Midterm Evaluation: Ghana Reads Programme
Midterm Evaluation of the Ghana Reads Programme

Eric Daniel Ananga
Vincent Adzahlie-Mensah
Gideon Mensah Anapey

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Executive Summary

In August 2013, Open Learning Exchange (OLE) Ghana contracted the National Centre for Research into Basic Education (NCRIBE), based at University of Education, Winneba to do a midterm evaluation of the Ghana Reads project in 3 schools in Ghana. The Ghana Reads programme is a pilot intervention funded by the All Children Reading (ACR) partnership, which comprises United States Agency for International Development (USAID), World Vision, and Australia Aid, and has been implemented on the field from January 2013 to date by Open Learning Exchange (OLE) Ghana. The ACR programme currently runs in 20 schools across 5 districts located in 2 regions in Ghana. It places heavy emphasis on the supply of technology-assisted materials that focus on improvement in the quality of reading instruction and student outcomes as measured by the Early Grade Reading Assessment (EGRA). Full intervention includes the provision of human (Coaching) and material resources.

The present assessment is a follow-up to the January 2013 baseline study. This midterm evaluation is important for gauging whether the Ghana Reads programme is on track and achieving its objectives. The purpose of this assessment was to examine the implementation of the programme. By comparing pupils’ EGRA scores at the time of the baseline study with their midterm achievements, it is assumed that any changes brought about by the intervention will be highlighted.

Quantitative and qualitative approaches were employed in this study. The analysis presented in this midterm evaluation suggests that the Ghana Reads programme is on track and achieving the desired outcomes.

The study has shown that the implementation of the Ghana Reads programme on the field since January 2013 is on track and has resulted in 13% increase in pupils’ literacy skills. In terms of material resources, the tablets supplied to schools were in good condition although some became faulty as a result of mishandling. All other equipment supplied to the schools are well kept. The study results suggest that teachers and pupils appear to be receiving the necessary support in the implementation of the programme.

The study found that equipment was being put to maximum use. However, a shortage of material resources meant that each pupil did not have access to his or her own tablet. Although some children appeared not to be benefiting from the programme owing to such
limited supply, pupils were making effective use of what was available to improve their literacy skills.

With regard to programme outcomes, the study found that pupils’ literacy skills had improved markedly as a result of the intervention. Specifically, pupils’ vocabularies had expanded; they were largely able to read independently; and their EGRA scores had risen significantly.

The findings of this study have some implications for the replication of the Ghana Reads programme in other schools as well as the increasing of support for the supply of equipment and facilities.

The study recommends the following:

- Future interventions should focus on combining instructional activities in reading skills with increased activities in vocabulary development.

- More equipment should be supplied as some children appeared not to be benefiting fully from the programme owing to such limited supply of equipment.

- The Ghana Reads project should be sustained as pupils in the case study schools showed improved literacy skills from the use of the equipment as well as from coaching of teachers and pupils in integrating the equipment in their teaching and learning.

- The Ghana Reads programme should also address the question of sustainability in replacing damaged materials and equipment.

- There is need for training for teachers and pupils on how to protect the equipment, especially tablets in order to avoid physical damages such as screen cracks.

- Future intervention should be expanded to other schools to enhance literacy and vocabulary improvement among a larger population of students in rural schools where literacy development is generally lower than urban endowed schools.
1 Introduction

The Ghana Reads programme is a pilot intervention funded by the All Children Reading (ACR) partnership, which comprises United States Agency for International Development (USAID), World Vision, and Australia Aid, and has been implemented on the field from January 2013 to date by Open Learning Exchange (OLE) Ghana. This ACR programme is currently running in 20 schools across 5 districts located in 2 regions. It places heavy emphasis on the supply of technology-assisted materials that focus on improvement in the quality of reading instruction and student outcomes as measured by the Early Grade Reading Assessment (EGRA). Full intervention includes the provision of human and material resources as follows:

- Support from a trained and dedicated instructional coach
- Intensive hands-on training of teachers in emerging pedagogy related to literacy in particular and appropriate delivery of lesson plans
- Supply of a digital library of open education resources to support teaching of literacy skills
- Supply of equipment and facilities to teachers and pupils to enhance teaching and learning

The quantitative analysis presented in this midterm evaluation suggests that the Ghana Reads programme is on track and achieving the desired outcomes. However, there are weaknesses in this type of quantitative analysis: while it can provide convincing evidence as to whether or not a programme is successful, the key questions of how and why it is effective remain unanswered. Therefore, additional qualitative data were gathered to answer questions that focused on the antecedent conditions, transactions, and outcomes of the programme – the ATO model of assessment.

The present assessment is a follow-up to the January 2013 baseline study. A midterm evaluation is important for gauging whether the Ghana Reads programme is on track and achieving its objectives. Therefore, the purpose of this assessment was to examine the implementation of the programme. By comparing pupils’ EGRA scores at the time of the
baseline study with their midterm achievements, it is assumed that any changes brought about by the intervention will be highlighted. In order to achieve the aims of the study, the following activities were undertaken:

1. A survey of the views of school heads, teachers and pupil on antecedent conditions, transactions, and outcomes related to the Ghana Reads programme.

2. An assessment of whether there were significant differences in pupil performance in EGRA before and after the intervention.

1.1 Research Questions

The research questions designed to meet the qualitative element of the study have been divided into three parts. Part 1 assessed specific antecedent conditions prior to the intervention; part 2 focused on transactions; and part 3 assessed the outcomes of the intervention. The questions that drove the qualitative research were thus:

- What are the perceptions of stakeholders (school heads, teachers, pupils, and implementers) on the antecedent conditions prior to the programme?
- What are the perceptions of stakeholders (school heads, teachers, pupils, and implementers) on the transactions of the programme?
- What are the perceptions of stakeholders (school heads, teachers, pupils and implementers) on the outcomes of the programme?
- How does pupil performance in EGRA compare in the baseline test and midterm evaluation respectively?
- How do the perceptions of stakeholders (school heads, teachers, pupils, and implementers) on antecedent conditions, transactions, and outcomes of the programme compare with EGRA results?

1.2 Hypotheses

Participants’ knowledge and skills were assessed by testing the following hypotheses:

1. Pupils’ EGRA scores will be significantly higher after the intervention.

2. Pupils’ vocabulary skills will be significantly improved after the intervention.
3. Pupils’ letter sound knowledge will be significantly better after the intervention.
4. Pupils’ familiar word reading will be significantly improved after the intervention.
5. Pupils’ unfamiliar non-word decoding will be significantly better after the intervention.
6. Pupils’ oral passage reading will be significantly improved after the intervention.
7. Pupils’ reading comprehension will be significantly better after the intervention.
8. There will be a significant correlation between pupils’ vocabulary skills and letter sound knowledge.
9. There will be a significant correlation between pupils’ familiar word reading and vocabulary skills.
10. There will be a significant correlation between pupils’ oral passage reading and vocabulary skills.
11. There will be a significant correlation between pupils’ familiar word reading and reading comprehension.
12. There will be a significant gender difference in pupils’ performance in the midterm evaluation.
13. There will be a significant difference between urban and rural pupils’ performance in the midterm evaluation.

2 Research Design

The EGRA test was administered orally to individual pupils and took about 15 minutes to complete. In this study, the EGRA test was combined with interviews designed to gauge a variety of antecedent, transactional and outcome variables aimed at identifying the degree to which they were consistently correlated with performance. The tools for the Ghana Reads midterm EGRA in December 2013 were based on those developed for the baseline study in January 2013. These in turn was derived from the EGRA developed by RTI International with support from USAID. They had been reviewed by the Assessment Unit, and the English Language Unit of the Curriculum, Research and Development Division of the Ghana Education Service (GES). This process ensured that materials were valid and reliable in the Ghanaian context.
Table 1 Sample

<table>
<thead>
<tr>
<th>School Name</th>
<th>P1 (No of Pupils)</th>
<th>P1 (Pupils sampled for midterm evaluation)</th>
<th>Percentage of sampled size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maamobi Prison Schools (Primary A and B)</td>
<td>20</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>13</td>
<td>59.1</td>
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<tr>
<td></td>
<td>53</td>
<td>18</td>
<td>34.0</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>20</td>
<td>37.7</td>
</tr>
<tr>
<td>Sacred Heart Primary School</td>
<td>10</td>
<td>9</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>8</td>
<td>23.5</td>
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<td>15</td>
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</tr>
<tr>
<td></td>
<td>42</td>
<td>10</td>
<td>23.8</td>
</tr>
<tr>
<td>Akuakrom Methodist Primary School</td>
<td>13</td>
<td>6</td>
<td>46.2</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>6</td>
<td>60</td>
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<td></td>
<td>14</td>
<td>6</td>
<td>42.9</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>6</td>
<td>50</td>
</tr>
</tbody>
</table>

The following lists the various sections of the EGRA used and what they test:

**Vocabulary**

Pupil to show parts of the body and objects in the environment, and demonstrate comprehension of spatial terms.

**Letter sound knowledge**

Pupil to sound as many letters of the alphabet as possible within 60 seconds.

**Familiar word reading**

Pupil to read as many familiar words as possible within 60 seconds.

**Unfamiliar non-word decoding**

Pupil to read as many made-up words as possible within 60 seconds.

**Oral passage reading**

Pupil to read a short story aloud, quickly but carefully within 60 seconds.

**Reading comprehension**

Pupil to answer questions about the story just read, allowing 15 seconds for each question.
3 Data Collection
Data were collected from all three sampled schools in December 2013. The EGRA test was administered by district education office staff in Ashanti (Sekyere East District) and Greater Accra (Ayawaso West Sub-Metro and Ga West Districts) regions. Staff from the National Centre for Research into Basic Education (NCRIBE) provided support in coordinating the exercise. Interviews with participants were also conducted by a team of researchers from NCRIBE. During data collection, teachers of grades 1 to 6 and the head teacher of each sampled school were interviewed. A total of 18 teachers and 3-6 head teachers thus participated in the study. The interviews, which comprised questions about antecedent conditions, transactions, and intervention outcomes, were used as part of the analysis of programme implementation performance (see appendix A for interview instruments and pupil assessment tools).

4 Results
The results presented here are divided into two sections: 1) qualitative analysis of findings regarding antecedent conditions, transactions and outcomes of the Ghana Reads programme; and 2) quantitative analysis of pupils’ EGRA scores. Pupils’ pre- and post-test EGRA scores are compared with the aim of highlighting the positive impact of the Ghana Reads intervention on pupils’ literacy performance.

