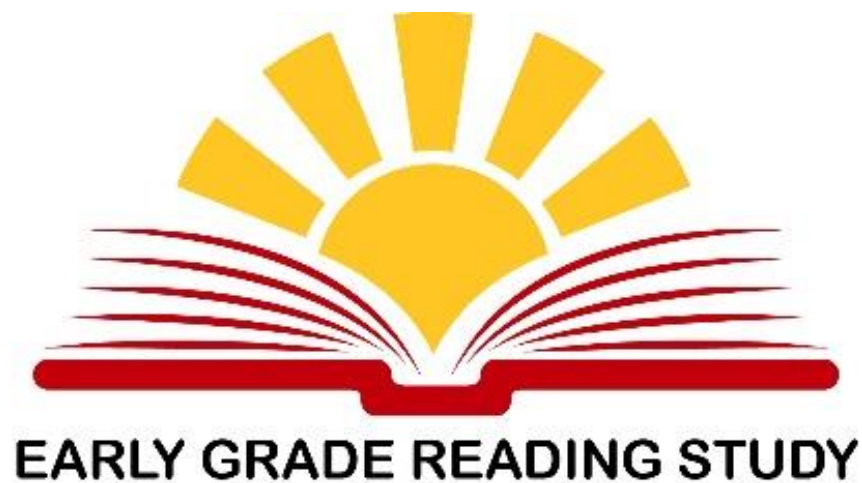


THE EARLY GRADE READING STUDY:

A midline report



**IMPROVING EARLY GRADE READING IN SOUTH AFRICA
[P2.10.SA.IE]**

MIDLINE REPORT, JUNE 2016

RESEARCH TEAM (AUTHORS)

Stephen Taylor

Jacobus Cilliers

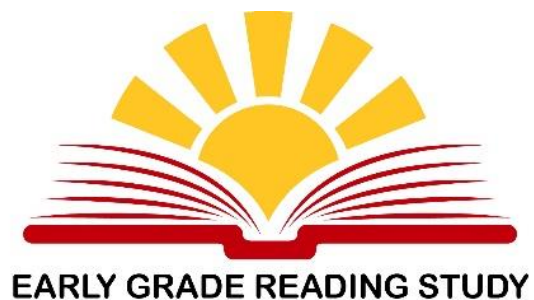
Brahm Fleisch

Cas Prinsloo

Servaas van der Berg

Vijay Reddy

(With help from Nompumelelo Mohohlwane and Janeli Kotze)



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basic education

Department:
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Responsible Department: Project Design, Management and Governance



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Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA

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CONTENTS

Abbreviations and Acronyms.....	5
List of tables.....	6
List of figures	8
Executive summary.....	9
Background to the Early Grade Reading Study.....	12
Description of Interventions	13
Summary of changes to interventions after Year 1	14
Theory of change	16
Research site.....	19
Evaluation design.....	22
Treatment assignment and sample selection.....	22
Midline Instrument development and piloting	24
Ethical clearance.....	25
Midline Data collection.....	25
Data capturing and cleaning.....	27
Summary of baseline results	28
Erratum: Baseline balance for Treatment 1	28
Midline Results	29
Learner test scores	29
Attrition	34
Main midline results	36
Effects on sub-tests	41
Heterogeneous treatment effects	43
Impacts on intermediate outcomes	55
Progress report on implementation of interventions	59
Reading development.....	59
Intervention one	65
Intervention two.....	70
Intervention three	78
Next steps in the EGRS	83
References.....	84

ABBREVIATIONS AND ACRONYMS

DBE	Department of Basic Education
PIRLS	Progress in International Reading Literacy Study
RCT	Randomized Controlled Trial
ANA	Annual National Assessments
EGRS	Early Grade Reading Study
SGB	School Governing Body
RDD	Regression Discontinuity Design
EGRA	Early Grade Reading Assessment
HSRC	Human Sciences Research Council
CRC	Community Reading Coach
GPLMS	Gauteng Primary Language and Mathematics Strategy

LIST OF TABLES

Table 1: Number of schools by phase in Dr Kenneth Kaunda and Ngaka Modiri Molema	20
Table 2: Grade 3 learners achieving 50% and above by subject	21
Table 3: Grade 6 learners achieving 50% and above by subject	22
Table 4: Number of parent questionnaires returned per school	26
Table 5: Baseline balance tests	28
Table 6: Summary statistics for each sub-test in Midline learner assessment	29
Table 7: Summary Statistics of Sub Tests	30
Table 8: Phonological Awareness Item Response	32
Table 9: Baseline Sub-test Predicting Midline Total Score	32
Table 10: Correlation between Baseline and Midline Sub-tests	33
Table 11: Midline Sub-test Correlation	33
Table 12: Baseline Sub-test Correlation	34
Table 13: Reason given for attrition	34
Table 14: Mean attrition by treatment group	35
Table 15: Linear probability model predicting attrition by treatment group	35
Table 16: Factors predicting attrition	36
Table 17: Simple comparison of baseline and midline mean scores	37
Table 18: Regression models controlling only for stratification	39
Table 19: Regression models controlling for baseline test scores	39
Table 20: Regression models with full controls (Main specification)	40
Table 21: Effects on sub-tests for Treatment 1 (Lesson plans, materials & centralized training)	42
Table 22: Effects on sub-tests for Treatment 2 (Lesson plans, materials & on-site coaching)	42
Table 23: Effects on sub-tests for Treatment 3 (Parent Involvement)	42
Table 24: Summary statistics for learner-level variables used in analysis of heterogeneous effects	43
Table 25: Summary statistics for school-level variables used in analysis of heterogeneous effects	43
Table 26: Summary statistics for teacher-level variables used in analysis of heterogeneous effects	44
Table 27: Treatment effects by baseline learner score	44
Table 28: Treatment effects by learner gender	45
Table 29: Treatment effects by number of books at home	46
Table 30: School-level interactions with treatment group (A)	47
Table 31: School-level interactions with treatment group (B)	48
Table 32: School-level interactions with treatment group (C)	50
Table 34: Teacher absenteeism interactions with treatment group	53
Table 35: Reading pedagogy and resources interactions with treatment group	54
Table 36: Summary statistics for variables used in analysis of intermediate outcomes	55
Table 37: Impact on pedagogy	56
Table 38: Impact on teacher effort	57
Table 39: Impact on classroom resources	58
Table 40: Impact on written work by learners	58
Table 41: Intervention 1 materials	65
Table 42: Intervention 1 activities	66
Table 43: School Attendance at Treatment 1 training	67
Table 44: Teacher attendance at Treatment 1 training	67

Table 45: School leaders attendance at Treatment 1 training	68
Table 46: Teacher assessments in Term 3	68
Table 47: Intervention 1 challenges and recommendations	69
Table 48: Intervention one plans 2016	70
Table 49: Intervention 2 materials	71
Table 50: Intervention 2 activities	72
Table 51: Intervention 2 coach details	73
Table 52: School attendance at Intervention 2 training	73
Table 53: Teacher attendance at Intervention 2 training	74
Table 54: Dosage of on-site coaching visits	74
Table 55: Curriculum coverage terms 2 to 4	74
Table 56: Assessment results terms 2 to 4	75
Table 57: Developments in instructional practice	75
Table 58: Intervention 2 challenges and recommendations	77
Table 59: Intervention 2 plans for 2016	78
Table 60: Intervention 3 materials	79
Table 61: Intervention 3 activities	79
Table 62: Community Reading Coach attendance at training	80
Table 63: Number of learners represented by parents/guardians at meetings	81
Table 64: Intervention 3 challenges and recommendations	81
Table 65: Intervention 3 plans for 2016	82

LIST OF FIGURES

Figure 1: Theoretical diagram of how reading acquisition occurs	17
Figure 2: Map of South Africa showing education districts	20
Figure 3: Highest Education level for adults aged 20 and older	21
Figure 4: Diagram showing sampling procedure	23
Figure 5: Map of North West province showing schools by treatment assignment	24
Figure 6a and 6b: Baseline and Midline Distributions of Number of Letters Correct per Minute, by Treatment	31
Figure 7a and 7b: Baseline and Midline Distributions of Number of Words Correct per Minute, by Treatment	31
Figure 8: Letter recognition at baseline and midline	37
Figure 9: Percentile plot of letter recognition at baseline and midline for Treatment 2 and Control	38
Figure 10: Graphical representation of estimated treatment effects from the main specification	40

EXECUTIVE SUMMARY

This report describes the first year of the South African Department of Basic Education's Early Grade Reading Study (EGRS), and presents the estimated programme impacts after one year of implementation. The EGRS project involves the implementation and evaluation of three alternative programmes all aimed at improving the acquisition of home language reading and literacy. The project is being implemented in two districts in the North West Province, in which the main home language is Setswana. The EGRS is working with the grade 1 class of 2015 for a two-year period, following the same learners into grade 2 in 2016.

The first intervention (implemented in 50 schools) provides teachers with lesson plans, additional reading support materials and training at centralized workshops twice a year. The second intervention (implemented in a different group of 50 schools) provides teachers with the same set of lesson plans and additional reading support materials but provides ongoing support to teachers through on-site coaching and small cluster training sessions. The third intervention (implemented in a further 50 schools) holds weekly meetings with grade 1 parents to inform them of the importance of learning to read in the early grades and to empower them with the knowledge and tools to become involved in their own child's reading acquisition.

Assignment to each of the three intervention or "treatment" groups and to a further group of 80 control schools was done through a computerized lottery. This ensures comparability across the groups. This randomized assignment is the key design feature of the EGRS and is the basis for making claims about the causal impacts of each intervention on reading outcomes.

All data collection is administered by the Human Sciences Research Council (HSRC). In the baseline data collection a random sample of 20 grade 1 learners per school was drawn to participate in oral assessments of reading and pre-reading skills. Questionnaires were also administered to the school principal, to all grade 1 teachers and to parents of the 20 tested learners. The learner tests were adapted from the well-known Early Grade Reading Assessment (EGRA) tool and covered the following skills in Setswana: expressive vocabulary, letter recognition fluency, short-term memory, phonological awareness, word recognition fluency, sentence reading and sentence comprehension. A standalone Baseline Report provides extensive detail on the baseline data collection.

The midline data collection occurred between the 26th of October 2015 and the 13th of November 2015. The intention was to re-test the same learners and again to administer questionnaires to parents, teachers and school principals. As described, in this report, the instrument completion rate was substantially better at midline than it was at baseline, and we attribute this to new quality control measures that we put in place as well as to a better quality fieldwork service provider. Approximately 8% of learners who were tested at baseline were not found for testing at midline, with the main reason being normal absenteeism. Although there were some slight differences in attrition rates between the treatment groups, we argue that this has negligible consequence for the validity of the subsequent impact analysis. We observe that

weaker learners at baseline, older learners and learners in schools with higher teacher absenteeism were more likely to attrit.

The midline Setswana reading tests were somewhat adapted from those used at baseline, with identical letter recognition and word recognition sections. The midline tests did not include expressive vocabulary or tests of working memory, but did include nonsense word decoding, paragraph reading and writing exercises.

As was the case at baseline, girls outperformed boys on the midline reading tests. This advantage for girls is consistent with what is observed in standardized tests for higher grades in South Africa, such as in the Annual National Assessments. It is interesting that this gender gap is evident right at the start of grade 1, which would suggest that the girl advantage may be due to some factor other than school practices, most likely differences in the physiological development of girls and boys at this age.

The midline data enables us to estimate the impacts of each intervention after a single year of implementation during the course of grade 1. Strictly speaking, implementation of interventions only began at the start of the second school term of 2015, since the first term was taken up with training teachers and other preparatory activities. These estimates of programme impact should be regarded as preliminary since we anticipate receiving more information from the endline data collection. For this reason, we remain cautious throughout this report when interpreting particular results, especially when interpreting the estimated effects of the treatments on particular sub-groups of children or schools.

We observe small to moderate positive impacts of both treatments 1 and 2 on reading outcomes at the end of grade 1. The estimated impacts in our main regression model are 0.13 and 0.14 standard deviations, respectively, and are both statistically significant at the 90% level of confidence. Overall, the impact of the parent involvement intervention is not statistically significantly greater than zero, except perhaps for those learners who had scored high in the baseline assessment. This result requires further investigation at endline. There is no clear evidence that any of the sub-tests were especially affected by any of the treatments.

The impacts of treatments 1 and 2 are clearer for boys than for girls. For boys, each of these interventions had an estimated effect of 0.19 standard deviations, and this was statistically significant at the 95% level of confidence. If this result is again observed at endline it could be a positive finding for the sake of helping boys catch up to girls in literacy outcomes.

