an intervention. Producer risk meant that the government would intervene with resources to reform a school where reform was not needed, and thus use resources inefficiently. The next conclusion we reached set the maximum tolerances for error:

¹⁵ The Food and Nutritional Technical Assistance (FANTA) project is an LQAS-based study used to evaluate several nutritional and health indicators. The project uses 10% (or 0.1) as the maximum tolerable alpha and beta errors. See the FANTA project Layers Manual (page 23): <http://www.fantaproject.org/layers/Layers%20Manual.pdf>.

Conclusion 4: Set our maximum tolerable alpha and beta errors to 10% (or 0.1 proportions).

Step 5: Determine our population size: Number of grade 3 pupils in each school.

According to the 2011 EMIS data, the maximum number of pupils in grade 3 among all schools at the time of the pilot was 326. Since we wanted to be sure that our sample would accommodate the largest of schools, we used $N = 326$ as our population size of class 3 pupils in a school:

Conclusion 5: Use 326 as our maximum population size of grade 3 pupils in a school.

Step 6: Plug the numbers we derived in Steps 1–5 into the sample-size equations and determine our sample size and decision rule.

The following two equations¹⁶ were used to derive the sample size.

$$n_* = \left(\frac{Z_{1-\alpha}\sqrt{p_0(1-p_0)} + Z_{1-\beta}\sqrt{p_a(1-p_a)}}{p_0 - p_a} \right)^2 \quad (1)$$

$$n = \frac{n_* \cdot N}{n_* + (N-1)} \quad (2)$$

where:

n = Final sample size, accounting for the population size (FPC, or finite population correction)

n_* = Initial sample size, not accounting for the population size (FPC, or finite population correction)

p_0 = The lower threshold cut-point for low literacy
 $p_0 = 0.2$ (or 20% of students who can read in a school)

p_a = The upper threshold cut-point for low literacy
 $p_a = 0.5$ (or 50% of students who can read in a school)

$Z_{1-\alpha}$ = The Z-value of a normal distribution that indicates our maximum tolerable alpha error
 $Z_{1-\alpha} = 1.29$ for the alpha level of 0.1

$Z_{1-\beta}$ = The Z-value of a normal distribution that indicates our maximum tolerable beta error
 $Z_{1-\beta} = 1.29$ for the beta level of 0.1

N = The population size from which to draw the sample.
 $N = 326$ pupils/school

Plugging these numbers into the equations above resulted in a sample size of 16 students per school. For each school, we agreed to sample two extra students to fill in for any selected student if that student was unable to be assessed for some reason. Therefore, we concluded the need to sample a total of 18 students in each school and to assess the first 16 students.

¹⁶ Equation (1): One sample Chi-square (normal approximation). Power or sample size is computed using the normal approximation to the binomial; see Dixon, W. J., & Massey, F. J. (1983). *Introduction to statistical analysis* (4th ed.). New York: McGraw-Hill.

Equation (2): Adjusting for the finite population correction (FPC) when the sample is a significant proportion of the full population.

The Food and Nutritional Technical Assistance (FANTA) project—which is also testing LQAS—has a very helpful website that allows users to enter numbers to determine the sample size and the decision rule. *Figure C-1* shows our input numbers, final sample size, and decision rule. It confirmed that given the numbers explained in Steps 1–5, we should sample 16 (and 2 reserve) students in each school.

Figure C-1: Online sample size and decision rule calculator to determine the number of students to sample in each school

(Source: FANTA project: http://www.fantaproject.org/calculators/samplesize_calculator.shtml)

Population size: <input type="text" value="326"/>	Sample size: <input type="text" value="16"/>	Decision rule: <input type="text" value="6"/>
Upper threshold: <input type="text" value="0.5"/>	Maximum tolerable α error: <input type="text" value="0.1"/>	Actual α error: <input type="text" value="0.0993"/>
Lower threshold: <input type="text" value="0.20"/>	Maximum tolerable β error: <input type="text" value="0.1"/>	Actual β error: <input type="text" value="0.0765"/>

Thus, we agreed to assess 16 students and to conclude that a school was low-literacy **if 5 or fewer** of the 16 students were able to read:

Conclusion 6 (Final Conclusion): We will sample 16 (and 2 reserve) students in each school. We will assess 16 students and conclude a school is low literacy level if 5 or fewer of the 16 students are able to read.

Determine Size of District School Sample

This section of the appendix explains how the number of 19 schools in each district was derived for the Ghana early education LQAS study. For schools, we used the same six steps as were employed to determine the student sample size, with the following exceptions:

- We did not use replacement schools like we did for the students.
- Our upper and lower thresholds were not the same.
- Our total number of schools per district was different from our total number of grade 3 pupils in the school.

Now that the initial pilot data have been collected, and a more concrete definition can be established for a low-literacy student and a low literacy school, the question of sample size should be revised using the strategy described below but with updated estimates.

Step 1: Define low literacy rate.

As mentioned in Step 1 of the student sample size, about 45% of schools were expected to be classified as low literacy. Therefore we agreed to define a district as low literacy if 45% or greater of schools in that district were classified as low literacy:

Conclusion 1: Define districts with low literacy rate as any district where 45% or greater of the schools are classified as low literacy.

Step 2: Determine our upper threshold for judging district literacy.

As mentioned in Step 2 of the student sample size, it was deemed suitable to use 30 percentage points more than the “most urgent” rate (45%). We used an upper threshold of 75%:

Conclusion 2: Set the upper threshold of the school low literacy rate to 30 percentage points more than the low-literacy rate, or 75% (or 0.75).

Step 3: Determine to sample schools or take a census.

Ideally assessors will eventually take a census of all schools in the districts. For the pilot study, however, we needed to take a sample of schools:

Conclusion 3: Sample schools in a district.

Step 4: Determine an acceptable level of certainty in correctly classifying a school.

We adopted the commonly used 10% (or 0.1) for our alpha and beta:

Conclusion 4: Set our maximum tolerable alpha and beta errors to 10% (or 0.1 proportions).

Step 5: Determine our population size: number of schools in each district.

Based on EMIS 2011 data, the Accra Metropolitan District had the most schools, at 310, so this was the figure we selected for our maximum school population:

Conclusion 5: Use 310 as our maximum population size of grade schools in a district.

Step 6: Plug the numbers we derived in Steps 1–5 into the sample size equations and determine our sample size and decision rule.

Figure C-2 shows the confirmation from the FANTA online calculator for the numbers we derived in the previous steps.

Figure C-2: Online sample size and decision rule calculator to determine the number of schools to sample in each district

(Source: FANTA project: http://www.fantaproject.org/calculators/samplesize_calculator.shtml)

Population size:	<input type="text" value="310"/>	Sample size:	<input type="text" value="19"/>	Decision rule:	<input type="text" value="12"/>
Upper threshold:	<input type="text" value="0.75"/>	Maximum tolerable α error:	<input type="text" value="0.1"/>	Actual α error:	<input type="text" value="0.0710"/>
Lower threshold:	<input type="text" value="0.45"/>	Maximum tolerable β error:	<input type="text" value="0.1"/>	Actual β error:	<input type="text" value="0.0804"/>

Thus, we agreed to sample 19 schools in each district and concluded that a district was low literacy if 12 or more schools were determined to be low literacy:

Conclusion 6 (Final Conclusion): We will sample 19 schools in each district and conclude that a district is at the low-literacy level if 12 or more of the 19 schools are labeled as low literacy.