The next section presents the qualitative analysis, which is grouped under three subsections: 1) interview data on antecedent conditions; 2) the views of pupils, teachers and head teachers on transactions; and 3) the outcomes of the intervention.

4.1 Introduction to Qualitative Analysis
The data presented in this section derive from interviews with head teachers, teachers and pupils from the three selected schools – Maamobi Prisons Schools, Sacred Heart Primary School, and Akuakrom Methodist Primary School).

4.1.1 Antecedents Conditions: Stakeholders’ Views on the Ghana Reads Programme
The study sought to explore antecedent conditions in order to determine the resources available to the programme, whether the necessary equipment had been supplied and was in
good working order, and the capacity of resource persons. The five subsections below present interview data from stakeholders that focus on the supply of facilities and equipment, the condition of equipment, storage of facilities and equipment, the capacity of teachers, and the literacy level of pupils prior to the intervention.

4.1.1.1 Supply of Facilities and Equipment
Stakeholders in the three participating schools were asked whether all the facilities and equipment necessary for the implementation of the programme had been supplied. All those interviewed confirmed that the material resources to support pupil learning had been made available. They mentioned laptops, tablet computers, projectors, cameras, headphones, wireless local area networks (Wi-Fi), secure digital (SD) cards, power regulators, servers, and amplified speakers.

The heads and assistant heads of two schools (Maamobi Prisons Schools and Sacred Heart Primary School respectively) reported that they have been supplied with the necessary facilities to enable them to implement the programme. They mentioned the following: “A projector, Pi server, camera, stabiliser, tablets and laptops” (School Head, Maamobi Prisons Schools). The heads’ views on the supply of items were corroborated by the teachers at the various schools. Interviews with pupils also indicated that equipment including tablets and accessories had been supplied to their schools. All pupils interviewed confirmed that they had received tablets installed with the necessary programmes. From the observation conducted by the study it was also noted that all schools had been provided with the necessary facilities. The equipment and facilities observed to be available in the schools included Wi-Fi, android tablets, Raspberry pi servers installed with the Bell operating system, power stabilisers, multipurpose digital cameras, projectors, printers and laptops.

4.1.1.2 Condition of Equipment and Facilities
The condition of equipment and facilities is vital to the success of the programme. It emerged from interviews that other than in some isolated cases, all items provided were original and remained in good working order. For example, when asked whether the equipment was in good condition when supplied, teachers from Akuakrom Methodist Primary and Sacred Heart Primary School affirmed that it was all in good condition when supplied.

However, there were cases in which some equipment was reported to be faulty: teachers in Maamobi Prisons Primary Schools indicated that some tablet screens had become cracked
due to mishandling. The head teacher commented, “...five of them have their screens cracked.” One female teacher from the same school also said, “...but some of the tablets have cracks on them.” Two others went further to comment on the working condition of the equipment, noting that, “...the items were supplied...but some are not working” (P3A¹, Maamobi Prisons Schools, female); and, “...but some tablets have problems” (P2A-LT, Maamobi Prisons Schools, female). It seemed that some of the equipments have also become dysfunctional as a result of mishandling by teachers.

Interestingly, the pupils did not report any problems with the materials. Apparently, only equipment that was in working order had been assigned to them, hence their perception that it was all in good condition. However, one admitted, “I have not gone through all the computers” (P6, Maamobi Prisons Schools, boy.). Another commented, “I have not check all, but the few I know is working” (P6, Sacred Heart, girl).

It may be concluded that, other than some cracked tablet screens at Maamobi, most were in good condition. Also apart from some equipments that have some problems all the equipment and facilities were in good working order. Thus in terms of supply of equipments for the Ghana Reads programmes, it is the opinion of the participating schools that there is not a significant problem that can impact effective implementation.

4.1.1.3 Storage of Facilities/Equipments

It is common knowledge that if equipment is stored in a secure place, its lifespan will be prolonged. The study therefore asked questions to find out whether there was a dedicated room for material resources in each school. In response to the question of location, it transpired that equipment was kept either in a storeroom, the head’s office, or a laboratory. Excerpts from interviews with school heads include the following: “It is kept in the ICT laboratory” (School head, Sacred Heart); and “It is kept in the storeroom in a trunk at the office” (School Head, Maamobi Prisons Schools). The views of teachers confirm these statements: “It is kept in a store room” (P3B-LT, Maamobi Prisons Schools, female); “It is kept in the headmistress’ office” (P5B-LT, Maamobi Prisons Schools, female); and “[It is] kept in a storeroom and headmistress’ office” (Akuakrom Methodist Primary School). We observed during the field visits in all the sampled schools that all three schools had storage

¹ P=Primary, 1-6 = Grades and  A or B = describes the two streams of the same grade in one school. P3A is Primary grade 3A
facilities (rooms) where the items were stored. These rooms were either the office of the head of the school or designated store rooms.

4.1.1.4 Capacity of Teachers

One of the key antecedent requirements of this programme is the capacity of teachers to implement the project. The study therefore sought to ascertain whether they were adequately trained or not. From head teachers’ perspectives, it appears that all their staff had been trained in the use of facilities and equipment. In response to the question: “Have any of the teachers in your school been trained in the use of facilities and equipment?” all three heads affirmed that their staff had been trained to provide pupils with the necessary support to improve their literacy skills. One head replied, “Yes, the coach does everything together with the lead teachers and ICT [information and communications technologies] teachers” (Head Teacher, Sacred Heart).

When the evaluation tool was used to ask school heads to rate the competency level of their teachers in helping pupils improve their literacy skills all the heads rated their teachers as either good or excellent. Teachers also reported that they had undergone training in the use of facilities and equipment. Additionally, three female teachers at Sacred Heart indicated that, through the coaching system, training was an on-going process and they looked forward to having received further training by the official end of the intervention at their school.

4.1.1.5 Computer Literacy of Pupils and Teachers Prior to the Intervention

Computer literacy levels of both teachers and pupils prior to the implementation of the intervention are key to the measurement of progress and change. The study therefore examined pupils’ pre-test scores (which were later compared with their post-test scores), and interviewed stakeholders on the computer literacy levels of pupils and teachers prior to the introduction of the programme. It is assumed that teachers and pupils will be able to integrate their prior computer literacy into the programme.

While some stakeholders believed that the computer literacy of pupils was vital and it was necessary to give them training to enable them to fully benefit from the programme, others thought that it was unnecessary. With regard to those who thought that pupil computer literacy prior to implementation was important, one head asserted, “Yes, they needed the skills because it will improve their reading and pronunciation skills very much and faster” (School Head, Maamobi Prisons Schools). Equally, some of the teachers’ views indicated that pupil
computer literacy was crucial. For example one affirmed, “Yes, it will enable the pupils to learn effectively” (P3-LT, Akuakrom Methodist Primary). Another commented, “It is necessary” (P6B-LT, Maamobi Prisons Schools, female).

On the other hand, some stakeholders thought that pupils did not need existing ICT skills to benefit from such a programme because they could learn as they gained familiarity with the equipment. In answer to the question of whether it was vital that pupils should be computer literate prior to the intervention, one head commented, “Not necessarily, because now the student can read” (School Head, Maamobi Prisons Schools). One teacher confirmed, “So far as they can manipulate their parents’ cell phones, I believe they can use it” (P6-LT, Sacred Heart, male). Another said, “I think they rarely need computer literacy skills” (P5-LT, Maamobi Prisons Schools, female).

It emerged from the interviews that in some grades of the urban schools under study, pupils’ computer literacy levels appeared to be quite high compared to their counterparts at school in rural settings. For example, responses from urban-based teachers include, “Quite a number of the pupils were computer literate before the introduction of the programme” (Teacher, Maamobi Prisons Schools, female), and, “About 20% had prior knowledge before the introduction of the programme” (Head Teacher, Maamobi Prisons Schools). Conversely, in the rural setting of Akuakrom Methodist Primary School, the head teacher indicated that pupils had no prior knowledge of computers before the introduction of the programme.

Views of teachers suggest that not all pupils in a given school had ICT competency. Although, clearly, some pupils in some grades had some level of computer literacy, there were instances in which no pupil had any ICT knowledge. Responses that reveal the computer literacy of some pupils in some grades include: “Some had prior knowledge” (Teacher, Maamobi Prisons Schools, female); and, “Just a few pupils, about 38%, were computer literate” (Teacher, Sacred Heart, male). Others estimated, “About 30% of the pupils in my class had prior knowledge before the introduction of the programme” (Teacher, Maamobi Prisons Schools, female); “About 20%” (Teacher, Maamobi Prisons Schools, female); and, “Ten were computer literate” (Teacher, Maamobi Prisons Schools, female). Therefore, in cases in which schools evidenced some ICT competency less than a quarter of all pupils may be considered to have been computer literate prior to the intervention.
In respect of those schools in which pupils were reported to have no computer literacy, some excerpts include, “None has any idea about computers” (Teacher, Maamobi Prisons Schools, female); “None of the pupils in my class was computer literate” (Teacher, Sacred Heart, female); and, finally, “None of the pupils” (Teacher, Akuakrom Methodist Primary School). It may therefore be concluded that the majority of pupils in such schools had virtually no computer literacy prior to the implementation of the programme.

The study also explored teachers’ backgrounds in terms of ICT. It emerged from the interviews that they were largely proficient, most head teachers affirming that their staff had been computer literate before the introduction of the programme, although a few claimed otherwise. Responses included: “Yes, with regards to the young teachers” (Head Teacher, Sacred Heart School); “A few of them were computer literate before its introduction (Head Teacher, Maamobi Prisons Schools); and, in the case of a school where some teachers lacked computer literacy, “Not really, it was only two of them were computer literate” (Head Teacher, Maamobi Prisons Schools).

There were divergent views on the need for ICT proficiency on the part of teachers in order to facilitate the programme. The majority of participants (see Figure 1) were of the opinion that being computer literate before getting involved in the programme could be of great help to them, a few thought otherwise. Comments from those who believed that it was important include: “Yes, that will make it easier for us regarding the use of the equipment and facilities” (P3B-LT, Maamobi Prisons Schools, female); and, “Yes, we need to be computer literate” (P2-LT, Maamobi Prisons Schools, female).