The positive estimated effects of treatments 1 and 2 are clearer amongst schools in urban areas (33% of our sample), where the estimated effects are higher than 30% of a standard deviation. Consistent with this, amongst schools classified as Poverty Quintile 1 (which are poor and rural) there appear to be no impacts of treatments 1 and 2. Finally, when excluding the few multi-grade schools in our sample, the positive impacts of treatment are also clearer. There is some

evidence that treatment effects were larger in schools where teachers were less frequently absent from school.

If the two teacher support programmes appear to be shifting learner outcomes somewhat, it is important to understand why. We do observe some evidence of changed teacher and classroom practice. We find that teachers in interventions 1 and 2 were more likely to “stream” children into groups according to their reading proficiency, compared to the control group. Treatment 2 teachers appeared to conduct individualized reading assessments of learners more frequently than the control group. There was some evidence of increased reading resources in treatment 1 and 2 classrooms, especially of Setswana posters. Encouragingly, based on an inspection of learner exercise books, there is consistent evidence of more exercises of all types (including drawing pictures), of written exercises, and of full sentence writing exercises in both treatment 1 and 2 schools compared to the control group.

The final section of this report provides an update on the implementation of the three interventions during Year 1 (2015). We also provide a short section describing the content and design of the interventions, in the words of the service provider, Class Act, who have brought substantial expertise to the project. As the Research Team, we have been working closely with Class Act to ensure an alignment of the research design with their ideas for strengthening the design of the interventions.

Interventions are continuing throughout 2016. The endline data collection is scheduled for October/November 2016. At that point we will be able to measure the impacts of the three interventions after two years of implementation at the end of grade 2.

BACKGROUND TO THE EARLY GRADE READING STUDY

The acquisition of reading is foundational to all subsequent learning; yet the majority of South African children are being left behind in this regard. The PIRLS study of 2006 showed that a striking 80% of South African children were not yet reading with comprehension after five years of schooling. The problem is particularly severe amongst poor children. Consequently, massive inequalities in educational achievement are established early in primary school and there is no evidence of these inequalities being reduced in later years. Therefore, early interventions, such as improving the acquisition of reading amongst poor children, can be expected to have larger effects than interventions later in the school programme.

The recently introduced Annual National Assessments (ANA) have raised public awareness of the weak literacy achievement of children in the primary school grades. Although the DBE and provincial education departments are implementing various strategies to support early grade reading, there is little or no sense of what is working and why. Moreover, there are competing models of support in the system. Some provinces favour the traditional model of teacher training workshops, while the province of Gauteng has provided additional graded readers and clearly scripted lesson plans together with specialist reading coaches who visit teachers on monthly basis to observe lessons and offer assistance. It is important that a national reading strategy be based on scientific evidence regarding what most improves the acquisition of reading.

A randomized controlled trial (RCT) design allows a credible estimation of the true causal impact of interventions, and thus has the potential to inform responsible policy decisions. Through the use of a lottery to allocate schools to intervention and control groups it is possible to construct a credible “counterfactual” scenario – what would have happened to those who received an intervention had they not received that intervention.

Moreover, by directly comparing the impacts on reading outcomes of alternative programmes, each with different cost implications, we can identify the most cost-effective intervention. This project is designed to explicitly compare the impact and cost of a new model of teacher development (on-school support) to the impact and cost of a more traditional model (training at central venues). The third intervention, which aims at improving parent involvement in schools and in home-based reading activities, relies on a rather different theory of change and is less expensive. By measuring the success of each intervention on the same scale, this project will provide a sense of the cost-effectiveness of different policy options.

The primary implementing partner is the South African government, in particular the Department of Basic Education. A key role is also being played by the North West provincial education department, which is contributing financially and is championing the project within the schools.

A service provider has been appointed to run the three interventions on behalf of the DBE for the purposes of this impact evaluation. The service provider is an organisation called “Class Act”, which is highly involved in partnerships with government to run literacy interventions. For

example, “Class Act” was a service provider in the Gauteng Province’s implementation of the Gauteng Primary Literacy and Maths Strategy (GPLMS) over the last few years. Programme interventions are being funded by a coalition of donors, including the ZENEX Foundation, UNICEF, Anglo American and the Department of Planning, Monitoring and Evaluation in the Presidency. These funds are being managed by the University of the Witwatersrand, which ran a tender for the service provider work and subsequently entered into a contract with Class Act.

The evaluation side of the project is being supervised by the Research Team while the data collection and capturing is being managed by South Africa’s Human Sciences Research Council (HSRC). The evaluation is being funded by the International Initiative for Impact Evaluation (3ie).

DESCRIPTION OF INTERVENTIONS

This study evaluates three different interventions, all aimed at improving early-grade reading in the home language, which in the case of the North West province is Setswana. All three interventions work with children entering Grade 1 at the start of 2015 over a two-year period (thus working with grade 2 learners in 2016).

Treatment 1: Training, scripted lessons, graded readers.

Treatments 1 and 2 aim to apply the same set of instructional practices in the teaching of home language literacy in grade 1 and 2 classrooms. Both treatments provide teachers with lesson plans, which are aligned to the curriculum as specified in the Curriculum and Assessment Policy Statements (CAPS) for home language literacy in the Foundation Phase. The lesson plans provide detailed specification for each lesson including information on methodology and content to be taught for each instructional day. The lesson plans incorporate the use of learning support materials including the government-provided workbooks as well as certain additional materials (graded reading booklets, flash cards, posters, etc.), which are provided through the EGRS. The graded reading booklets provide a key resource for the teacher to use in group-guided reading and individual work so as to facilitate reading practice at an appropriate pace and sequence of progression.

Treatment 1 trains the teachers on how to use the lesson plans and accompanying materials through central training sessions, each lasting 2 days, and occurring twice yearly. The first session was conducted in February 2015 and the second occurred in July 2015. Similar sessions are scheduled for 2016.

Treatment 2: Reading Coaches, scripted lessons, graded readers.

Exactly the same set of instructional materials (scripted lesson plans, graded reading booklets and other materials) is provided to Treatment 2 schools. However, instead of central training

sessions, ongoing support to teachers consisting of regular (monthly) on-school coaching from specialist “reading coaches” is provided. In addition to these on-site visits, there are occasional meetings with the coach and a small cluster of nearby Treatment 2 schools. The evaluation of treatments 1 and 2 should thus shed light on whether the fairly prescriptive instructional regime has the ability to improve reading acquisition and whether the mode of teacher support is important in mediating effectiveness.

Treatment 3: Parental involvement

Treatment 3 is designed to promote parental involvement to support their children’s reading progress. At each of the 50 schools in this treatment arm a Community Reading Coach (CRC) was recruited. The CRC was identified through communication with the school principal who recommended a suitably qualified but available person in the community. The CRCs attend a 1-day training session facilitated by the service provider (Class Act) at the start of each school term (quarterly). The CRCs are trained to deliver weekly training sessions for grade 1 parents at their respective schools. A total of 30 sessions is scheduled for each year covering a total of 10 topics per year. Each topic has 3 sessions where the topic is the same but the activities of the session differ. Thus a parent can attend roughly 1 in 3 sessions and still be exposed to all topics, while parents who attend more regularly can still enjoy fresh activities. For their services, CRCs are paid a stipend of R400 per month (about \$35).

The topics covered in these sessions include the importance of learning to read for later educational and labour market success, training on how to support their child’s reading at home and the provision of low-cost materials and reading games to use at home.

SUMMARY OF CHANGES TO INTERVENTIONS AFTER YEAR 1

Several minor changes have been made to the design of each of the three interventions since the programmes started being implemented. These alterations do not substantially affect the theory of change but are essentially designed to strengthen programme implementation. They also have minimal cost implications. Mid-way through 2015, the following changes were suggested by the implementation service provider and agreed to by the Research Team¹:

1. The establishment of WhatsApp groups amongst Treatment 1 teachers and trainers: Teachers in treatment 1 attend central training once every six months. Therefore, it was felt that some channel for communication to those who provided the new materials and

¹ There were also several other changes suggested by the implementation service provider that were not agreed to by the Research Team.

the training would be beneficial. Communication through WhatsApp groups was deemed to have virtually no cost implications and would be a suitable arrangement for any such support programmes involving centralized teacher training as a way to enhance sustained implementation.

2. Start of term training for Treatment 2 teachers: It was decided that on-site coaching needed to be preceded by a light dose orientation training session at the start of every term. This training does not occur at a single central venue but on several separate occasions and venues, hosted by each coach with their cluster of treatment 2 schools. These orientation sessions last less than 1 full day.
3. Symbolic rewards for treatment 1 and 2 teachers: At training sessions, teachers are invited to present work done by their children and evidence of completing the prescribed learner assessments. Small non-monetary rewards are given to teachers who make successful presentations.
4. Attendance incentives for parent attendance (Treatment 3): The big challenge experienced in Treatment 3 has been low levels of parent attendance. Therefore, we introduced a small cash incentive for attending the weekly parent meetings. Each week the Community Reading Coach conducts a lottery in which those parents in attendance compete for a prize of R25 (about \$2). This is a small amount and the fact that only one parent can win it makes it a weak and partly symbolic incentive.

As of 2016, several additional measures were agreed upon in order to improve parent attendance:

- Class Act will ensure that Intervention 3 has a fixed routine;
- School principals have been involved in the management of the weekly meeting, monitoring the CRC and ensuring that they know what the training sessions entail;
- The CRCs have been requested to explore other possibly convenient venues like the local churches where transportation is not available;
- A communication strategy using SMS messaging has been implemented. Monthly SMS messages are being sent to school principals to remind them to follow up on the CRCs and ensure that parent meetings occur. Class Act has been in communication with the CRCs on a weekly basis regarding what they are required to cover in that week;
- Principals are now invited to the cluster CRC training that occur once a month;
- Class Act is planning to host a parental meeting, where parents will be briefed on the study and encouraged to participate in the regular meetings. The parents who attend the parental involvement meetings will be issued certificates of attendance.

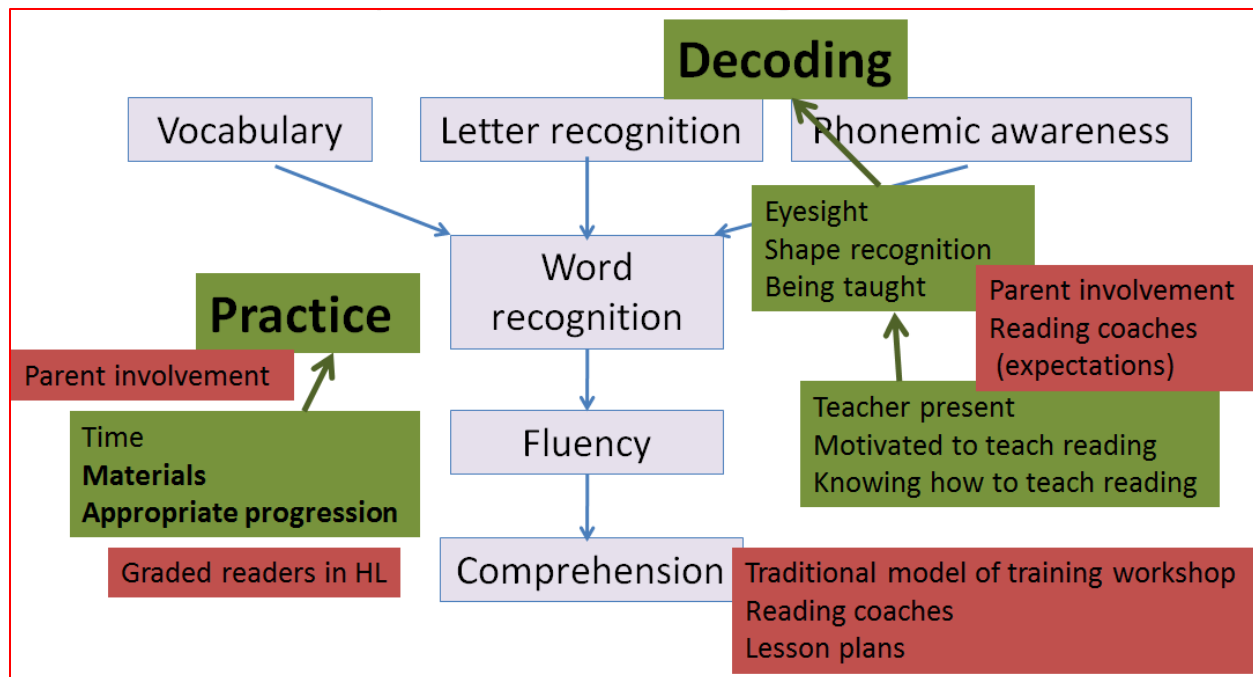
THEORY OF CHANGE

Reading acquisition

All three interventions relate to the educational theory of how reading acquisition occurs. Reading comprehension is the product of two components: vocabulary and decoding. To a great extent vocabulary (and more broadly language acquisition) comes naturally through speaking and hearing others speaking. Through speaking and hearing others speaking, phonological awareness also develops - this involves sound segmentation and recall of sound patterns. This phonological awareness is important for children to learn to decode. Particular written shapes are associated with particular sounds. Decoding thus consists of letter recognition and phonemic awareness. Unlike learning to speak, decoding does not come naturally; it is a method that must be taught systematically. It is important to emphasize that reading is produced by the product of vocabulary and decoding: If one has a perfect vocabulary but has not been taught the method of decoding one will not be able to read at all. Letter recognition and phonemic awareness are mastered through systematic teaching and consistent practice. This leads to the next stage of reading acquisition: word recognition. Through practice and appropriate progression from simpler sounds and words to more complex ones word recognition becomes established leading to the next phase of reading acquisition: fluency. It is only once decoding and word recognition have become fluent that it is possible to reach the ultimate goal of reading comprehension.