Figure 1Teachers’ perceptions of the need for computer literacy prior to the intervention
Figure 1 shows percentages of teachers by school that believed computer literacy prior to the implementation of the intervention was necessary or unnecessary respectively. Interestingly, some teachers from Sacred Heart and Maamobi Prisons Schools indicated that computer literacy was irrelevant. However, it may be concluded that being computer literate before getting involved in the programme was generally perceived to be more useful. One teacher summed this up thus: “So that they can train the children very well” (Maamobi Prisons Schools). It appears teachers thought that having prior ICT knowledge meant they could integrate these skills into their teaching on the programme.

4.1.2 Transaction: Stakeholders’ Views on the Ghana Reads Programme

The study also sought to explore whether the programme was being implemented in accordance with its transactions as planned; that is, whether the planned activities of the implementation team were being carried out as intended, and whether the pupils for whom the programme had been designed were participating as expected. The following subsections present interview excerpts that exemplify stakeholders’ views on programme transactions. These address the frequency of equipment use by pupils; support to teachers in the use of facilities and equipment; community support to schools; collaboration among pupils to improve literacy skills; and the effective use of equipment by pupils.

4.1.2.1 Frequency of Pupils’ Use of Equipment and Facilities

With regard to the use of equipment and facilities, most teachers indicated that they were used twice a week, while a few female teachers at Maamobi Prisons Schools said that it was once a week. The study explored the frequency with which pupils used equipment for literacy skills development in their schools. It emerged that most of them did so either once or twice a week. For example, one boy at Akuakrom Methodist Primary commented that, “We use the tablet on Thursdays and Fridays.” Some pupils indicated that access was less frequent, one male pupil at Maamobi Prisons Schools asserting that, “We use it once a week.” It appears that pupils had such limited access because equipment had to be shared between classes, and some teachers were also concerned about giving space to other aspects of English on the timetable that might not require the use of tablets.

4.1.2.2 Support to Teachers and Pupils in the Use of Equipment and Facilities

Provision of support to teachers and pupils in diverse ways will help in the achievement of programme objectives. The study therefore gathered data from stakeholders on support given to teachers and pupils.
According to the head teachers participating in the study, the necessary support was provided to teachers and pupils regarding the use of equipment and facilities. The type of support varied: heads facilitated access to equipment and offered guidance to teachers in the planning of lessons. The following are some relevant interview excerpts:

“I give them support by providing all the available materials for teaching and learning activities during the ICT lesson period” (Head Teacher, Maamobi Prisons Schools).

“I guide teachers in doing their lesson plan” (Head Teacher, Maamobi Prisons Schools).

“…advising and encouraging the teachers to use the facilities, and also directly involved in the writing of the newsletter” (Head Teacher, Sacred Heart).

“Motivating teachers and pupils and also making sure the facilities are always ready for users” (Head Teacher, Maamobi Prisons Schools).

Teachers at all three schools under study also mentioned that they received various kinds of support from their heads. For example, those at Sacred Heart were helped in lesson plan preparation, as one of their number asserted: “Yes, he does offer help where necessary” (Teacher, Sacred Heart, female). Teachers at Maamobi Prisons Schools noted that their head supported them through supervision, encouragement, and the provision of verbal motivation. At Akuakrom Methodist Primary school, the head teacher assisted their staff by making tablets available and ensuring that they were fully charged when required. All participating teachers received support from their head in one way or another.

Both head teachers and their staff also thought that the quality of support they received from programme coaches was very high.

The data indicate that pupils were also provided with the necessary support in the use equipment. For example some teachers asserted, “Yes, I believe I am supporting them” (P6-LT, Sacred Heart, male); “Yes, we teach them how to use the equipment and facilities, and assist them in using them during the programme” (P2-LT, Akuakrom Methodist Primary); and, “Yes, we use IT to teach them how to pronounce words” (P2-LT, Akuakrom Methodist Primary).

Pupils were interviewed to determine whether they believed that their teachers were giving them adequate support. All said that their teachers did provide them with the necessary
assistance in the use of equipment and facilities. For example, a boy at Akuakrom Methodist Primary asserted that teachers supported them “...because they teach us how to read stories from the tablet.” In another instance, a boy in Primary 6 from Akuakrom Methodist Primary cited “helping us to read stories and identification of words.” All pupils responded positively, confirming their teachers’ claims that they supported them.

The study also sought to determine whether school heads offered any support to pupils. In being asked the question: “Are pupils receiving any support from their head teacher to enable them to use the equipment and facilities, and improve their literacy skills?” most responses were in the affirmative. For example a boy and girl in Primary 4 at Sacred Heart commented on the regularity of their head teacher’s support. However, some pupils indicated that support was less frequent (P4A, Maamobi Prisons Schools, boy), and one claimed not to receive any support from her head teacher (P6A, Maamobi Prisons Schools, girl).

Next, pupils were asked whether they supported each other. In response, most asserted that they helped each other to improve their literacy skills. For example, one said, “Yes, through story discussion” (P6, Akuakrom Methodist Primary, girl).

4.1.2.3 Community Support to the School
In the interests of programme sustainability and ownership, the study sought to ascertain whether the community supported the intervention in any form. In this regard, we were unable to interview community members to establish their views. However, all head teachers of the study schools indicated that they received some kind of programme support from their respective communities. Heads’ comments suggest that such support was in the form of acceptance of the programme and the community’s willingness for its children to participate in it. Most teachers did not find any direct support from the community, but one lead teacher from Sacred Heart noted that, “Even though it is a poor community, parents have provided the school with reading books.”

4.1.2.4 Collaboration among Pupils to Improve Literacy Skills
Collaboration among pupils is considered to be vital in improving their literacy skills. Stakeholders were therefore interviewed to ascertain whether such co-operation occurred in the study schools. According to head teachers, their pupils did support each other. For example, one head commented, “Yes, through group work” (Head teacher, Maamobi Prisons Schools). With regard to the nature of the support pupils gave each other to help improve
their literacy skills, teachers also noted that pupils co-operated in one way or another. One teacher explained that, “Each person wants to have a feel of the tablets, so there is a competition and that helps the poor ones to learn from the good ones” (P6-LT, Sacred Heart, male). Another said; “Yes, they sit in groups during lessons and help each other” (P3B-LT, Maamobi Prisons Schools, female). Moreover, as pupils worked in groups, each had a leader who was sometimes referred to as a ‘teaching assistant’ and supported group members.

4.1.2.5 Pupils’ Effective Use of Equipment and Facilities to Improve Literacy Skills

Pupils’ effective use of material resources to facilitate the improvement of literacy skills is important. Interviews with school heads suggest that all pupils used ICT equipment to improve their literacy skills. The views of teachers corroborate this. For example one affirmed: “Yes, they are making good use of the facilities provided” (P2A, Maamobi Prisons Schools, female). Another responded: “Yes, because the pupils can now read and pronounce words better” (P2-LT, Akuakrom Methodist Primary, male). The views of some pupils also suggest that they were using the equipment and facilities to improve their literacy skills. When asked the question: “Are pupils able to use the facilities very well to improve their literacy skills?” most pupils replied in the affirmative. However, interestingly, one teacher indicated that it was “not all of them” (Teacher, Maamobi Prisons Schools, female), and a few pupils in Primary 4B at Maamobi Prisons Schools did not think that they were able to use the resources effectively. Some also said “sometimes” (P6, Maamobi Prisons Schools).

4.1.3 Outcomes: Changes Resulting from the Intervention

This section is divided into two subsections. The first presents the study’s findings on improvements in pupils’ skills, focusing on views on changes in literacy level, familiarity with words, pronunciation of difficult words, and ability to read independently. The second subsection offers a general assessment of the programme with regard to improvement of pupils’ literacy skills.

4.1.3.1 Improvements in Pupils’ Skills

Literacy level

A key component of the midterm evaluation is to examine whether there have been any improvements in pupils’ literacy skills resulting from the intervention. Interviews with head teachers suggest that pupils had improved their literacy skills. For example, one female head teacher said that, “Their speed in reading...pronunciation, Listening and typing has
improved” (Head Teacher, Maamobi Prisons Schools). The views of teachers on the extent of pupils’ literacy skills improvement also suggest that a positive change had occurred. In this regard, one teacher made the following comment: “I have realized that after laughing at their friends for speaking bad English, they try to correct them” (P6-LT, Sacred Heart, male). Others noted, “Yes, they are improving but not as fast as we expected” (P5B-LT, Maamobi Prisons Schools, female); and, “Yes, they can pronounce more words” (P2-LT, Akuakrom Methodist Primary, female). Two teachers from Maamobi Prisons Schools shared similar views: “They are improving but not as fast as we expected”, and “Some of them are doing very well.”

Interviews with pupils on the question of how equipment and facilities had helped in the improvement of their literacy skills also suggest that progress had been made. For example, some mentioned the ability “to type my name” (P4, Sacred Heart, boy); “to write a story” (P4, Sacred Heart, girl); and “to communicate with other people through the use of ICT, and also to watch movies” (P6A, Maamobi Prisons Schools, boy). Pupils at Akuakrom Methodist Primary gave similar responses, some noting that, “My reading has greatly improved” (P4, boy); “I can see that I can read more words now” (P4, girl); “It has helped me in words identification, reading stories, and playing educative games” (P6, boy); and “It has improved my reading skills, pronunciation, playing educative games” (P6, girl).

These views suggest that the intervention has resulted in improvements in pupils’ literacy skills (see section 4.2 for change in average scores and statistical significance).

**Familiarity with vocabulary**

With regard to the familiarity of words, the key issue is to gauge pupils’ ability to recognise and pronounce words displayed on the tablet at a glance. In answer to the question of whether they were familiar with most of the words on the tablets, the majority of the pupils responded in the affirmative. There had clearly been improvement in this respect. Head teachers also indicated that pupils had become familiar with most of the words and could now pronounce them without difficulty. This was confirmed by their class teachers, although they indicated that there were instances in which pupils were not fully familiar with vocabulary and required assistance.
Responses to the question of whether pupils had increased their vocabulary include: “They still need our guidance in some unfamiliar words” (P2A-LT, Maamobi Prisons Schools, female); and: “Yes, but not all pupils” (P3A, Maamobi Prisons Schools, female).

**Pronunciation of difficult words**

Interview responses on pupils’ pronunciation of difficult words reveal that it had improved in almost all cases. However, there were variations by grade and school. For example, while interviews with some teachers indicate that pupils could read very well on their own, other teachers’ views suggest that they could only do so with assistance. Those at Akuakrom Methodist Primary categorically stated that pupils could pronounce new vocabulary, citing words such as ‘birthday’ and ‘tomorrow’. In other cases, interview results shows that pupils could sometimes pronounce words on their own.

In answer to the question of whether their pupils could read well, some study participants thought that they could not do so without assistance. For example, one P2 teacher asserted, “No they can only read well with teachers’ support” (P2B, Maamobi Prisons Schools, female). A P1 teacher said, “Not many of them; others need supervision” (P1-LT, Maamobi Prisons Schools, female) A P4 teacher said “It depends” (P4, Akuakrom Methodist Primary, male). Interviews with pupils confirm the divided views of teachers: while some children stated that they had developed their literacy skills, which had helped improve their general academic performance, others (three female pupils) did not think their reading skills had improved.

**Independent reading**

The study also sought to explore whether pupils could read independently. Some comments from pupils include: “Yes, with [a] little support from my teachers” (P6, Akuakrom Methodist Primary, boy); “I can read fairly with [a] little support” (P4, Akuakrom Methodist Primary, girl); and “I can read but not fluent” (P4, Akuakrom Methodist Primary, boy). It was thus found that the majority of pupils under study could read with the support of their teachers. However, there were some instances in which pupils stated that they did not need any support from their teachers and could read independently.

**4.1.3.2 Assessment of Effectiveness of the Intervention in Improving Literacy Skills**

In terms of the overall evaluation of the programme, it emerged from head teachers that pupils could read well. Participants from all three schools under study expressed a great
satisfaction with the programme and believed that it had been very effective in improving the literacy skills of pupils. Examples of responses from teachers include: “Although the impact is slow, we believe with time, they will catch up” (Maamobi Prisons Schools, female); “Very effective; it has helped increase the enrolment level in the school” (Sacred Heart, male); “Yes it has. I would not have to worry about reading books that are yet to be provided or out of date” (P6-LT, Sacred Heart, male); and “It has improved greatly our pupils’ literacy skills” (P2A-LT, Maamobi Prisons Schools, female).

Some participants recommended that the programme should be run in other schools. For example, teachers and pupils contended, “Yes, it should be replicated in other schools” (P2-LT, Akuakrom Methodist Primary, female); “Yes, because I want them to have access to computer literacy” (P4, Sacred Heart, boy); “Yes, because it will improve their computer literacy skills” (P4, Sacred Heart, girl); “Yes, because they have to know and understand computer literacy at their level” (P6, Sacred Heart, girl); and “Yes, because it can help other pupils to improve their reading skills” (P6, Akuakrom Methodist Primary, boy).

From the foregoing discussion, it can be concluded that the introduction of the programme has contributed substantially to improving pupils’ literacy skills. The next section explores how the base line study (pre-test) and midterm evaluation (post-test) scores compare.

4.2 Quantitative Analysis: Pre- and Post-test Scores
Section 4.1 highlighted the EGRA stakeholders’ views qualitatively with a general conclusion that the interventions administered had improved pupils literacy skills. Qualitative analysis is limited therefore the baseline and midterm data was analysed to ascertain the statistical significance in pupils’ baseline and midterm scores. The following section presents charts, tests of significance, correlation analysis and the overall results of changes in pupils’ literacy skills.

4.2.1 Comparison of Baseline and Midterm Scores
This section is focused on the average score of pupils during the baseline and midterm evaluation.
As indicated in the above histogram, pupil performance in the vocabulary test improved in primaries 1, 2, 3 and 4. However, that of Primary 3 was marginal. Primary 1 pupils experienced the highest level of improvement, followed by Primary 2.

A critical examination of the above histogram shows that Sacred Heart Primary 4 experienced the greatest improvement, followed by Primary 2. It may be observed that scores for all classes (primaries 1, 2, 3 and 4) were quite high.
At Akuakrom Methodist Primary, although there were improvements in midterm vocabulary test results in all four classes (primaries 1, 2, 3 and 4) over the baseline score, they were quite slight. Primaries 3 and 4 evidenced significant improvement, with scores of a little above 50. Conversely, a look at primaries’ 1 and 2 midterm vocabulary test results shows scores of less than 50. It thus appears that primaries 3 and 4 pupils understood the programme better than primaries 1 and 2, which is normal. Progress in grade performance also improved.
Midterm letter sound test results recorded at Maamobi Prisons Schools show that all classes experienced great improvement except Primary 3, whose improvement was marginal. Primary 2 evidenced the greatest improvement, with the least being Primary 3. The midterm letter sound test scores for primaries 1 and 3 were the same even though the latter had evidenced higher pre-test (baseline) scores than Primary 1. It therefore appears that pupil–teacher interaction in primary 1 was better than in Primary 3, since progress in letter sound production requires skills development, time, constant practice, and effective communication.

**Figure 6 Sacred Heart School: Letter sound Scores**

Sacred Heart pupil performance in letter sound production was outstanding. A careful examination of the above histogram shows that primaries 1 and 4 evidence the most progress. It appears that this aspect of the programme was very effective.

**Figure 7 Akuakrom Methodist Primary: Letter sound Scores**
At Akuakrom Methodist Primary, the outcome of the midterm letter sound test score was very good in primaries 1 and 2 in terms of level of improvement. However, Primary 3 experienced slight improvement, with Primary 4 performing better. It may be observed that Primary 3 pupils performed relatively better in the baseline test, hence its slight improvement.

Figure 8 Maamobi Prisons Schools: Familiar word Scores

It may be observed from the above histogram that at Maamobi Prisons Schools, there was progressive improvement from Primary 1 to Primary 4 in respect of familiar words recognition, with virtually universal high achievement in this regard.
As indicated in the above histogram, the pre-test shows a progressive increase in word familiarity in respect of primaries 2, 3 and 4. However, Primary 2 performed slightly better in terms of level of improvement in the midterm test than primaries 3 and 4. Levels of improvement in primaries 1, 3 and 4 were very good.

Akuakrom Methodist Primary pupils did very well in word familiarity in the midterm test as compared to their baseline results. However, the performance of Primary 2 pupils in word familiarity in the midterm test was abysmal. However, this may be attributed to the class
teacher who was a service person and yet to receive training in the use of equipment and facilities.

**Figure 11 Maamobi Prisons Schools: Non-word Scores**

At Maamobi Prisons Schools, in terms of non-word reading, the trend in the baseline test result was similar to that of midterm scores even though there were improvements in classes. All classes (primaries 1, 2, 3 and 4) showed remarkable improvement in non-word reading.

**Figure 12 Sacred Heart School: Non-word Scores**

Significant improvement can be observed in non-word reading with regard to Primary 2 at Sacred Heart. Generally, there was improvement in the midterm performance of pupils over their baseline results.
The midterm non-word reading test results evidenced by Primary 3 represent the greatest improvement over the baseline score at Akuakrom Methodist Primary. These are followed by those of primaries 1 and 4. The slight improvement evidenced by Primary 2 might again be due to the inexperience of the class teacher.

It may be observed that the reading results of the midterm test evidenced by Maamobi Prisons Schools primaries 2, 3 and 4 represent an improvement over baseline scores. This increased progressively from Primary 2 to Primary 4; however, there is room for improvement in primaries 2 and 3.
The above histogram shows that at Sacred Heart, there was improvement in the midterm reading test over the baseline test, with Primary 2 experiencing the most progress.

At Akuakrom Methodist Primary, there was improvement in the midterm test results over those of the baseline test. The level of improvement increased progressively from Primary 1 to Primary 4. The remarkable improvement in reading evidenced by primaries 3 and 4 pupils could be due to more effective use of the equipment and facilities.
Comprehension results in the midterm test at Maamobi Prisons Schools indicate that there were improvements in both primaries 3 and 4 over their corresponding baseline test results. However, the results for Primary 3 only evidenced slight improvement, whilst that for Primary 4 was remarkable. On the other hand, the results for Primary 2 pupils show a retrogression in performance, its baseline result being better than that of the midterm test.

Figure 18 Sacred Heart: Comprehension Scores

At Sacred Heart, there was general improvement in the midterm test results of primaries 2, 3, and 4 over those of the baseline test scores, Primary 2 being the highest followed by Primary 4.
In respect of Akuakrom Methodist Primary, the above histogram comparing the results of the midterm test with those of the baseline test indicate a considerable improvement in pupil performance in comprehension, especially that of primaries 3 and 4. This suggests that the programme has been a great success at this school.

4.3 Project Intervention and Effect on Pupils’ Post-test Scores

To determine whether the programme had brought about any changes in pupil learning outcomes, the study sought to establish significant differences between baseline (pre-test) and midterm evaluation (post-test) data over the trial period of the intervention to date. Using a paired sample t-test and an Alpha value of 0.05, Table 2 shows that there were statistical significant differences between pre- and post-intervention scores in terms of all six literacy (vocabulary, letter sounds, familiar words, non-words, reading, and comprehension) tests administered to the pupils at the three study schools. Indeed, the statistical results showed that the interventions contributed significantly to the improvement of pupils’ literacy. Specifically, in the areas of vocabulary \( t = (128) 15.10, M = 4.20, p<0.05 \); letter sounds \( t = (128) 13.56, M = 17.92, p < 0.05 \); familiar words \( t = (128) 15.55, M = 10.64, p<0.05 \); non-words \( t = (128) 9.78, M = 7.54, p<0.05 \); oral passage reading \( t = (128) 10.85, p<0.05 \); and comprehension \( t = (91) 6.69, M = 0.97, p<0.05 \) (See Appendix ??).

These significant results confirmed the stakeholders’ opinions that the Ghana Reads intervention improved pupils’ literacy. Therefore, we can also infer from the statistical significance results that provision of ICT-enhanced learning materials to pupils and teachers’
coupled with teacher support by way of coaching to enhance teachers’ technology professional development had greatly improved pupils’ learning outcomes in the EGRA.

In the next section, the results of the relationships between pupils’ vocabulary and letter sound knowledge, reading and vocabulary skill, reading and comprehension, and significant differences between sex and rural/urban school’s performances on literacy scores are presented.