In order to learn the basics of decoding, a child requires a teacher who is present, capable and motivated to deliver systematic reading instruction. In order for decoding to become fluent a child requires suitable graded materials and the discipline (perhaps imposed) to practice a lot. The interventions to be tested in this study address these needs in various ways. Figure 1 presents a theoretical diagram illustrating how reading acquisition occurs, what supportive conditions need to be in place and how each of the interventions being evaluated in the EGRS address key points in the development of reading acquisition.

Figure 1: Theoretical diagram of how reading acquisition occurs



There is a growing body of evidence from developing countries that early grade reading interventions can have a significant impact. The “EGRA Plus” programme administered in Liberia produced substantial gains in reading achievement relative to comparison children who did not receive the programme. Key aspects of this programme included a cascading model of reading coaches, the distribution of scripted lesson plans and reading assessment tools, and the dissemination of report cards to parents (Gove and Wetterberg, 2011). A supplementary reading curriculum administered in India also produced significant improvements in both public schools and pre-schools (He, Linden and MacLeod, 2009).

However, these studies cannot tell us which component of the intervention is responsible for the success of the program. This is important for policy purposes, because we want to find the most cost-effective intervention which could be scaled up by government. For example, the “EGRA plus” programme in Liberia was clearly highly resource-intensive because it required ongoing monitoring from qualified reading coaches, but we do not know if one might be able to reach the same results with a sub-component of the program. Moreover, there is uncertainty about the transferability of the findings given different language and social contexts.

Similar programs have been implemented in South Africa, but since they were not credibly evaluated, we do not know if they truly improved pupils’ reading acquisition. The Department of Basic Education typically holds training programs similar to our intervention 1; and Gauteng has implemented a model of reading coaches, similar to intervention 2. Since it has not been possible to produce a robust empirical impact evaluation of these programmes, we do not know if they truly work or not. Fleisch and Schoer (2014) attempted a Regression Discontinuity

Design (RDD) to evaluate the impact of the Gauteng Primary Language and Mathematics Strategy (GPLMS) and findings pointed to a positive impact, though the findings were tentatively made given significant data constraints. Sailors et al (2010) evaluated a reading intervention in South Africa, which followed a similar model to intervention 2, but there are large methodological challenges to the study.

There is also a growing international literature providing information to parents and fostering parental involvement in schools can improve learning outcomes, but there is much we still do not know. In Pakistan, pupils who came from villages where the community was provided with information of school performance performed better in independently administered tests, compared to pupils from villages where no such information was administered. The improvement was particularly large for schools with low initial learning outcomes (Andrabi et al, 2013). In a different programme in India, school communities were informed of their school performance and also educated on their rights, roles and responsibilities in school governance through 8 public meetings. Education performance improved as a result (Pandey et al, 2013). However, in a recent impact evaluation in Kenya, informing parents on their child's reading progress had zero impact (Lieberman, Posner and Tsai, 2013). The authors hypothesize necessary conditions for an information-intervention to work, all of which we address in our study: (i) information is new; (ii) it highlights under-performance and potential to improve; (iii) it is combined with measures which enable parents to act on this information.

All interventions aim to improve reading acquisition in the home language. Strictly speaking, the targeted outcome is home language literacy more broadly, since this is the Foundation Phase curriculum area being given support through our programmes. The choice to address home language literacy is motivated by research showing long-term benefits to strong home language skills prior to switching to a second language. Taylor and Von Fintel (2016), for instance, show that in South Africa using home language as the language of instruction during grades 1, 2 and 3 has been associated with better English acquisition in grades 4, 5 and 6.

Intervention 1:

This programme is intended to impart the capacity to ensure that it is possible for the teacher to provide effective and systematic reading instruction in the classroom. Scripted lessons provide a structure to assure systematic practice and learning based on sound pedagogical theory. It can act as a substitute to low teacher capability or low motivation to prepare lesson plans. The accompanying reading materials aim to ensure that all the necessary instructional infrastructure is in place for a systematic reading programme to be effectively implemented.

Intervention 2:

The reading coach intervention provides more intensive training to improve teacher capacity. The assumption is that, just like learning to read, the ability to teach is a skill that needs to be

developed over time and might not be accomplished in one-off training. Furthermore, the reading coaches could also improve teacher motivation as they are frequently monitored, provided with much-needed additional support, and can also find inspiration from watching an excellent example provided occasionally by coaches. This programme thus addresses both teacher capacity and teacher motivation. Another way to describe the difference between Treatments 1 and 2 is that while they share an underlying pedagogical theory of change (centered around instructional alignment and coherence using prescriptiveness as a vehicle), they differ in their theory of action (where Treatment 2 has a stronger component focused on changing behavior using accountability and motivation).

Intervention 3:

Parents play a critical component to learning to read, as it requires continuous practice, both at school and at home. For parents to be *willing* to play this role they need to appreciate (i) the importance of reading; and (ii) that their child is most likely not learning enough at school and requires additional support. This is the purpose of the information. For parents to be *able* to play this role, they need to understand the necessary steps in learning to read and also have appropriate material to practice reading with their child. This is the purpose of the training and additional practice material.

Each of these three interventions has a different theory of change and also has different cost implications. Treatment 3 has the lowest cost amounting to approximately R16 000 per school per year (i.e. about \$1200). Treatment 1 costs approximately R34 000 per school per year (i.e. about \$2600). Treatment 2 is the most costly, amounting to approximately R63 000 per school per year (i.e. about \$4800).

RESEARCH SITE

The EGRS is being implemented in the North West province, in the districts of Dr Kenneth Kaunda and Ngaka Modiri Molema. The North West province was chosen on the basis of 1) it being a relatively poor province, thus making it relevant to the majority of the underperforming South African school system; 2) it is relatively homogenous in terms of home language (Setswana) making it more affordable to develop learning support materials in a single language; 3) it is within driving distance from the Gauteng province where the national DBE is located; and 4) the senior management of the North West provincial education department were eager to partner with the DBE on this project. The district of Bojanala was excluded because another special targeted intervention was taking place in that district at the same time. The district of Dr Ruth Segomotsi Mompati was excluded since it is particularly far West of Gauteng and since enough schools existed in the districts of Dr Kenneth Kaunda and Ngaka Modiri Molema. Figure 2 shows a map of South Africa divided into the 83 education districts.

Figure 2: Map of South Africa showing education districts

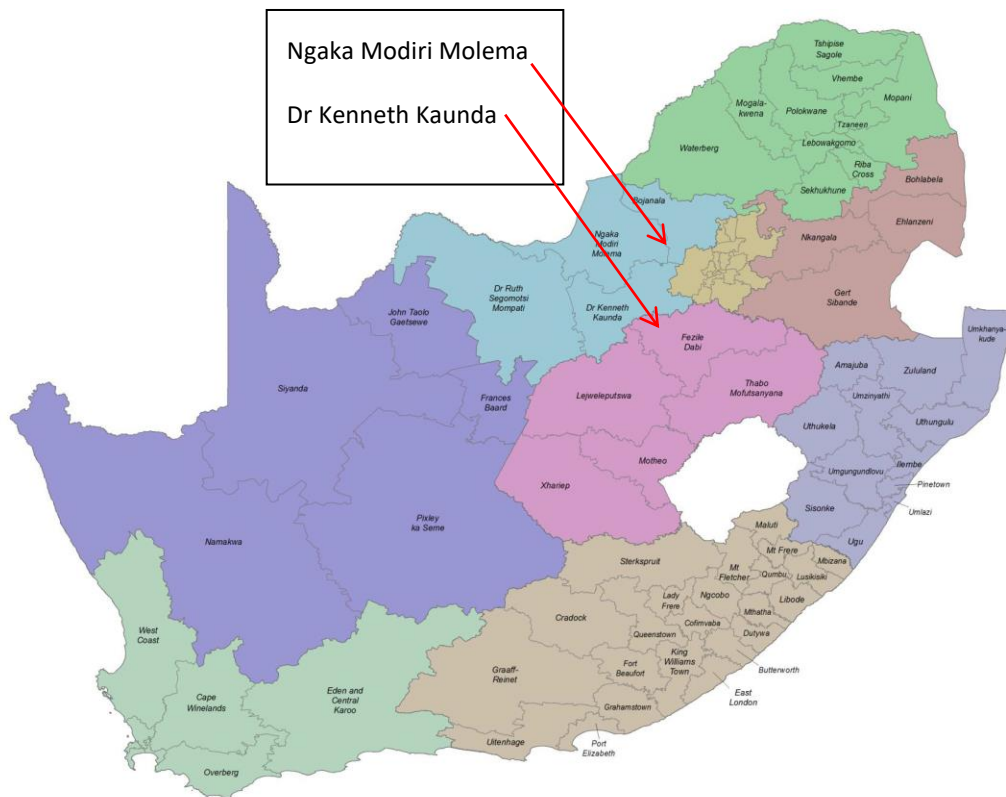


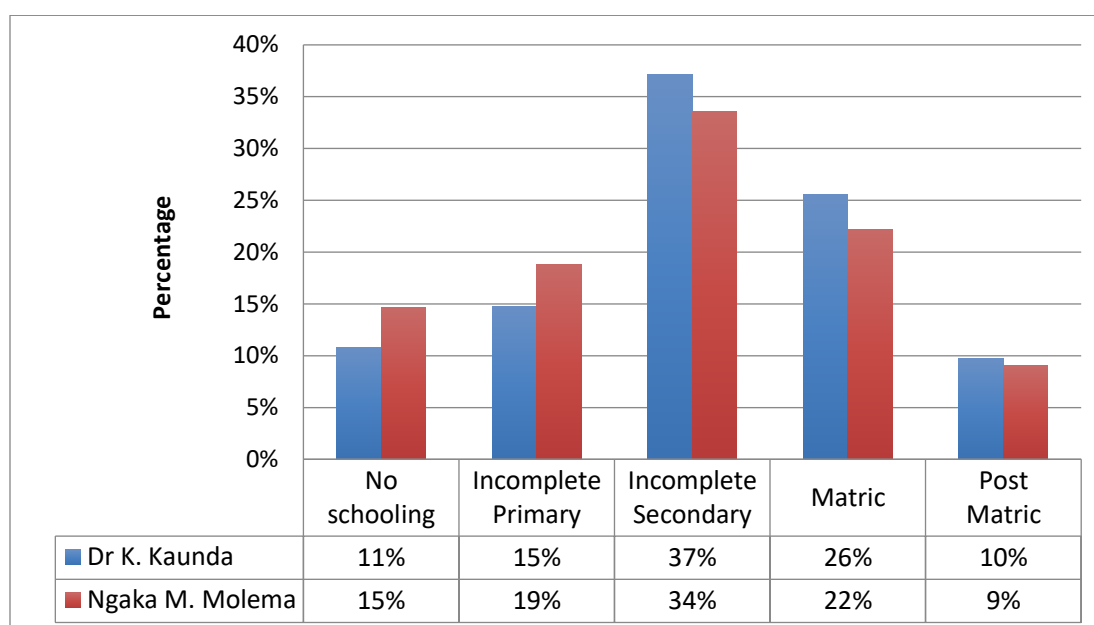
Table 1 below shows the total number of ordinary schools by phase for both Dr Kenneth Kaunda and Ngaka Modiri Molema districts in 2014. We see that Ngaka Modiri Molema district has the highest number of schools across all categories. Of the 248 schools in Dr Kenneth Kaunda district, 14 are independent schools while 11 of the 404 schools in Ngaka Modiri Molema district are independent schools. In Dr Kenneth Kaunda, 81% of schools are no-fee schools (classified as Quintile 1, 2, and 3 according to the official school poverty classification) while the equivalent figure was 91% of schools in Ngaka Modiri Molema district. This confirms that these two districts are largely poor and rural parts of South Africa. The choice of these areas for the EGRS project was deliberate so as to optimize the relevance of the study's findings to the large, underperforming and poor sections of South Africa's school system.