### Table 2 Significant differences between baseline and post-intervention scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Lower</th>
<th>Upper</th>
<th>T</th>
<th>Diff</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sounds pre-test/post-test</td>
<td>17.922</td>
<td>15.237</td>
<td>1.342</td>
<td>15.268</td>
<td>20.577</td>
<td>13.360</td>
<td>128</td>
<td>.000</td>
</tr>
<tr>
<td>Familiar words pre-test/post-test</td>
<td>10.643</td>
<td>7.776</td>
<td>.685</td>
<td>9.289</td>
<td>11.998</td>
<td>15.546</td>
<td>128</td>
<td>.000</td>
</tr>
<tr>
<td>Comprehension pre-test/post-test</td>
<td>.967</td>
<td>1.386</td>
<td>.145</td>
<td>.680</td>
<td>1.254</td>
<td>6.693</td>
<td>91</td>
<td>.000</td>
</tr>
</tbody>
</table>

### 4.3.1 Relationship between Pupils’ Vocabulary Skills and Letter Sound Knowledge

With regard to the relationship between pupils’ vocabulary skills and letter sound knowledge, Table 3 shows that post-intervention scores in respect of 129 pupils. Table 3 shows a weak positive \( r = 0.36 \) correlation result was recorded during the midterm review. In effect, pupils’ sound knowledge did favourably reflect in their ability to recognise and articulation of words (vocabulary) displayed on the tablet at a glance, but they are unable to exhibit a good mastery of sound knowledge \( (M = 7.44) \) to affect their vocabulary skill \( (M = 15.88) \). Indeed, response to the question on whether pupil had increased their vocabulary in section 4.1.3.1, a female teacher (P2A-LT) at Maamobi Prisons Schools summarised the weak correlation result by indicating that pupils still need teachers guidance in some unfamiliar words.
### Table 3 Correlation between Midterm Vocabulary skills and Letter Sound Knowledge

<table>
<thead>
<tr>
<th></th>
<th>Vocabulary skills</th>
<th>Letter Sound knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson correlation</td>
<td></td>
<td>.361***</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td>Sum of squares and cross-products</td>
<td>1,749.256</td>
<td>1,876.628</td>
</tr>
<tr>
<td>N</td>
<td>129</td>
<td>129</td>
</tr>
</tbody>
</table>

### Table 4 Descriptive statistics for post-intervention vocabulary skills and letter sound knowledge

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mean</th>
<th>Std deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary skills</td>
<td>15.88</td>
<td>3.697</td>
<td>129</td>
</tr>
<tr>
<td>Sound knowledge</td>
<td>7.44</td>
<td>11.001</td>
<td>129</td>
</tr>
</tbody>
</table>

### 4.3.2 Relationship between Familiar Word Reading Skills and Vocabulary Skills

This study also postulated that pupils’ reading ability will relate to their vocabulary development. We believe that future interventions could focus on helping pupils improve their literacy in the two learning domains. Hence, Table 5 shows a moderate significant positive relationship ($r = .434; p < .000$) between pupils’ ability to pronounce words on display at a glance on a tablet and pronouncing new vocabularies.

The qualitative report on pupils’ familiarity with vocabulary, teachers submitted that indeed, the use of ICT was relevant in their acquisition of new vocabulary. However, pupils still need assistance in the realisation of some unfamiliar words, as reported in the qualitative by a pupils that she could ‘read fairly’ with the support of his/her teacher.
Table 5 Correlations

<table>
<thead>
<tr>
<th></th>
<th>Reading post</th>
<th>Vocab post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson correlation</td>
<td>-</td>
<td>.434**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Sum of squares and cross-products</td>
<td>40,697.504</td>
<td>3,661.070</td>
</tr>
<tr>
<td>N</td>
<td>129</td>
<td>129</td>
</tr>
</tbody>
</table>

Table 6 Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading post-intervention</td>
<td>18.27</td>
<td>17.831</td>
<td>129</td>
</tr>
<tr>
<td>Vocabulary post-intervention</td>
<td>15.88</td>
<td>3.697</td>
<td>129</td>
</tr>
</tbody>
</table>

4.3.3 Correlation between Pupils’ Oral Passage Reading and Reading Comprehension

Using Pearson’s product moment, Table 7 indicates a strong positive correlation ($r = .848$) between reading and comprehensive skills development in all three schools under the study. This finding indicates that as pupils’ reading ability improves, their comprehension skill also improves.

Table 7 Reading and Comprehension Correlation Table

<table>
<thead>
<tr>
<th></th>
<th>Reading skills</th>
<th>Comprehension post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson correlation</td>
<td>-</td>
<td>.848**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Sum of squares and cross-products</td>
<td>40,697.504</td>
<td>2,242.342</td>
</tr>
<tr>
<td>Covariance</td>
<td>317.949</td>
<td>18.843</td>
</tr>
<tr>
<td>N</td>
<td>129</td>
<td>120</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
### Table 8 Descriptive Statistics for Reading and comprehension Midterm Scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>18.27</td>
<td>17.831</td>
<td>129</td>
</tr>
<tr>
<td>Comprehension</td>
<td>1.16</td>
<td>1.243</td>
<td>120</td>
</tr>
</tbody>
</table>

#### 4.3.4 Gender Differences in Post-intervention Scores

Establishing gender differences in post-intervention scores is relevant in terms of designing instructional activities. However, the study found no statistically significant difference ($F = (127) 0.360; MD = 0.944, p>0.05$) between the post-intervention scores of boys and girls in the three schools. The average scores for boys ($n = 58$) and girls ($n = 71$) recorded a difference of $0.097$, which was not statistically significant. Hence, we can confidently conclude that equitable access to digital technologies for both sexes reduces marginalisation of girls in technology and learning outcomes. Past gender/technology researches also always put boys ahead of girls in technology scores. This difference had often been explained in terms of “access” - where boys were taught to be ahead of girls due to the aggressive nature of boys getting to the computer first. However, in this study, both sexes had equal access thereby reducing the existing gap.

### Table 9 Post-intervention scores by gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std Deviation</th>
<th>Std mean error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>58</td>
<td>11.8443</td>
<td>8.01815</td>
<td>1.05283</td>
</tr>
<tr>
<td>Female</td>
<td>71</td>
<td>11.7474</td>
<td>7.56373</td>
<td>.89765</td>
</tr>
</tbody>
</table>
**Table 10 Independent sample t-test for gender**

<table>
<thead>
<tr>
<th>Performance</th>
<th>F</th>
<th>Sig</th>
<th>T</th>
<th>df</th>
<th>Sig (2-tailed)</th>
<th>Mean diff.</th>
<th>S diff.</th>
<th>95% confidence interval of difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variance</td>
<td>.360</td>
<td>.549</td>
<td>.070</td>
<td>127</td>
<td>.944</td>
<td>1.37539</td>
<td>-</td>
<td>2.62482</td>
</tr>
<tr>
<td>assumed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.81849</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variance</td>
<td>.070</td>
<td>1.18</td>
<td>118</td>
<td>18</td>
<td>9.44</td>
<td>1.38356</td>
<td>-</td>
<td>2.83646</td>
</tr>
<tr>
<td>not assumed</td>
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<td></td>
<td></td>
<td></td>
<td>2.64279</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although there was a difference of 2.41% in average scores between urban (M = 9.45) and rural (M = 7.04) schools in this study, the two-sample t-Tests show that there is no significant statistical difference (t = (127) 1.46, p>.05) between urban and rural schools in terms of pre-intervention scores. However, we need to interpret this non-significant result with the caveat that sample sizes were unequal (urban = 128 and rural = 18). Therefore, lack of parity in
sample size could have biased the result. The variation in scores of 66.72 (urban) and 13.61 (rural) demonstrate that pupils’ results differed greatly from the mean value according to location. This disparity also shows that scores in respect of the urban schools under study were themselves inconsistent.

5 Conclusion

5.1 Introduction
This study set out to conduct a midterm evaluation of the ACR sponsored Ghana Reads programme. The purpose of the exercise was to assess the implementation of the initiative to date. In order to achieve this, the following activities were undertaken:

1. To explore the views of school heads, teachers and pupils on the antecedent conditions, transaction, and outcomes of the programme
2. To assess whether there were significant differences in pupils’ EGRA performance before and after the intervention

In so doing, interviews were conducted with a sample of pupils, head teachers, and teachers. Additionally, an EGRA test was administered to pupils and the results compared with their baseline scores. The study focused primarily on two major areas: first, antecedent conditions, transactions, and outcomes, focusing on the supply of equipment, its storage and usage as well as support provided for its effective usage; and second, a comparison of pupils’ pre- and post-intervention EGRA performance, to highlight the learning outcomes of the programme.

5.2 Antecedent Conditions
The study found that all ICT equipment necessary to support pupils’ learning had been made available. This included; Wi-Fi, android tablets, Raspberry pi servers with the Bell operating system, power stabilizers, multipurpose digital cameras, projectors, printers, and laptops.

The condition of equipment supplied is considered key to the success of the programme. Interviews and observations suggest that, other than in a few cases in which tablet screens were cracked, all items were in good condition. Interestingly, the faulty and cracked tablets were due to mishandling by teachers rather than pupils.
It emerged from the study that all the schools had a space where equipment could be stored. In some cases, materials were kept in storerooms and in others, the head teachers’ office.

The study found that all the teachers had been trained to use the equipment and facilities to teach pupils. It emerged that as training was an on-going process through the coaching system, those teachers who had not received full training were looking forward to further instruction before the official end of the intervention.

Assessment of pupils’ computer literacy levels prior to the intervention yielded mixed results. One section of participants considered such proficiency to be vital, arguing that pupils required ICT training to enable them to integrate this knowledge into the programme. On the other hand, other participants thought that pupils did not need to be computer literate prior to the programme, contending that they would learn as they familiarised themselves with the equipment.

The study also found that computer literacy levels amongst pupils prior to the intervention varied by location and grade. Computer literacy levels of pupils from rural communities appear to have been lower than those of their counterparts living in urban districts. In grades in which some pupils were alleged to be computer literate, they constituted a very small proportion of the school. Overall, the majority of pupils under study were virtually computer illiterate prior to the implementation of the programme.

Exploration of teachers’ backgrounds in terms of computer literacy revealed that most of them were proficient prior to the introduction of the programme. Nevertheless, the study found that while a section of participants believed it was necessary for teachers to be computer literate others did not think this was relevant.

5.3 Transactions
With regard to programme transactions, in terms of frequency of equipment and facilities usage, most study participants indicated that it was once or twice a week. Usage frequency tended to be low because classes had to share equipment. Teachers also seemed to be concerned about leaving room on the timetable to address other aspects of English language that might not require tablet or projector usage.

The study found that teachers and pupils were given the necessary support through the coaching concept in the integration of equipment and facilities in teaching and learning.
activities. In terms of support for teachers, heads ensured access to equipment and offered guidance in the planning of lessons. Support for pupils took the form of assistance in the use of equipment, how to pronounce words, and using the tablet to read stories and identify words.