Table 1: Number of schools by phase in Dr Kenneth Kaunda and Ngaka Modiri Molema

	Dr Kenneth Kaunda		Ngaka Modiri Molema	
	Number	%	Number	%
Primary	149	60%	247	61%
Secondary	54	22%	76	19%
Combined	42	17%	67	17%
Intermediate	3	1%	14	3%
Total	248	100%	404	100%

In the 2011 Census, people were asked to indicate the highest level of education that they had completed. It referred to the highest level completed, not the level currently in, if the person was still studying. Figure 3 shows the education levels of adults aged 20 and older by district. The category 'Matric' refers to the secondary school leaving examination. This figure shows that Dr Kenneth Kaunda district had higher proportions of people who had a matric and post matric qualifications compared to those in Ngaka Modiri Molema district. Overall, this figure implies that the majority of people who would be parents to Grade 1 pupils would have relatively low levels of education.

Figure 3: Highest Education level for adults aged 20 and older



The Annual National Assessment (ANA) results provide an indication of school performance at the primary school level. It should be noted, however, that results are not comparable across time or across subjects or grades, since the tests cannot be equated to each other. In 2012 Dr Kenneth Kaunda performed better than Ngaka Modiri Molema. However, the opposite was true in 2013. This seems strange, and may reflect differential test administration and marking practices across time and district. The broad point to note is that language and mathematics performance in both of these districts is at a low level, allowing much room for improvement.

Table 2: Grade 3 learners achieving 50% and above by subject

Subject	Year	Dr Kenneth Kaunda	Ngaka Modiri Molema
Mathematics	2012	30%	18%
	2013	49%	48%
Language	2012	53%	41%
	2013	44%	49%

Table 3: Grade 6 learners achieving 50% and above by subject

Subject	Year	Dr Kenneth Kaunda	Ngaka Modiri Molema
Mathematics	2012	9%	7%
	2013	15%	23%
Language	2012	25%	19%
	2013	40%	45%

EVALUATION DESIGN

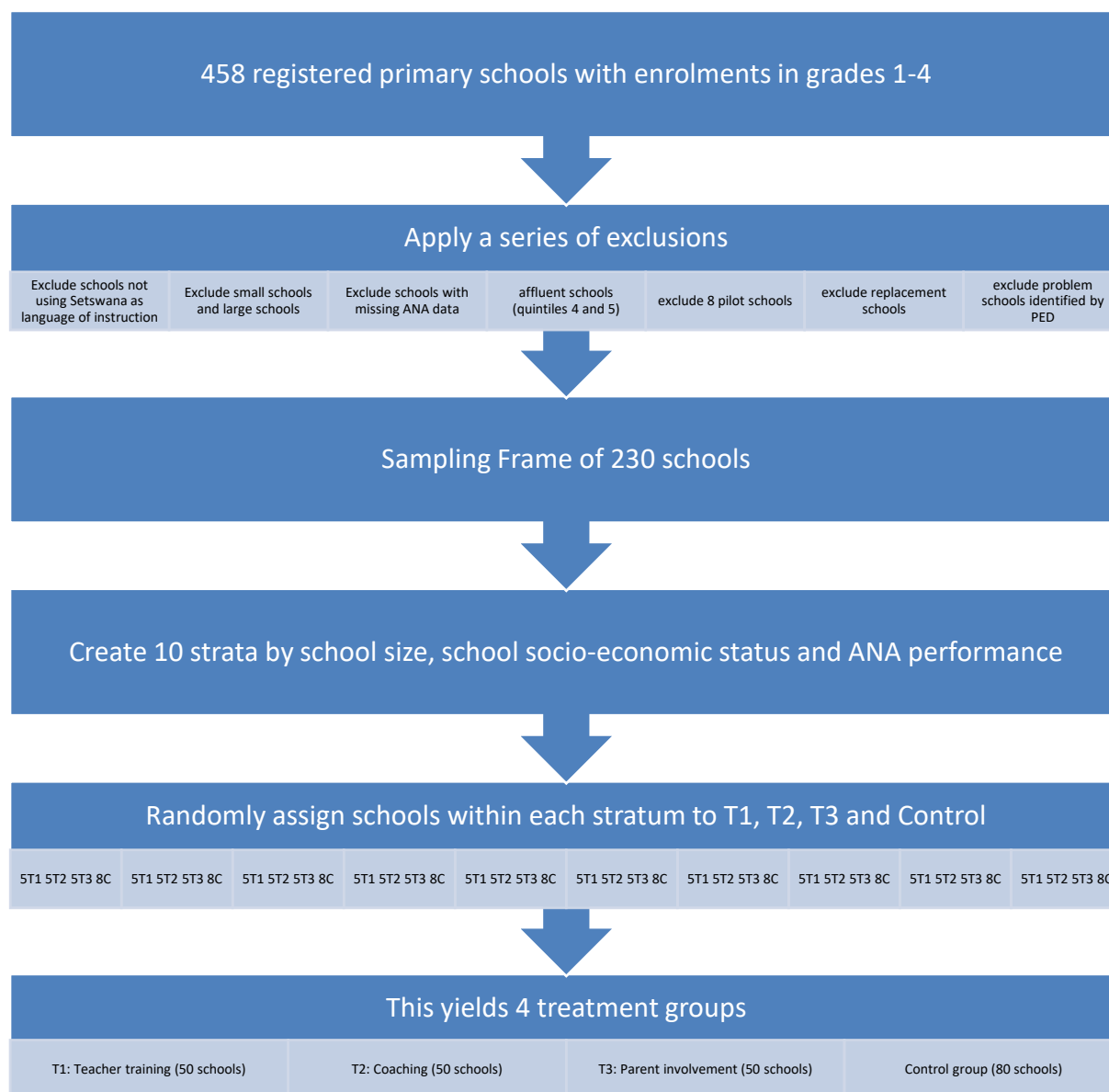
TREATMENT ASSIGNMENT AND SAMPLE SELECTION

Through a process of elimination we developed a sampling frame of 230 eligible schools. Beginning with 458 primary schools registered in 2014 administrative data in the districts of Dr Kenneth Kaunda and Ngaka Modiri Molema we started by excluding relatively affluent schools (those in quintiles 4 and 5). Next, we excluded schools in which the language of instruction in the Foundation Phase was not Setswana. We excluded schools which were missing in the 2014 ANA dataset. We also excluded 8 schools that had already been selected for the purposes of piloting of instruments through the course of this project. We further excluded particularly small schools (fewer than 20 grade 1 enrolments) since many of these schools would practice multi-grade teaching rendering the scripted lesson plans less appropriate. We also excluded particularly large schools (more than 180 grade 1 enrolments) to limit intervention costs. Three more schools were excluded after the North West PED checked our list of schools and found specific problems with these schools (e.g. the school had been closed down, or a particular conflict around school management was occurring in a school). After all of these exclusions 235 eligible schools remained. Using a random number generator, we then excluded 5 schools, which we retained as possible replacement schools. Thus we obtained the sampling frame of 230 schools.

To increase power and assure balance between treatment arms, we performed stratified randomization. We created 10 strata of 23 similar schools based on school size, socio-economic status, and previous performance in the Annual National Assessments. Within each stratum, we then randomly assigned 5 schools to each treatment group and 8 to the control group. Thus we randomly assigned 50 schools to each treatment and 80 to the control. Given that we collect data on 20 grade 1 learners per school, this sample should be sufficient to identify a minimum effect size of 0.21 standard deviations when comparing a treatment group with the control group and a minimum effect size of 0.23 standard deviations when comparing two treatment groups. These calculations assume a 95% confidence interval, an alpha value of 0.8, an intra-class correlation coefficient (ρ) of 0.3 and a correlation between pre- and post-

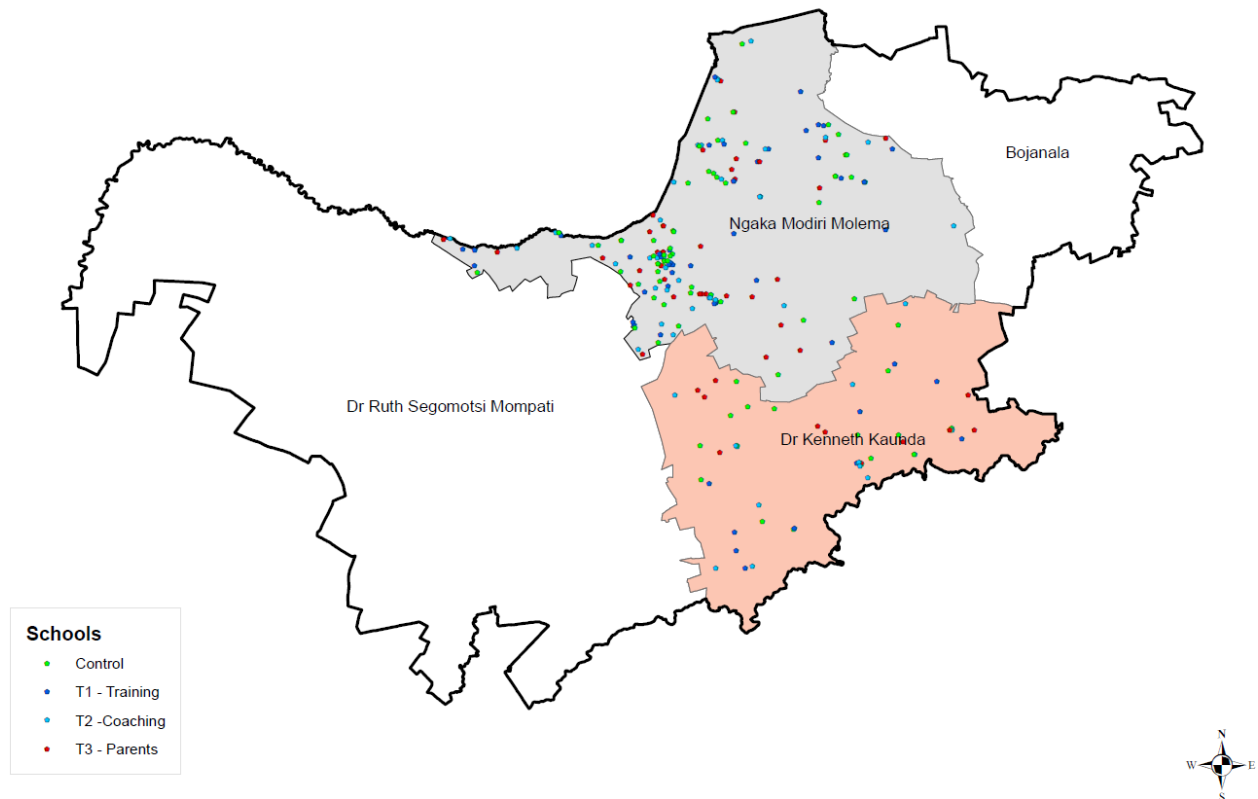
test scores of 0.7. Figure 4 presents a schematic diagram to describe the sampling procedure that was followed.

Figure 4: Diagram showing sampling procedure



The following map shows the schools participating in the EGRS and indicates the treatment status of each school. Note that a few schools are not shown on the map due to missing or inaccurate GIS codes.

Figure 5: Map of North West province showing schools by treatment assignment



MIDLINE INSTRUMENT DEVELOPMENT AND PILOTING

The Research Team worked closely with the HSRC to develop four survey instruments for the midline data collection: a learner test, a school principal questionnaire, a teacher questionnaire and a parent/guardian questionnaire. The learner test was designed in the spirit of the Early Grade Reading Assessment (EGRA) to be administered orally by a fieldworker to one child at a time. The test instrument used parts of the EGRA for Setswana, which had already been developed in South Africa. A Setswana linguist consultant (accredited assessor, qualified / certified teacher, translator and text-book developer) assisted the Research Team.

The Midline instruments were piloted on 3-4 September 2015 in the same five schools where the piloting of the baseline instruments and procedures took place a year before. Further refinements to the instruments were then finalised by 29 September 2015 in preparation for the start of fieldwork during the final week of October 2015. The revision task included a training and administration manual. Seven sub-tests were included in the final midline learner assessments. They were:

- EGRA (Early Grade Reading Assessment) Letter Sound Recognition
- EGRA Word Recognition
- EGRA Non-Word Decoding
- Sentence Reading
- Paragraph Reading
- Writing
- Phonemic Awareness.

The piloting indicated that each individual oral assessment should take approximately 15 minutes per learner.

ETHICAL CLEARANCE

The HSRC's Research Ethics Committee (REC) approved the initial project design on 24 March 2014. The baseline instruments along with an application for recertification for another year were approved on 21 January 2015. The pilot-versions of the Wave 2 instruments, information sheets and consent forms, as well as procedures, were approved on 2 September 2015. The final Wave 2 data-collection versions of the foregoing, including approval of a deviation request to involve learners and staff from five additional schools in simulation training, were granted clearance on 13/14 October 2015. Recertification of the study for 2016 was approved on 6 November 2015.

MIDLINE DATA COLLECTION

As described in the Baseline Report, the random selection of 20 learners per school appears to have been effectively done, and a high proportion of the intended sample of learners was successfully tested. However, there were several problems noted with regard to the quality of the data and with low response rates to parent, teacher and principal questionnaires. In response a number of measures were put in place by the HSRC and the Research Team to ensure a better quality of fieldwork in the Midline survey. The Terms of Reference for the subcontracting of a fieldwork agency was much more detailed with respect to fieldworker selection criteria, conditions around approval of and payment for deliverables, and overall functionality criteria for the fieldwork organization. Instead of a single day of fieldworker training, there was a three-day training programme for fieldworkers including a practice round of data collection (with monitoring and feedback) at five schools not included in the project. The Terms of Reference specified that exactly 40 fieldworkers should be recruited, 20 of whom will administer the learner tests and must have expertise in early grade teaching. The fieldwork schedule needed to be submitted well in advance to the HSRC with schools already having been contacted and appointments fixed for specific days made. As a result of these steps, a different fieldwork service provider was hired and operated under better supervision. The process of communicating with schools was also much smoother since we now have an updated database of contact information, which the DBE compiled using information collected in baseline questionnaires and by the implementing agent for interventions. Finally, extensive

revisions were made to the midline instruments, especially the shortening of the school principal and teacher questionnaires, with the intention of improving response rates.

The Research Team is considerably more satisfied with the quality of data collection at midline than was the case at baseline. The fact that only 395 of the original 4538 learners were not tested at midline (less than 9%) is in itself a very positive outcome, since this amount of attrition is in line with what one would expect given absenteeism and migration.

The response rates to the parent, teacher and principal questionnaires at baseline was disappointing. The parent questionnaire was sent home with tested children and was meant to be brought back to the school and then collected on a later day by the fieldwork agency. The weakness of this method is that children may not always bring the questionnaire back. However, it is more reliable than asking children themselves about home characteristics. At baseline there were 49 schools for which no parent questionnaires were returned (as reported in Table 4). At midline this was the case for only 2 schools. At baseline roughly 40% of schools had fewer than 10 completed parent questionnaires. At midline only about 10% of schools had fewer than 10 completed questionnaires. These differences between baseline and midline are most likely a reflection of differential fieldwork quality. Importantly, there was no significant pattern of instrument return across treatment group, not that one would expect that given that fieldworkers were blind to treatment allocation.

Table 4: Number of parent questionnaires returned per school

Number of parent questionnaires	Baseline		Midline	
	No of schools with this number of learners	Cumulative percentage	No of schools with this number of learners	Cumulative percentage
0	49	21.3	2	0.87
2	2	22.17	0	0.87
3	1	22.61	1	1.3
4	7	25.65	1	1.74
5	4	27.39	0	1.74
6	3	28.7	0	1.74
7	3	30	0	1.74
8	7	33.04	5	3.91
9	9	36.96	8	7.39
10	9	40.87	7	10.43
11	10	45.22	10	14.78
12	9	49.13	16	21.74
13	11	53.91	17	29.13
14	15	60.43	16	36.09
15	18	68.26	20	44.78
16	15	74.78	37	60.87
17	8	78.26	28	73.04
18	18	86.09	30	86.09
19	18	93.91	21	95.22
20	14	100	11	100

Similarly, there were 32 schools at baseline for which no teacher questionnaires were returned. At midline, there were only 2 such schools. At baseline, we received teacher questionnaires for 326 teachers compared to 383 teachers at midline. At baseline, there were 14 schools for which we received no principal questionnaires, compared to just 2 schools at midline.

DATA CAPTURING AND CLEANING

Once the completed survey instruments had arrived back at the HSRC, they were unbundled from their school batches and re-sorted by instrument or record type in preparation for data capturing and cleaning.

- Preparation of instruments for data processing

The data manager of the project, with two research trainees, went through the various instruments to ensure that correct coding and scoring had been accomplished. All queries were attended to before the instruments were batched and routed for data capturing. Given in-house capturing capacity constraints of the HSRC, permission and instruction was given for the data to be captured by an external service provider.

- Data capturing

The external data-capturing service provider was provided with all the record layouts, requirements and capturing templates for each instrument / dataset, and then trained for their task. On-going supervision and regular (virtually daily) checking of progress and quality were pursued by the HSRC's data manager.

The data-capturing service provider had to adhere to a process of 100% verification. This means that all data were captured twice; first into a temporary dataset and then, once the second capturing keystrokes were either identical, or a query had been solved on being discrepant, into the permanent output file.

Data capturing had been completed by 24 December 2015, after which the preliminary datasets were provided to the Research Team in January 2016.

- Data cleaning and final hand-over

On receiving the initial datasets from the data-capturing service provider, the HSRC's data manager checked for double records, incorrect identity numbers, incorrect field values, and similar unexpected values and information, and consolidated such queried data-fields against the hard-copy completed instruments. Once these unexpected values and queries had been solved, and data labels and values completed, the final dataset was provided to the Research Team on 24 February 2016.

SUMMARY OF BASELINE RESULTS

ERRATUM: BASELINE BALANCE FOR TREATMENT 1

In the Baseline Report we indicated that there was near universal balance across treatment arms. However, we have subsequently discovered an error in the data analysis, and we now are finding that Treatment 1 (Training) had achieved statistically significantly lower scores on several of the baseline sub-tests. This is strange given that the random assignment was carried out with fidelity. Some analysts recommend not reporting baseline balance since randomization allows one to assume balance and it is always possible that a degree of imbalance might exist. Nevertheless, we feel that since we reported an error it is important to publish the corrected numbers here. Table 5 shows the results of regressions to test if the differences in average scores in learning outcomes between treatment groups are statistically significantly different from zero. Each column shows a separate regression on treatment indicators after controlling for strata fixed effects. The standard errors are clustered at the school level. One star indicates that the difference in means between one of the treatments and the control is statistically significant at the 10% level. The bottom three rows show the p value for the equality tests on the treatment coefficients. In other words, it shows the pair-wise tests comparing the means between treatment groups. Out of the 42 possible comparisons, there is slight imbalance in 6 cases, all involving Treatment 1. This slight imbalance should not bias our main conclusions since we do control for baseline learner scores in our main model specifications.

Table 5: Baseline balance tests

	(1) Expressive vocabulary	(2) Letter Recognition	(3) Working memory	(4) Phonological awareness	(5) Word recognition	(6) Sentence comprehension	(7) Words in sentence	(8) Combined score
T1 (training)	-0.272* (0.149)	-1.261 (1.101)	-0.491* (0.283)	-0.789** (0.348)	-0.680 (0.542)	-0.0673 (0.188)	-0.0609 (0.359)	-0.209* (0.119)
T2 (coaching)	-0.0824 (0.138)	0.419 (1.215)	-0.156 (0.296)	-0.193 (0.406)	0.199 (0.715)	0.248 (0.195)	0.597 (0.509)	0.0670 (0.147)
T3 (parents)	-0.215 (0.140)	-0.652 (1.209)	-0.282 (0.308)	-0.290 (0.405)	0.0898 (0.735)	-0.115 (0.171)	0.810 (0.553)	-0.0389 (0.153)
Obs	4538	4538	4538	4538	4538	4538	4538	4538
T1=T2: p-value	0.233	0.106	0.289	0.154	0.216	0.155	0.203	0.070
T2=T3: p-value	0.721	0.557	0.524	0.231	0.294	0.811	0.120	0.282
T1=T3: p-value	0.381	0.354	0.710	0.834	0.900	0.080	0.749	0.555
Control mean	8.704	5.406	5.196	2.450	1.994	0.719	0.926	0.040

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses

MIDLINE RESULTS

LEARNER TEST SCORES

The Midline learner assessment instrument was adapted from the Setswana Early Grade Reading Assessment (EGRA), and was similar to the Baseline assessment instrument. Three of the sub-tests in the Midline assessment (Letter Recognition, Word Recognition and Phonological Awareness²) remained exactly the same as in the Baseline assessment and can therefore be used to directly assess learning gains made over the year. The summary statistics for the sub-tests in the Midline learner assessment are presented in Table 6. It is unfortunate that we observe floor effects on all sub-tests, with the partial exception of the writing sub-test. It has to be admitted that our instrument piloting had not indicated that floor effects were likely, especially in the easier sub-test of letter recognition. For non-word decoding, paragraph reading, comprehension and phonological awareness we observe scores of zero at the median. Fortunately, however, for letter recognition and writing there was a fair amount of variation within the bottom 25% of learners. There were definitely no ceiling effects (which would have occurred had the test lacked in difficult items). One implication of the distribution of scores observed here is that the Endline assessment will probably not require the development of new harder items. This will nonetheless be confirmed after further piloting in September 2016.

Table 6: Summary statistics for each sub-test in Midline learner assessment

Sub-test	min	max	p10	p25	p50	p75	p90
Letter recog.	0	110	0	4	16	38	54
Word recog.	0	50	0	0	3	9	22
Non-word decoding	0	50	0	0	0	6	18
Sentence reading	0	11	0	0	1	9	11
Paragraph reading	0	64	0	0	0	11	30
Comprehension	0	6	0	0	0	1	4
Writing	0	12	1	4	6	8	11
Phonological awareness	0	4	0	0	0	1	3
Combined score	-0.943	3.650	-0.868	-0.718	-0.444	0.486	1.693

The next table shows mean scores per sub-test for each treatment group, and indicates baseline scores where the sub-test was common across the two assessments. It is evident that learners in treatment 2 outperformed the other treatment groups, including the control group, in every sub-test at midline. The summary statistics of the sub-tests which are comparable between the Midline and Baseline assessments are also included. In both the Letter Recognition and Word Recognition sub-tests it is evident that there have been noticeable

² Four of the phonological awareness items from the Baseline assessment were also administered in the Midline assessment.

learning gains made during grade 1 for all treatment groups. Overall, learners could recognize about 17 letters more per minute and five words more per minute than in their Baseline assessments. On phonological awareness, however, there was an unexpected decrease in performance on the four items that were common to baseline and midline. This probably reflects a difference in the strictness of test administration, rather than a real decline in phonological awareness. The research team has been concerned about the functioning of this sub-test at baseline and therefore spent extra time training fieldworkers for the midline data collection on how to score this section. The point was made that these words were to be read out loud and the child needed to identify all the word's separate letter sounds, rather than merely the syllables.

On average learners could correctly read four out of the 11 words the two sentences in the sentence reading sub-test, and eight words correctly in a paragraph. However, when asked about the contents of what they read it is evident that learners had a very poor comprehension of what they have read. In testing the “non-word decoding” skill learners could only decode four “nonsense” words in a minute on average, and with regards to writing learners could write six words correctly out of the 12 asked.

Table 7: Summary Statistics of Sub Tests

		Full Sample		Treatment 1		Treatment 2		Treatment 3		Control	
		Mean	s.e.	Mean	s.e.	Mean	s.e.	Mean	s.e.	Mean	s.e.
Number of Letters Correct:	<i>Baseline</i>	5.2	(0.154)	4.1	(0.276)	5.8	(0.288)	4.7	(0.286)	5.4	(0.281)
	<i>Midline</i>	22.7	(0.338)	22.0	(0.688)	25.1	(0.722)	20.8	(0.700)	22.7	(0.600)
Number of Words Correct:	<i>Baseline</i>	2.0	(0.083)	1.3	(0.125)	2.2	(0.177)	2.1	(0.172)	2.0	(0.141)
	<i>Midline</i>	6.9	(0.153)	6.5	(0.320)	7.4	(0.324)	6.6	(0.327)	7.0	(0.268)
Phonemic Awareness /4:	<i>Baseline</i>	0.8	(0.021)	0.7	(0.039)	0.8	(0.041)	0.8	(0.041)	0.9	(0.035)
	<i>Midline</i>	0.7	(0.018)	0.7	(0.038)	0.9	(0.043)	0.6	(0.037)	0.7	(0.030)
Sentence Reading - Words Correct	<i>Midline</i>	4.1	(0.071)	4.2	(0.153)	4.4	(0.154)	3.8	(0.152)	4.0	(0.120)
Reading Comprehension (% correct)	<i>Midline</i>	16%	(0.004)	16%	(0.009)	18%	(0.010)	16%	(0.009)	16%	(0.007)
Non-word Decoding (Number of Words correct)	<i>Midline</i>	4.5	(0.126)	4.4	(0.267)	5.1	(0.281)	4.3	(0.264)	4.2	(0.211)
Paragraph Reading (Number of Words Correct)	<i>Midline</i>	8.0	(0.219)	7.8	(0.458)	8.8	(0.476)	7.6	(0.456)	7.8	(0.381)
Writing Words Correct /12	<i>Midline</i>	5.9	(0.053)	6.2	(0.112)	6.2	(0.117)	5.5	(0.114)	5.7	(0.087)

Figures 6a and 6b depicts the performance distribution of the number of letters learners correctly identified in a minute. There is a clear shift in the distribution from the baseline, and this shift is especially prominent for the learners in treatment arm two. Similarly, in figures 7a and 7b a clear improvement is visible between the number of word correct between the baseline and midline assessments. In this sub-test, learners in treatment arm one and treatment arm two showed similar improvements.