The study also found that there was some form of peer support amongst pupils that aimed to help improve their literacy skills. They often worked in groups to support each other, the more advanced children taking the initiative to assist their classmates. It also seems that they collaborated in supporting each other because there were insufficient resources for all pupils in the class to study independently; given that they had to share, they tended to help each other so that everyone could have at least some access. It would be interesting to explore how pupils collaborated if they all had their own tablets.

Additionally, the study found that there was some form of indirect support to the school from the community whereby parents appeared to embrace the programme and allow their children to participate. Some parents have been mentioned to have donated books to the school.

In interviews with school heads, teachers and pupils, it was claimed that all learners used the ICT equipment and facilities to improve their literacy skills. However, it was also reported that there were some isolated cases in which not all pupils benefited from the usage of resources. The aforementioned observation about helping each other notwithstanding, it appears that such instances may have been due to the fact that there was insufficient equipment to allow each child full access.

5.4 Outcomes
One of the key findings of this midterm evaluation is the efficacy of the Ghana Reads programme in enhancing literacy skills. Both narrative evidence and comparative analysis of pre- and post-test scores point to a significant improvement in pupils’ performance.

With regard to vocabulary, the study found that following the intervention, pupils had become more familiar with lexicons designed for their respective ages. Assessments of both head teachers and class teachers suggest that pupils evidenced better pronunciation, although there were variations by grade and school. A section of teachers also asserted that pupils could read independently, but interviews with others suggest that some pupils still needed assistance to read.
This study’s overall evaluation of the programme indicates that pupils could read well. It emerged that all those who participated in the programme expressed great satisfaction with it. Thus, from the discussion of the overall findings, it can be concluded that the introduction of the Ghana Reads programme has really contributed to improving pupils’ literacy skills.

5.5 Summary of Results

Hypothesis 1: Pupils’ EGRA scores will be significantly higher after the intervention.

Result: Confirmed: Results of tests conducted in all six literacy categories (vocabulary, letter sound, familiar words, non-words, reading, and comprehension) are significant at a 95% confidence interval. Therefore, we can confidently conclude that the Ghana Reads programme is able to improve learning outcomes in the six categories measured by the EGRA.

Hypothesis 2: Pupils’ vocabulary skills will be significantly improved after the intervention.

Result: Confirmed: A verification test reveals that there are significant statistical differences in the three study groups (primaries 1–3) between scores before and after the intervention. Accordingly, there is a strong positive correlation ($r = .70$) between pre- and post-test vocabulary learning scores.

Hypothesis 3: Pupils’ letter sound knowledge will be significantly better after the intervention.

Result: Confirmed: Results show that post-test scores are on average higher by 18 points following the implementation of the intervention; therefore, there is a statistically significant difference between pre- and post-test scores in letter sound recognition.

Hypothesis 4: Pupils’ familiar word reading will be significantly improved after the intervention.

Result: Confirmed: There is a statistically significant difference between familiar word reading pre- and post-test scores, the latter being on average ten times higher. Thus, we can conclude that the impact of the intervention has been profound in this area.

Hypothesis 5: Pupils’ unfamiliar non-word decoding will be significantly better after the intervention.
Result: Confirmed: Pupils performed extremely well in terms of unfamiliar non-word decoding, the average post-test score being higher than its pre-test equivalent by nine points. Accordingly, there is a statistically significant difference between pre- and post-test scores in this area in all three schools under study.

**Hypothesis 6:** Pupils’ oral passage reading will be significantly improved after the intervention.

Result: Confirmed: Reading scores improved significantly following the implementation of the programme.

**Hypothesis 7:** Pupils’ reading comprehension will be significantly better after the intervention.

Result: Confirmed: Reading comprehension scores improved significantly following the implementation of the intervention.

**Hypothesis 8:** There will be a significant correlation between pupils’ vocabulary skills and letter sound knowledge.

Result: Confirmed: The study established that there is a significant (p<.000) positive correlation between vocabulary acquisition and letter sound development; although the correlation is weak (r = .36), the average score for vocabulary skills being higher than that for letter sound knowledge.

**Hypothesis 9:** There will be a significant correlation between pupils’ familiar word reading and vocabulary skills.

Result: Confirmed: There is a positive (p<.000) significant correlation (r = .43) between familiar word reading and vocabulary acquisition; the familiar word reading mean score (2.39) being higher than its vocabulary acquisition equivalent.

**Hypothesis 10:** There will be a significant correlation between pupils’ oral passage reading and vocabulary skills.

Result: Confirmed: There is a strong positive correlation (r = .85) between reading skills and vocabulary acquisition. This indicates that the more pupils read, the more their vocabulary increases. This is a significant finding of this study.
**Hypothesis 11:** There will be a significant correlation between pupils’ familiar word reading and reading comprehension.

**Result:** Confirmed: There is a significant correlation between performance in reading and comprehension in post-test EGRA scores, the increase \( r = .85 \) in reading skills being equivalent to the level of comprehension.

**Hypothesis 12:** There will be a significant gender difference in pupils’ performance in post-intervention assessment.

**Result:** Refuted: The results showed that gender has no significant correlation with post-intervention scores in the six categories assessed. Average respective scores for boys \( n = 58 \) and girls \( n = 71 \) indicate a difference of 0.097, which is not statistically significant. It can therefore be concluded that the intervention is not subject to gender bias. This is a positive finding in terms of combating gender discrimination at a tender age whereby equal resources are provided to boys and girls alike.

**Hypothesis 13:** There will be a significant difference between urban and rural pupils’ performance after the intervention.

**Result:** Refuted: Even though the study sample includes more pupils from urban \( n = 111 \) than rural communities \( n = 18 \), location has no significant correlation with post-test scores. Comparison of the mean post-test score of the only rural community (Akuakrom) of 9.45 with that of the two urban communities (Maamobi Prisons A and B, and Sacred Heart) of 12.17 does not evidence any statistical significance. Therefore, it may be assumed that whatever differences are observed in the data could be basically due to statistical error. Also, although the qualitative analysis indicated some difference in computer literacy by location, the study did not explore whether it might have affected language literacy.

Figure 20 shows percentage change in the six learning domains. Pupils’ knowledge in letter sound recognition, and non-word identification recorded the highest percentage change (54%) respectively. Reading and comprehension activities witnessed closed percentage
changes (49% and 52% respectively). However, Children vocabulary acquisition recorded the least percentage change.

Figure 20 Comparison of Baseline and post-intervention EGRA scores and percentage change in pupils’ learning activities

5.6 General Conclusions

From the above discussion, this study has shown that the implementation of the Ghana Reads programme is on track and has resulted in 13% increase in pupils’ literacy skills. In terms of material resources, the tablets supplied to schools were in good condition although some became faulty as a result of mishandling by teacher. All other equipment supplied to the schools were being stored in designated places and were being utilised by the schools as planned. The study results suggest that teachers and pupils appear to be receiving the necessary support through the coaching concept and other means in the implementation of the programme.

In respect of programme transactions, the study found that equipment was being put to maximum use. However, a shortage of material resources meant that each pupil did not have access to his or her own tablet. Although some children appeared not to be benefiting from the programme owing to such limited supply, pupils were making effective use of what was available to improve their literacy skills.

With regard to programme outcomes, the study found that pupils’ literacy skills had improved markedly as a result of the intervention. Specifically, pupils’ vocabularies had
expanded; they were largely able to read independently; and their EGRA scores had risen significantly.

These findings have some implications for the replication of the Ghana Reads programme in other schools as well as the increasing of support for the supply of equipment and facilities.

5.7 **Recommendation**

- Future interventions should focus on combining instructional activities in reading skills with increased activities in vocabulary development.

- More equipment should be supplied as some children appeared not to be benefiting fully from the programme owing to such limited supply of equipment.

- The Ghana Reads project should be sustained as pupils in the case study schools showed improved literacy skills from the use of the equipment as well as from coaching of teachers and pupils in integrating the equipment in their teaching and learning.

- The Ghana Reads programme should also address the question of sustainability in replacing damaged materials and equipment.

- There is need for training for teachers and students on how to protect the equipment, especially tablets in order to avoid physical damages such as screen cracks.

- Future intervention should be expanded to other schools to enhance literacy and vocabulary improvement among a larger population of students in rural schools where literacy development is generally lower than urban endowed schools.
INTERVIEW SCHEDULE FOR HEADTEACHERS

Antecedents
1. Has your school been provided with the necessary facilities? .................................................................
   a. If YES, mention them\(^2\) ...................................................................................................................
   ...........................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   b. Are they all in good working conditions? ..........................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
2. Is there a dedicated room for these facilities in the school? .................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
   ..............................................................................................................................................
3. If no where do you keep these items .................................................................................................
   ..............................................................................................................................................
4. Have any of the teachers in your school been trained in the use of the facilities? ....................
   ..............................................................................................................................................
5. Have the teachers been trained in how to provide the pupils/students with the necessary support to improve upon their literacy skills? .................................................................
   ..............................................................................................................................................
6. How will you rate the level of competency of the teachers involved in helping pupils/students to improve upon their literacy skills?  
   
   Excellent [ ]  
   Very Good [ ]  
   Good [ ]  
   Average [ ]  
   Low [ ]

\(^2\)Interviewer, probe for these: E-Learning Materials, e.g. Wi-fi, Android tablet, Raspberry Pi containing the BeLL content, Power Stabiliser, Multi Purpose Digital Camera, Projector, Printer,
7. How many of your pupils/students were computer literate before the introduction of the programme? .................................................................................................................................
   a. Do you think pupils/students need computer literacy skills to benefit from this programme? .................................................................................................................................

8. Were the teacher(s) involved computer literate before getting involved in this programme?
   ........................................................................................................................................
   a. Do you think teachers need to be computer literate to get involved in this programme?

Transactions
1. How often do pupils/students in your school use the facilities provided? .................................................................

2. Are you providing the necessary support to the teacher(s) and pupils/students in the use of the facilities? ........................................................................................................................................
   a. What is the nature of the support you are providing to your teachers and pupils/students? ........................................................................................................................................

3. Is the school receiving any support from the community in connection with the programme? .................................................................

4. Are pupils/students supporting each other to improve upon their literacy skills? ........................................................................................................................................
5. Are pupils/students exhibiting effective use of the facilities to improve upon their literacy skills?  
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

Outcomes
1. Are your pupils/students exhibiting improved literacy skills?  
................................................................................................................................................
................................................................................................................................................

2. Are your pupils/students familiar with most words (including difficult ones) at their level?  
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

   a. Can they pronounce these words without difficulty?  
................................................................................................................................................