Figure 6a and 6b: Baseline and Midline Distributions of Number of Letters Correct per Minute, by Treatment

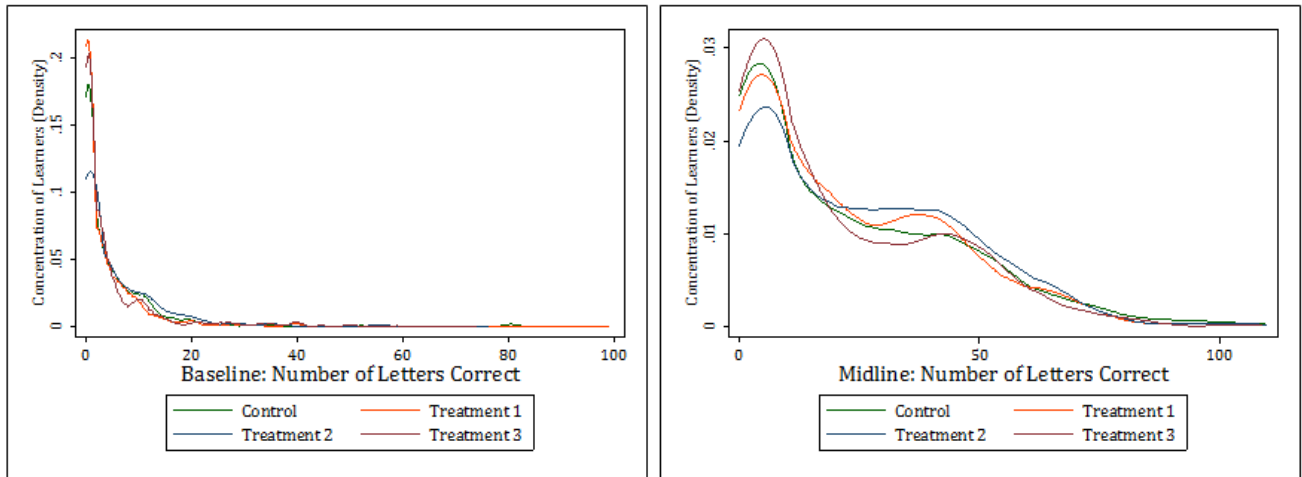


Figure 7a and 7b: Baseline and Midline Distributions of Number of Words Correct per Minute, by Treatment

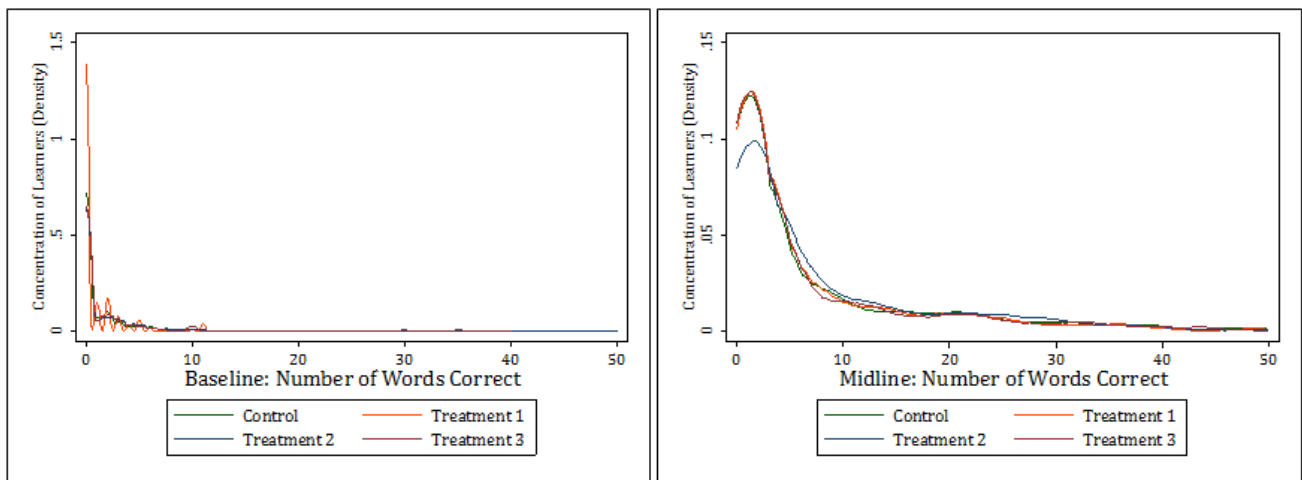


Table 8 further decomposes the trend observed in the Phonemic Awareness sub-test by considering the percentage of learners that could answer each item correctly. In three of the four items common to the Baseline and Midline assessment there was a significant decrease in the number of learners that answered correctly. Given the complexity of explaining the task to a learner, a lot of the variation in scores between the two years probably originates from the quality of fieldworker. The correlation between the baseline and midline scores for Phonemic Awareness is exceptionally low at 0.09, which support this theory.

Table 8: Phonological Awareness Item Response

	<u>Baseline</u>		<u>Midline</u>	
	% Correct	s.e.	% Correct	s.e.
Item 1	36.4%	0.007	29.3%	0.007
Item 2	20.7%	0.006	16.7%	0.006
Item 3	19.3%	0.006	18.9%	0.006
Item 4	13.0%	0.005	5.8%	0.004

With regards to learner's ability to write and dictate words and sentences, it emerged that learners struggled the most to write longer words, relative to letter sounds. Furthermore, when asked to dictate a sentence the learners struggled with the correct sentence punctuation (capital letter at the start of a sentence, correct spacing between words and full stop at the end of a sentence).

Table 9 explores the relationship between the different sub-tests in the Baseline assessment and the final score in the Midline assessment. The strongest and most consistent predictor of the overall performance in the Midline assessment was the number of letters a learner answered correctly in the Baseline assessment. For the full sample one additional letter correct in the Baseline assessment is related to an increase in average performance in the Midline assessment of 0.03 standard deviations. The effect remains significant when restricting the sample to each of the treatment arms, and seems to be the strongest in treatment arm three, where an additional letter correct relates to a 0.05 standard deviation increase in the Midline results. Furthermore, the section assessing a learners' working memory with regards to numbers is also a reasonable predictor of later reading performance, but this relationship is not significant in the control group, and is the strongest in treatment arm one.

Table 9: Baseline Sub-test Predicting Midline Total Score

	<u>Full Sample</u>		<u>Control</u>		<u>Treatment 1</u>		<u>Treatment 2</u>		<u>Treatment 3</u>	
	β	s.e.	B	s.e.	B	s.e.	β	s.e.	β	s.e.
Picture Comprehension	0.03	0.015	0.01	0.029	0.02	0.027	0.07	0.039	0.04	0.027
Number of Letters Correct	0.03***	0.005	0.03***	0.006	0.02*	0.01	0.04***	0.006	0.05***	0.006
Digit Span Words	0.03	0.023	0.05	0.04	-0.01	0.036	0.05	0.038	0.08*	0.035
Digit Span Numbers	0.04*	0.022	-0.05	0.043	0.14**	0.042	0.10*	0.042	0.06*	0.029
Phonemic Awareness	0.02*	0.009	0.03*	0.012	0.03	0.019	-0.02	0.015	0.03*	0.016
Number of Words Correct	0.00	0.006	0.01	0.009	0.01	0.012	0.00	0.01	-0.01	0.009
Sentence Reading Comprehension	0.06*	0.026	0.02	0.033	0.22***	0.051	-0.02	0.043	0.12	0.062
Sentence Reading Words Correct	-0.03***	0.010	-0.02	0.013	-0.11***	0.017	-0.04	0.018	-0.04**	0.014
Constant	-1.27***	0.259	-1.53***	0.397	-0.89*	0.381	-2.07***	0.414	-1.02	0.587
Observations	3665		1286		741		816		822	
R-squared	0.188		0.237		0.258		0.251		0.316	

Notes: Controls are included for learner gender, learner age, principal gender and the different strata.

As Table 10 shows, the correlations between the corresponding sub-tests in the baseline and midline assessments are relatively weak ranging from 0.31 in the letter recognition sub-test to 0.09 in the phonological awareness sub-test. The low correlation between sections in the

assessments which were exactly the same between the two assessments casts some doubt on the variation introduced through fieldworker quality. However, the correlations between the sub-tests within the midline assessment (Table 11) are strong ranging from 0.54 (between Phonological Awareness and Letter Recognition) to 0.91 (between Non-word decoding and word recognition). This reassures us of the quality of the midline data collection. In contrast, we observe weaker correlations between the sub-tests within the baseline assessment (Table 12). It is possible that this is partly due to the inherent difficulties of assessing children at the very beginning of formal schooling. However, put together this picture confirms what was observed at the baseline and midline data collections, namely that the midline involved substantially better fieldwork quality than the baseline.

Table 10: Correlation between Baseline and Midline Sub-tests

	LC - BL	LC - ML	WC - BL	WC - ML	PA - BL	PA - ML
Letters Correct - BL	1					
Letters Correct - ML	0.305	1				
Words Correct - BL	0.527	0.150	1			
Words Correct - ML	0.337	0.700	0.193	1		
Phonemic Awareness BL	0.299	0.112	0.385	0.135	1	
Phonemic Awareness ML	0.271	0.539	0.137	0.613	0.095	1
Cronbach's Alpha	Scale Reliability Coefficient: 0.5990					

Table 11: Midline Sub-test Correlation

	LR	WR	NWD	SR	PR	W	PA
Letter Recognition	1						
Word Recognition	0.700	1					
Non-Word Decoding	0.667	0.914	1				
Sentence Reading	0.645	0.728	0.738	1			
Paragraph Reading	0.649	0.891	0.895	0.734	1		
Writing	0.618	0.610	0.580	0.661	0.594	1	
Phonological Awareness	0.539	0.613	0.614	0.598	0.619	0.553	1
Cronbach's Alpha:	Scale Reliability Coefficient: 0.8366						

Table 12: Baseline Sub-test Correlation

	A.	B.	C.	D.	E.	F1.	F2.
A. Expressive vocab.	1						
B. Letter recog.	0.14	1					
C. Working memory	0.30	0.24	1				
D. Phonological awareness	0.22	0.34	0.46	1			
E. Word recog.	0.17	0.53	0.31	0.46	1		
F1. Sentence compr.	0.15	0.18	0.22	0.38	0.35	1	
F2. Sentence word decoding	0.14	0.23	0.31	0.47	0.45	0.53	1

ATTRITION

We collected valid test scores for 4538 grade 1 children in the baseline data collection.³ At the midline data collection we managed to test 4143 of these children. Therefore, 395 children were lost due to attrition (8.7%). This is very much in line with what one would expect given typical levels of learner absenteeism. Table 13 shows the reason given for attrition, as collected by the fieldworker from the responsible teacher on the day of the visit. It is clear that the main reason was absenteeism. These children may well be re-included in the endline data and are therefore not necessarily lost to the project. The amount of 85 children reportedly moving to another school is also not unrealistic. Although the reason given for two children was that they only partially completed the test, we observed no test score information at all for these children.

Table 13: Reason given for attrition

Absent	283
Left school	85
No reason given	25
Partial test completion	2
Total	395

Table 14 shows the rate of attrition for each treatment group. The attrition rates are fairly similar across the treatment groups, with slightly higher attrition observed in Treatments 1 and 3 relative to control and slightly lower attrition in Treatment 2 relative to control. Table 15 indicates

³ In the Baseline report we reported that there were 4539 children tested. However, upon receiving and cleaning the midline data we realised that there was a case of a duplicate child and therefore the corrected sample is 4538.

that none of the treatment dummies significantly predict attrition relative to control in a regression controlling only for stratification. However, those in Treatment 2 were significantly less likely to attrit than those in Treatments 1 and 3. One could speculate as to the reasons for these differences and about how this might bias any treatment estimates. However, although precisely estimated, the magnitudes of these differences are not large and our main results of interest are of treatment effects relative to the control group, in which attrition is not significantly different from any of the treatment groups. Therefore, we have proceeded without adjusting the model specifications for this midline report and will again monitor attrition at endline. If, at endline, there are significant differences in attrition we will conduct our planned bounding exercise as a robustness check for the main results.

Table 14: Mean attrition by treatment group

Treatment arm	Mean
Control	0.0851
Treatment 1	0.105
Treatment 2	0.0642
Treatment 3	0.0951
Observations	4538

Table 15: Linear probability model predicting attrition by treatment group

	Attrition
Treatment 1	0.0197 (1.27)
Treatment 2	-0.0206 (-1.60)
Treatment 3	0.00991 (0.67)
Obs	4538
T1=T2: p-value	0.010
T2=T3: p-value	0.041
T1=T3: p-value	0.571
Control mean	0.085

Notes:

Standard errors in parentheses are adjusted for clustering by school

*** p<0.01, ** p<0.05, * p<0.1

It is, however, interesting to note what factors did explain attrition, aside from treatment group. Table 16 shows the results from a regression model predicting attrition. The results indicate that weaker learners, males, and older learners were more likely to attrit. Attrition was also significantly higher in one of the two education districts, and was higher in Quintile 1 schools.

Table 16: Factors predicting attrition

Variables	Attrition
Baseline combined score	-0.0888** (0.0406)
Female	-0.0887* (0.0536)
Learner Age	0.0710* (0.0380)
Quintile 2	-0.162** (0.0813)
Quintile 3	-0.0476 (0.0838)
District 1	0.222*** (0.0816)
Constant	-1.841*** (0.252)
Observations	4,512
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

MAIN MIDLINE RESULTS

As was done with the baseline test scores, we again derived a combined test score at midline using Principal Components Analysis (PCA).⁴ This score was then standardized across the

⁴ In calculating a composite score one needs to decide how much weight to attach to each subtask in the test. One cannot calculate simply add each subtask's score together, since one subtask may have had more items but should not necessarily carry more significance than another subtask. Therefore, we ran Principal Components Analysis (PCA) on the subtotals for each subtask. In PCA the variation within all variables included is analysed and those linear combinations capturing the most common variation amongst variables are identified. It is assumed that the linear combination, referred to as a principal component, which captures the most common variation amongst the variables included represents the underlying construct of interest. In this case we might think of the primary underlying construct being measured as reading ability. The weight given to each variable when calculating the total composite score is then determined by the extent of that variable's correlation with the first principal component. The intuition is that a subtask that is not well correlated with the other subtasks may be measuring something different from the intended underlying construct – this subtask should therefore carry less weight in a composite index.

whole sample of students to have a mean of zero and a standard deviation of 1. Table 17 reports the baseline and midline mean scores by treatment group, for the combined score as well as for the letter recognition sub-tests. In order to make this more visually accessible we also present the letter recognition scores in a bar chart (Figure 8). It would appear from this descriptive analysis that Treatment 1 has “caught up” somewhat from its below average baseline performance, while Treatment 2 seems to have extended its “lead” on the other treatment groups. Treatment 3 appears to have experienced a similar trend to the control group. However, even at this preliminary descriptive analysis stage, it is clear that no dramatic shifts in performance have been achieved in any of the treatment groups. Figure 9 uses a percentile plot to zoom in on what appears to be the largest shift, namely that in treatment 2. The shift seems to be the largest at around the median. Whereas both treatment 2 and control groups median baseline number of letters correct was about 2 letters, by midline the median treatment 2 learner could recognize 23 letters in a minute compared to 16 letters in the control group.

Table 17: Simple comparison of baseline and midline mean scores

	(1) Baseline combined score	(2) Endline combined score	(3) Baseline letter recognition	(4) Endline letter recognition
Mean				
Control	0.0404	-0.0179	5.406	22.70
Treatment 1	-0.170	-0.00675	4.144	22.01
Treatment 2	0.108	0.0992	5.836	25.14
Treatment 3	-0.00172	-0.0644	4.740	20.79
Observations	4538	4143	4538	4143

Figure 8: Letter recognition at baseline and midline

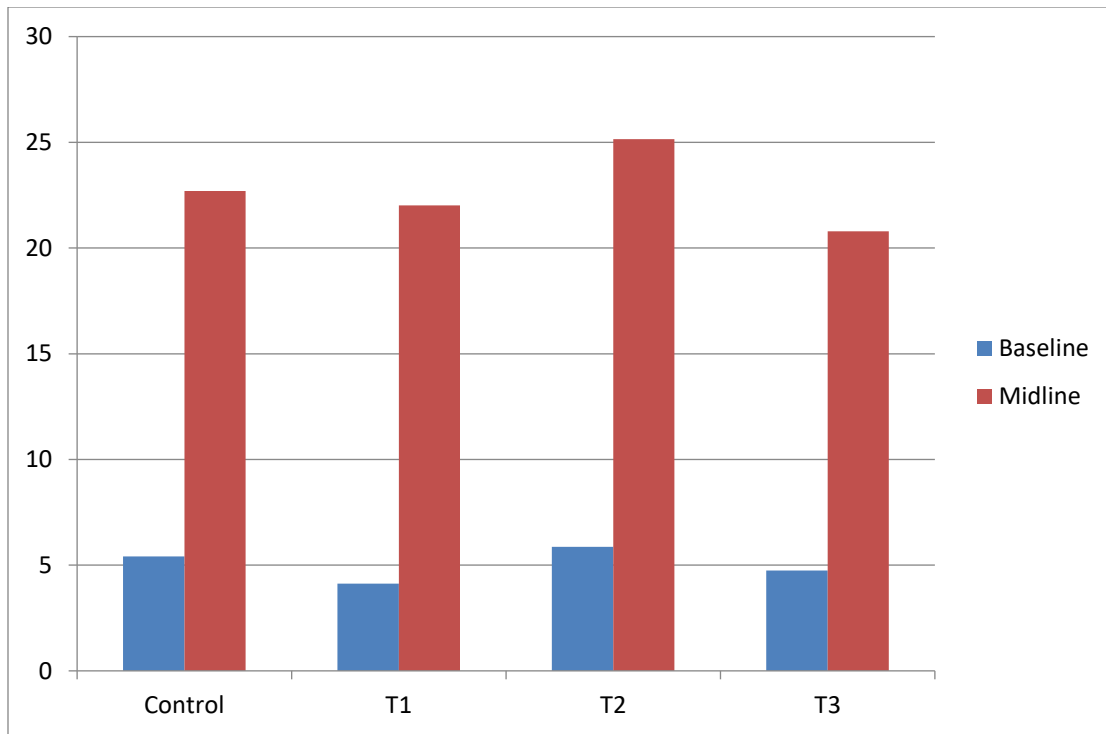


Figure 9: Percentile plot of letter recognition at baseline and midline for Treatment 2 and Control

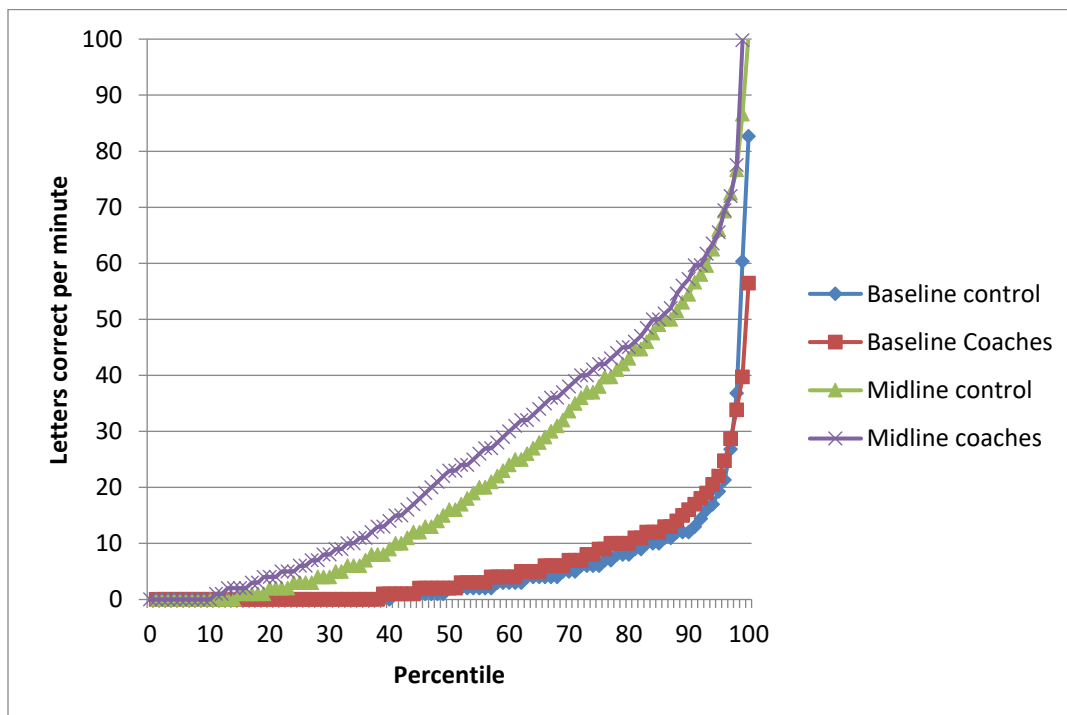


Table 18 shows the results of a simple regression model controlling only for the stratification dummies. This confirms the descriptive analysis above that at midline Treatment 2 pupils were performing about 0.12 SD better than those in the control group, while Treatment 1 and 3 were

performing at virtually the same level. However, even the coefficient on the Treatment 2 dummy is not statistically significant.

Table 18: Regression models controlling only for stratification

	T1 Combined score	T2 Combined score	T3 Combined score
T1	0.0113 (0.0849)		
T2		0.117 (0.0901)	
T3			-0.0452 (0.0860)
Constant	-0.266** (0.104)	-0.254** (0.103)	-0.151 (0.129)
Observations	2,321	2,359	2,345
R-squared	0.023	0.022	0.033

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

After controlling for baseline scores, the picture changes slightly (Table 19). The coefficients on the Treatment 1 and 3 dummies increase in size somewhat, probably because of the somewhat lower performance of these groups at baseline. Note that we include all the baseline sub-test scores as separate variables (and omit the combined baseline score) since this captures the most variation in midline achievement.

Table 19: Regression models controlling for baseline test scores

	T1 Combined score	T2 Combined score	T3 Combined score
T1	0.0795 (0.0802)		
T2		0.123 (0.0823)	
T3			0.0220 (0.0759)
Constant	-0.782*** (0.177)	-1.022*** (0.218)	-0.947*** (0.188)
Observations	2,321	2,359	2,345
R-squared	0.148	0.169	0.201

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 20 presents the results from our preferred model specification, which controls for baseline scores, district (schools are spread randomly across two districts), school mean score in the Annual National Assessments of 2014 (the most recent standardized school assessment), learner gender, parent education (according to the parent/guardian questionnaire), and two community-level controls obtained from the national census of 2011, namely a community wealth index derived from several questions about household possessions and the proportion of 13 to 18 year-olds in the community that are attending and educational institution. The motivation for including these controls is to account for any incidental differences that may exist between the treatment groups as well as to improve the precision of the estimates by increasing the explanatory power of the model. The standard errors in Table 20 are indeed slightly smaller than those in Table 19.

After including the additional set of controls, the estimated treatment effects are all slightly higher than in the less fully specified models. The coefficients on the dummies for Treatment 1 and Treatment 2 are now statistically significant, but only at the 90% level. Both of these coefficients are of a magnitude of about 0.13 to 0.14 standard deviations. The coefficient on the Treatment 3 dummy (Parent Involvement programme) is neither statistically significant nor large enough to be educationally meaningful. The estimated treatment effects of graphically represented in Figure 10.