3. Can they read very well with little or no support from you?  
................................................................................................................................................
................................................................................................................................................

4. Are you satisfied with the programme?  
................................................................................................................................................

5. Do you think that the programme has been effective in improving the literacy skills of pupils/students?  
................................................................................................................................................
................................................................................................................................................
INTERVIEW SCHEDULE FOR TEACHERS

Antecedents

9. Has your school been provided with the necessary ICT facilities to support pupils learning English? ..............................................................
   a. If YES, mention them\(^3\) ..................................................................................................................................................................................
   ........................................................................................................................................................................................................
   ........................................................................................................................................................................................................
   ........................................................................................................................................................................................................

   b. Are they all in good working conditions? .................................................................
   ........................................................................................................................................................................................................
   ........................................................................................................................................................................................................
   ........................................................................................................................................................................................................

10. Is there a dedicated room for these facilities in the school? .................................................................
    ........................................................................................................................................................................................................
    ........................................................................................................................................................................................................
    ........................................................................................................................................................................................................
    a. If no where do you store them.................................................................................................
    ........................................................................................................................................................................................................
    ........................................................................................................................................................................................................

11. Have you been trained in the use of the facilities? .................................................................
    ........................................................................................................................................................................................................

12. Have you been trained in how to provide your pupils/students with the necessary support to improve upon their literacy skills? .................................................................................................................................
    ........................................................................................................................................................................................................

13. How will you rate your level of competency in helping pupils/students to improve upon their literacy skills? Excellent [ ] Very Good [ ] Good [ ] Average [ ] Low [ ]

\(^3\)Interviewer, probe for these: Wi-fi, Android tablet, Raspberry Pi containing the BeLL content, Power Stabiliser, Multi Purpose Digital Camera, Projector, Printer etc?
14. How many of your pupils/students were computer literate before the introduction of the
programme? .................................................................................................................................

    a. Do you think pupils/students need computer literacy skills to benefit from this
programme? .................................................................................................................................

15. Were you computer literate before you got involved in this programme? .......................
....................................................................................................................................................

    a. Do you think teachers need to be computer literate to get involved in this
programme? .................................................................................................................................

Transactions
6. How often do pupils in your school use the facilities provided? ..............................
....................................................................................................................................................

7. Are you providing the necessary support to the pupils/students in the use of the facilities?
....................................................................................................................................................

8. Are you providing the pupils with the skills needed to improve upon their literacy skills?
....................................................................................................................................................

9. Are you receiving any support from your school Head in running this programme? ...........
....................................................................................................................................................

    a. What is the nature of the support you are receiving from your Head? .......................  
....................................................................................................................................................

10. Is the school receiving any support from the community in connection with the programme?
....................................................................................................................................................

11. Are pupils supporting each other to improve upon their literacy skills?
12. Are pupils exhibiting effective use of the facilities to improve upon their literacy skills?

Outcomes
6. Are your pupils exhibiting improved literacy skills?

7. Are your pupils familiar with most words (including difficult ones) at their level?
   a. Can they pronounce these words without difficulty?

8. Can they read very well with little or no support from you?

9. Are you satisfied with the programme?

10. Do you think that the programme has been effective in improving the literacy skills of pupils?
INTERVIEW SCHEDULE FOR PUPILS/STUDENTS

Antecedents
16. Do you have computers with reading material installed on them, in your school?
................................................................................................................................................

   a. Are they all working very well? ..........................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

   b. How often do you use this to learn? ...........................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

17. Is there a dedicated room for these facilities in your school? .............................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

18. Have you been trained in the use of the facilities? ........................................................

   a. What kind of training were you given? ..........................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................
................................................................................................................................................

   b. Do you think pupils/students need computer literacy skills to be able to benefit
from this programme? ..............................................................................................
................................................................................................................................................
................................................................................................................................................

19. Do have computer in your house? ............................................................................... 

   a. Do you have access to them? ..........................................................................
................................................................................................................................................

20. Do you have access to any other reading materials in the house?
................................................................................................................................................

21. If yes, what are these? ............................................................................................

Transactions
13. How often do you use the facilities provided for literacy skills development in your school?
................................................................................................................................................
................................................................................................................................................
14. Are your teachers providing you with the necessary support in the use of the facilities?

........................................................................................................................................

15. Are your teachers providing you with the skills needed to improve upon your literacy skills?

........................................................................................................................................

16. Are you receiving any support from your Headteacher to enable you use the facilities and
improve upon your literacy skills? ......................................................................................

........................................................................................................................................

17. Do you support each other to improve upon your literacy skills? .................................

........................................................................................................................................

18. Are you able to use the facilities very well to improve upon your literacy skills? ...........

........................................................................................................................................

Outcomes

11. Have your literacy skills improved? ................................................................................

    a. How has it improve? .................................................................................................
       ...................................................................................................................................
       ...................................................................................................................................

12. Are you now familiar with most words (including difficult ones) at your level? 
    ........................................................................................................................................
    ........................................................................................................................................
    a. Can you pronounce these words without difficulty? .............................................
       ........................................................................................................................................

13. Can you read very well with little or no support from your teacher or friends? ............
    ........................................................................................................................................
    ........................................................................................................................................

14. Will you want this programme to be sent to other schools that do not have it? ............
    a. Why? .........................................................................................................................
OBSERVATION CHECKLIST FOR DATA COLLECTION

Antecedents
22. Has the school been provided with all the necessary facilities (e.g. Wi-fi [], Android tablet [], Rasberry Pi containing the BeLL content [], Power Stabiliser, [], Multi Purpose Digital Camera[], Projector[], Printer etc? [] )

23. Are they all in good working conditions? YES [] NOT ALL [] NO []

24. Is there a dedicated room for these facilities in the school? YES [] NO []
   a. Describe the nature of the room.
      ........................................................................................................................................
      ........................................................................................................................................
      ........................................................................................................................................
      ........................................................................................................................................

25. Are there teachers trained in the use of the facilities and literacy skills to help pupils/students use the facilities? YES [] NO []

Transactions
19. How often do pupils/students use the facilities provided?
   Very Often [] Often [] Quite Often [] Seldom []

20. Are the teachers involved providing the necessary support to the pupils/students in the use of the facilities? YES [] SOMEHOW [] NO []

21. Are the teachers providing the pupils/students with the skills needed to improve upon their literacy skills? YES [] SOMEHOW [] NO []

22. What is the nature of the support the school is receiving from the community in connection with the programme?
   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................
   ............

23. Are pupils/students supporting each other to improve upon their literacy skills?
   YES [] SOMEHOW [] NO []
24. Are pupils/students exhibiting effective use of the facilities to improve upon their literacy skills? YES [ ] SOMEHOW [ ] NO [ ]

Outcomes
15. Are pupils/students exhibiting improved literacy skills? YES [ ] SOMEHOW [ ] NO [ ]

16. Are pupils/students familiar with and can pronounce words at their level of education? YES [ ] SOMEHOW [ ] NO [ ]

17. Can they read very well with little or no teacher support? YES [ ] SOMEHOW [ ] NO [ ]

18. Are teachers showing satisfaction about the success of the programme? YES [ ] SOMEHOW [ ] NO [ ]
General Instructions:

It is important to establish a playful and relaxed rapport with the children to be assessed, via some simple initial conversation among topics of interest to the child (see example below). The child should perceive the following assessment almost as a game to be enjoyed rather than a severe situation. It is important to read ONLY the sections in boxes aloud slowly and clearly.

Good morning. My name is ____ and I live in ____. I'd like to tell you a little bit about myself. [Number and ages of children; 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?

Verbal Consent

- Let me tell you why I am here today. I work with the Ministry of Education and we are trying to understand how children 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.
- We are going to play a reading game. I am going to ask you to read letters, words and a short story out loud. In English.
- Using this stopwatch, I will see how long it takes you to read.
- This is NOT a test and it will not affect your grade at school.
- I will NOT write down your name so no one will know these are your answers.
- Once again, you do not have to participate 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? Are you ready to get started?

Check box if verbal consent is obtained: ☐ YES

(If verbal consent is not obtained, thank the child and move on to the next child, using this same form)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Date of assessment :</td>
<td>Day : ______ Month : ______</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Enumerator’s name :</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C. School Name :</td>
<td></td>
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<tr>
<td>D. Province :</td>
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<tr>
<td>E. District :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. School shift :</td>
<td>○ 1 = Full day  ○ 2 = Morning  ○ 3 = Afternoon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Multigrade class ?</td>
<td>○ 0 = No  ○ 1 = Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Teacher code</td>
<td></td>
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<tr>
<td>J. Section :</td>
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<tr>
<td>K. Pupil Unique Code :</td>
<td></td>
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<tr>
<td>L. Student Age :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Student’s gender</td>
<td>○ 1 = boy  ○ 2 = girl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Time Started:</td>
<td>____ : _____ (24 hour system)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Section 2. Vocabulary

You will ask the pupil to show parts of the body and objects in the environment, and to check comprehension of spatial terms. Note the answers in the manner indicated:

- **Error:** Slash (/) each item for which the pupil gave an incorrect answer
- **Self-correction:** If the pupil gave an incorrect answer but corrected the response thereafter (self-correction), circle the item that you already slashed. Count this answer as being correct

**Materials needed:** “‘Put a pencil, the “Big Cow” book, and an eraser side by side in front of the pupil.

A. Body parts:

I will tell you some words which describe parts of your body. Please show me the part(s) on your body the words describe. For example, show me: « your nose », « your eyes ». Good! Let’s begin.

<table>
<thead>
<tr>
<th>Your arm - your foot - your chin - your knee -</th>
</tr>
</thead>
<tbody>
<tr>
<td>your shoulder - your elbow - your face - your hair</td>
</tr>
</tbody>
</table>

Number of correct answers: / 8

B. Object words:

Now I will say some words. Please point to show me where they are.

| a pencil - a paper book - a wall - the floor - an eraser - a chair |

Number of correct answers: / 6

C. Spatial Terms:

Do you see this pencil? Please place it where I tell you.

Put the pencil:

<table>
<thead>
<tr>
<th>on the book - behind you - on the floor -</th>
</tr>
</thead>
<tbody>
<tr>
<td>under the book - in front of you - beside the book</td>
</tr>
</tbody>
</table>

Number of correct answers: / 6

TOTAL CORRECT / 20

Good effort! Let’s go on to next section.
Section 4. Letter Sound Knowledge

Show the child the sheet of letters in the student stimuli booklet. Say:

Here is a page full of letters of the English alphabet. Please tell me the SOUNDS of as many letters as you can—not the NAMES of the letters, but the SOUNDS. For example, the sound of this letter [point to A] is /ah/.

Let's practise: tell me the sound of this letter [point to V];
   If the child responds correctly say: Good, the sound of this letter is /vvvv/“
   If the child does not respond correctly, say: The sound of this letter is /vvvv/“

Now try another one: tell me the sound of this letter [point to L];
   If the child responds correctly say: Good, the sound of this letter is /lll/
   If the child does not respond correctly, say: The sound of this letter is “/lll/

Do you understand what you are to do?
When I say “Begin,” please sound out the letters as quickly and carefully as you can. Tell me the sound of the letters, starting here and continuing this way. [Point to the first letter on the row after the example and draw your finger across the first line]. If you come to a letter sound you do not know, I will tell it to you. If not, I will keep quiet and listen to you. Ready? Begin.

Start the timer when the child reads the first letter. Follow along with your pencil and clearly mark any incorrect letters with a slash (/). Count self-corrections as correct. If you’ve already marked the self-corrected letter as incorrect, circle the letter and go on. Stay quiet, except when providing answers as follows: if the child hesitates for 3 seconds, provide the sound of the letter, point to the next letter and say “Please go on.” Mark the letter you provide to the child as incorrect. If the student gives you the letter name, rather than the sound, provide the letter sound and say: [“Please tell me the SOUND of the letter”]. This prompt may be given only once during the exercise.

AFTER 60 SECONDS SAY, “stop.” Mark the final letter read with a bracket ( [ ) .

Early stop rule: If you have marked as incorrect all of the answers on the first line with no self-corrections, say “Thank you!”; discontinue this exercise, check the box at the bottom, and go on to the next exercise.

Examples: A v L

<p>| | | | | | | | | | |</p>
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<td>a</td>
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<td>p</td>
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<td>r</td>
<td>y</td>
<td>n</td>
<td>G</td>
</tr>
</tbody>
</table>

Time remaining on stopwatch at completion (number of SECONDS) : [ ]

Check this box if the exercise was discontinued because the child had no correct answers in the first line.

Good effort! Let’s go on to next section.

Good effort! Let’s go on to next section.
Section 5. Familiar Word Reading

Show the child the sheet of familiar words in the student stimuli booklet. Say,

<table>
<thead>
<tr>
<th>Here are some words. Please read as many words as you can (do not spell the words, but read them). For example, this word is: “cat”.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let’s practice: please read this word [point to the word “sick”]:</td>
</tr>
<tr>
<td>If the child responds correctly say: Good, this word is “sick.”</td>
</tr>
<tr>
<td>If the child does not respond correctly, say: This word is “sick.”</td>
</tr>
<tr>
<td>Now try another one: please read this word [point to the word “made”]:</td>
</tr>
<tr>
<td>If the child responds correctly say: Good, this word is “made.”</td>
</tr>
<tr>
<td>If the child does not respond correctly, say: This word is “made.”</td>
</tr>
<tr>
<td>When I say “begin,” read the words as quickly and carefully as you can. Read the words across the page, starting at the first row below the line. I will keep quiet and listen to you, unless you need help. Do you understand what you are to do? Ready? Begin.</td>
</tr>
</tbody>
</table>

Start the timer when the child reads the first word. Follow along with your pencil and clearly mark any incorrect words with a slash (/). Count self-corrections as correct. If you’ve already marked the self-corrected word as incorrect, circle the word and go on. Stay quiet, except when providing answers as follows: if the child hesitates for 3 seconds, provide the word, point to the next word and say “Please go on.” Mark the word you provide to the child as incorrect.

AFTER 60 SECONDS, SAY “stop.” Mark the final word read with a bracket ( ).

**Early stop rule:** If you have slashed/marked as incorrect all of the answers on the first line, say “Thank you!”, discontinue this exercise, check the box at the bottom, and go on to the next exercise.

Examples:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>go</td>
<td>sad</td>
<td>find</td>
<td>up</td>
<td>come</td>
</tr>
<tr>
<td>help</td>
<td>two</td>
<td>run</td>
<td>see</td>
<td>down</td>
</tr>
<tr>
<td>red</td>
<td>and</td>
<td>play</td>
<td>at</td>
<td>you</td>
</tr>
<tr>
<td>chair</td>
<td>man</td>
<td>when</td>
<td>now</td>
<td>under</td>
</tr>
<tr>
<td>please</td>
<td>like</td>
<td>soon</td>
<td>they</td>
<td>good</td>
</tr>
<tr>
<td>thank</td>
<td>going</td>
<td>are</td>
<td>know</td>
<td>him</td>
</tr>
<tr>
<td>jump</td>
<td>once</td>
<td>ask</td>
<td>fly</td>
<td>want</td>
</tr>
<tr>
<td>must</td>
<td>green</td>
<td>sing</td>
<td>those</td>
<td>always</td>
</tr>
<tr>
<td>many</td>
<td>which</td>
<td>some</td>
<td>sit</td>
<td>clean</td>
</tr>
<tr>
<td>stop</td>
<td>big</td>
<td>me</td>
<td>house</td>
<td>for</td>
</tr>
</tbody>
</table>

Time remaining on stopwatch at completion (number of SECONDS):

Check this box if the exercise was discontinued because the child had no correct answers in the first line.

Good effort! Let’s go on to next section.
Section 6. Unfamiliar Nonword Decoding

Show the child the sheet of invented words in the student stimuli booklet. Say,

Here are some made-up words. I would like you to read as many as you can. Do not spell the words, but read them. For example, this made-up word is: “ut”.

Let’s practise: please read this word [point to the next word: dif].

[If the student says “dif”, say]: “Very good: “dif”
[If the student does not say “dif” correctly say]: This made-up word is “dif.”

Now try another one: please read this word [point to the next word: mab].

[If the student says “mab”, say]: “Very good: “mab”
[If the student does not say “mab” correctly say]: This made-up word is “mab.”

When I say “begin,” read the words as quickly and carefully as you can. Read the words across the page, starting at the first row below the line. I will keep quiet and listen to you, unless you need help. Do you understand what you are to do? Ready? Begin.

Start the timer when the child reads the first word. Follow along with your pencil and clearly mark any incorrect words with a slash (/). Count self-corrections as correct. If you’ve already marked the self-corrected word as incorrect, circle the word and go on. Stay quiet, except when providing answers as follows: if the child hesitates for 3 seconds, provide the word, point to the next word and say “Please go on.” Mark the word you provide to the child as incorrect.

AFTER 60 SECONDS, SAY “Stop.” Mark the final word read with a bracket ([ ]).

Early stop rule: If you have slashed/marked as incorrect all of the answers on the first line, say “Thank you!”, discontinue this exercise, check the box at the bottom, and go on to the next exercise.

Examples:  ut  dif  mab

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>fut</td>
<td>lus</td>
<td>dit</td>
<td>leb</td>
<td>gax</td>
<td>(5)</td>
</tr>
<tr>
<td>2</td>
<td>huz</td>
<td>jod</td>
<td>kib</td>
<td>mib</td>
<td>tob</td>
<td>(10)</td>
</tr>
<tr>
<td>3</td>
<td>nom</td>
<td>rop</td>
<td>hig</td>
<td>reg</td>
<td>san</td>
<td>(15)</td>
</tr>
<tr>
<td>4</td>
<td>tup</td>
<td>ral</td>
<td>wix</td>
<td>nep</td>
<td>nad</td>
<td>(20)</td>
</tr>
<tr>
<td>5</td>
<td>lut</td>
<td>yod</td>
<td>sim</td>
<td>tat</td>
<td>sig</td>
<td>(25)</td>
</tr>
<tr>
<td></td>
<td>et</td>
<td>zon</td>
<td>nup</td>
<td>sen</td>
<td>kad</td>
<td>(30)</td>
</tr>
<tr>
<td></td>
<td>taw</td>
<td>rew</td>
<td>paf</td>
<td>sal</td>
<td>zib</td>
<td>(35)</td>
</tr>
<tr>
<td></td>
<td>ved</td>
<td>dag</td>
<td>vom</td>
<td>riz</td>
<td>gof</td>
<td>(40)</td>
</tr>
<tr>
<td></td>
<td>maz</td>
<td>fol</td>
<td>ver</td>
<td>Et</td>
<td>teb</td>
<td>(45)</td>
</tr>
<tr>
<td></td>
<td>tib</td>
<td>lef</td>
<td>yag</td>
<td>fim</td>
<td>bif</td>
<td>(50)</td>
</tr>
</tbody>
</table>

Time remaining on stopwatch at completion (number of SECONDS) :

Check this box if the exercise was discontinued because the child had no correct answers in the first line.

Good effort! Let’s go on to next section.
Section 7a. Oral passage reading
Show the child 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 have finished, I will ask you some questions about what you have read. Do you understand what you are to do? When I say “begin,” read the story as best as you can. I will keep quiet & listen to you, unless you need help. Ready? Begin.

Start the timer when the child reads the first word. Follow along with your pencil and clearly mark any incorrect words with a slash (/). Count self-corrections as correct. Stay quiet, unless the child hesitates for 3 seconds, in which case provide the word, point to the next word and say “Please go on.” Mark the word you provide to the child as incorrect.

At 60 seconds, say “Stop.” Mark the final word read with a bracket ( ]).

Early stop rule: If the child reads no words correctly on the first line, say “Thank you!”, discontinue this exercise, check the box at the bottom of the page, and go on to the next exercise.

Section 7b. Reading comprehension

When 60 seconds are up or if the child finishes reading the passage in less than 60 seconds, REMOVE the passage from in front of the child, and ask the first question below.

Give the child at most 15 seconds to answer the question, mark the child’s response, and move to the next question.

Read the questions for each line up to the bracket showing where the child stopped reading.

<table>
<thead>
<tr>
<th>Time remaining on stopwatch at completion (number of SECONDS):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Check this box if exercise stopped due to no correct answers in the first line.</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where does Senga live?</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>[On a farm; home; with his mother, father and sister Ana]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Why does the land get dry?</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>[The rains haven't come; there is a drought; there is a dry season; God doesn't send the rain]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Why do Senga and his family watch the sky?</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>[Hoping the rains come; waiting for the rain]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What hit Senga on the head?</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>[rain; water; drops]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How do you think Senga felt when the rains came?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Excited, thankful, happy, any reasonable answer]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Good effort! Let’s go on.