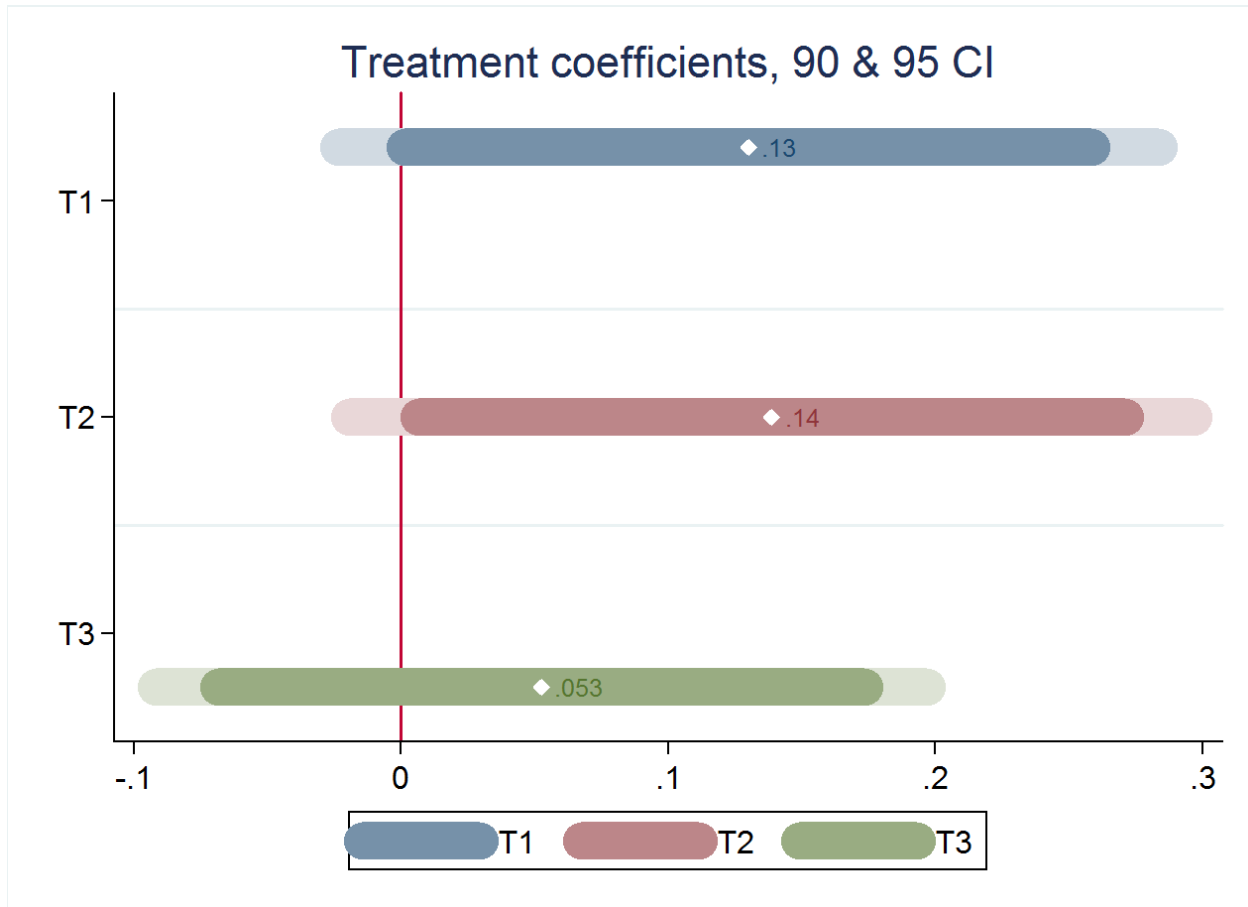
Table 20: Regression models with full controls (Main specification)

	T1 Combined score	T2 Combined score	T3 Combined score
T1	0.130* (0.0777)		
T2		0.139* (0.0799)	
T3			0.0526 (0.0730)
Constant	-1.811*** (0.560)	-1.498** (0.578)	-1.070** (0.475)
Observations	2,321	2,359	2,345
R-squared	0.190	0.208	0.243

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 10: Graphical representation of estimated treatment effects from the main specification



EFFECTS ON SUB-TESTS

The following three tables report the estimated treatment effects on each of the sub-tests. The same set of controls as used in the main specification above was included in these models. The effect sizes are all expressed in terms of standard deviations. For treatment 1 we observe positive treatment effects on all 8 sub-tests, and these coefficients are statistically significant for non-word decoding, sentence reading and writing. For treatment 2 we also observe positive estimated effects on all sub-tests, with statistically significant coefficients in the cases of writing and phonological awareness. For treatment 2 we observe no statistically significant treatment effects on any sub-test. These tables thus do not provide clear evidence that any particular learning domains were very differently impacted by any of the treatments.

Table 21: Effects on sub-tests for Treatment 1 (Lesson plans, materials & centralized training)

	(1) Letters	(2) Words	(3) Non-words	(4) Sentence	(5) Compr.	(6) Paragraph	(7) Writing	(8) Phon. awareness
T1	0.0639 (0.74)	0.0702 (0.98)	0.120* (1.69)	0.154* (1.95)	0.114 (1.54)	0.0575 (0.76)	0.207** (2.60)	0.126 (1.60)
N	2321	2321	2321	2321	2322	2321	2321	2321

Robust t statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 22: Effects on sub-tests for Treatment 2 (Lesson plans, materials & on-site coaching)

	(1) Letters	(2) Words	(3) Non-words	(4) Sentence	(5) Compr.	(6) Paragraph	(7) Writing	(8) Phon. awareness
T2	0.128 (1.38)	0.0583 (0.77)	0.115 (1.56)	0.107 (1.31)	0.0985 (1.32)	0.0747 (1.00)	0.172* (1.94)	0.234*** (3.14)
N	2359	2359	2359	2359	2359	2359	2359	2359

Robust t statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 23: Effects on sub-tests for Treatment 3 (Parent Involvement)

	(1) Letters	(2) Words	(3) Non-words	(4) Sentence	(5) Compr.	(6) Paragraph	(7) Writing	(8) Phon. awareness
T3	-0.00491 (-0.06)	0.0559 (0.80)	0.0868 (1.30)	0.0242 (0.33)	0.0818 (1.19)	0.0618 (0.88)	0.0191 (0.22)	0.0192 (0.27)
N	2345	2345	2345	2345	2345	2345	2345	2345

Robust t statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

HETEROGENEOUS TREATMENT EFFECTS

The question of whether treatments had a differential effect on various sub-groups is important for policy and for understanding when and how these interventions are effective. Therefore, we collected a considerable amount of contextual information about learners, their teachers and the schools they are in. However, there is a risk when investigating numerous possible heterogeneities of so-called data mining – that sooner or later a statistically significant result is bound to occur. The existence of a midline assessment as well as an endline assessment reduces this risk somewhat. We interpret all heterogeneous treatment effects reported here very tentatively, and will only make bold claims if we observe a consistent result when using the endline data. Moreover, if we observe similar heterogeneities within treatments 1 and 2 this will provide some assurance that a genuine effect is occurring since these two interventions have similar theories of change. Tables 24, 25 and 26 show summary statistics for the various individual-, school- and teacher-level variables for which we present estimates of heterogeneous effects.

Table 24: Summary statistics for learner-level variables used in analysis of heterogeneous effects

	Obs.	min	p10	mean	p90	max
Baseline composite score	4538	-1.83	-0.82	0.00	1.13	5.40
Female dummy	4538	0	0	0.46	1	1
Books at home: low	4538	0	0	0.22	1	1
Books at home: high	4538	0	0	0.20	1	1

Table 25: Summary statistics for school-level variables used in analysis of heterogeneous effects

	Obs.	min	p10	mean	p90	max
School mean BL score	4538	-1.11	-0.60	0.00	0.84	5.00
School Standard dev. (BL)	4538	0.06	0.16	0.38	0.61	1.73
Rural dummy	4538	0	0	0.77	1	1
District	4538	0	0	0.23	1	1
Quintile 1 dummy	4538	0	0	0.48	1	1
Quintile 3 dummy	4538	0	0	0.23	1	1
Principal female	4498	0	0	0.49	1	1

Multi-grade classroom	4481	0	0	0.14	1	1
Class size	4312	10	28	41.80	55	87

Table 26: Summary statistics for teacher-level variables used in analysis of heterogeneous effects

	Obs.	min	p10	mean	p90	max
Days Absent A	4287	0	0	0.74	3	8
Days Absent B	4528	0	0	0.60	2	7
Days ill	4361	0	0	0.21	1	6
Days at training	4351	0	0	0.17	0	5
Stream by ability (BL)	3473	0	0	0.58	1	1
Stream by ability (ML)	4284	0	0	0.76	1	1
Readers access: low	4242	0	0	0.32	1	1
Readers access: high	4242	0	0	0.37	1	1

At the individual learner level we investigated several possible heterogeneous effects, each time by running the main model specification with the full set of controls, but with an interaction term between treatment and the characteristic of interest as well as the inclusion of the main effect of that characteristic. Table 27 shows the coefficients of interest from regressions where baseline composite test score is interacted with treatment group. The impacts of treatments 1 and 2 do not appear to depend on the baseline proficiency of learners. However, we do observe a positive treatment effect of Treatment 3 (parent involvement) for the highest achieving learners at baseline. At this stage we do not offer a confident explanation for why the parent involvement intervention may be more effective amongst learners who enter school with higher levels of (pre)reading ability. If we observe a similar outcome at endline, we will then investigate possible reasons through, for instance, looking at attendance rates at the parent meetings and parent characteristics according to questionnaire data. For example, it is possible that highly involved and motivated parents prepare their children better for the start of school and are also more likely to attend parent meetings and benefit from attending these meetings. We have not yet conducted a thorough investigation of these questions, but the data will be available and it is in our plans for the endline analysis.

Table 27: Treatment effects by baseline learner score

	T1 Combined score	T2 Combined score	T3 Combined score
T1	0.130 (0.0788)		
BL_X_T1	0.00164 (0.0924)		
T2		0.136* (0.0787)	

BL_X_T2		0.0324 (0.0953)	
T3			0.0555 (0.0717)
BL_X_T3			0.138** (0.0658)
Constant	-1.810*** (0.571)	-1.507*** (0.574)	-1.023** (0.467)
Observations	2,321	2,359	2,345
R-squared	0.190	0.208	0.248

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 28 shows the treatment effects by gender. We observe fairly large, albeit not statistically significant, negative interactions of female with treatments 1 and 2. What is clear is that there are noteworthy treatment effects of both treatments 1 and 2 for boys. Again, it is premature to assert reasons why boys in particular might gain from the enhanced instructional practice that is intended with treatments 1 and 2. Therefore, we will continue to monitor whether there are differential effects by gender at endline.

Table 28: Treatment effects by learner gender

	T1 Combined score	T2 Combined score	T3 Combined score
T1	0.187** (0.0774)		
female_X_T1	-0.122 (0.0941)		
T2		0.191**	

		(0.0795)	
female_X_T2		-0.110	
		(0.0842)	
T3			0.0717
			(0.0706)
female_X_T3			-0.0424
			(0.0778)
Constant	-1.823***	-1.526***	-1.078**
	(0.562)	(0.574)	(0.474)
Observations	2,321	2,359	2,345
R-squared	0.191	0.208	0.243

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

As Table 29 below shows, there appears to have been no treatment impact of treatment 2 amongst learners with particularly low numbers of books at home (as measured in the parent questionnaires). The left half of Table 29 indicates that this interaction holds for learners with low levels relative to those with medium or high levels, while the right half of the table indicates that there was no differential impact when comparing those with high numbers of books to those with medium or low numbers. Once again, this is not strong evidence of a differential effect. If no similar pattern emerges at endline we will not interpret this as an important result.

Table 29: Treatment effects by number of books at home

	T1 Combined score	T2 Combined score	T3 Combined score		T1 Combined score	T2 Combined score	T3 Combined score
T1	0.143*			T1	0.104		
	(0.0794)				(0.0777)		
books_low_X_T1	-0.0536			books_high_X_T1	0.142		
	(0.101)				(0.106)		

T2		0.202**		T2		0.144*	
		(0.0840)				(0.0838)	
books_low_X_T2		-0.292***		books_high_X_T2		-0.0245	
		(0.0897)				(0.102)	
T3			0.0760	T3			0.0494
			(0.0765)				(0.0755)
books_low_X_T3			-0.104	books_high_X_T3			0.0300
			(0.105)				(0.0964)
Constant	-1.826***	-1.495**	-1.090**	Constant	-1.814***	-1.502**	-1.090**
	(0.556)	(0.574)	(0.469)		(0.554)	(0.579)	(0.474)
Observations	2,321	2,359	2,345	Observations	2,321	2,359	2,345
R-squared	0.190	0.212	0.244	R-squared	0.192	0.208	0.244

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * <0.1

We also investigated individual-level heterogeneous effects based on learner age, parent education and learner absenteeism. However, no significant interactions were found and the results are therefore not reported in full.

The next three tables present the results of investigating school-level heterogeneous treatment effects. We observe a positive interaction between the school mean score at baseline and the treatment 2 and 3 dummies. For treatment 3 this is consistent with the earlier result when we interacted individual learner scores at baseline with treatment group. Even so, we remain tentative about the possible reasons for this effect, and will reserve judgement until endline. However, we did not find a significant interaction between individual learner scores and treatment 2. The fact that there is a significant interaction with school-level mean score for treatment 2 might reflect the advantage of running on-site coaching in better performing and better functioning schools. However, we will wait for endline results before exploring these possible reasons further.

Table 30: School-level interactions with treatment group (A)

	(1) School mean baseline score	(2) Standard deviation in school at baseline
T1	0.101 (0.0763)	0.152 (0.124)
T2	0.138*	0.116

	(0.0787)	(0.168)
T3	0.0629	-0.0882
	(0.0718)	(0.145)
mean_scorexT1	0.0496	
	(0.119)	
mean_scorexT2	0.154*	
	(0.0864)	
mean_scorexT3	0.236***	
	(0.0596)	
mean_score	-0.361***	
	(0.0590)	
score_school_sdxT1		-0.0704
		(0.251)
score_school_sdxT2		0.000307
		(0.414)
score_school_sdxT3		0.395
		(0.312)
score_school_sd		-0.264*
		(0.140)
Constant	-1.979***	-1.745***
	(0.397)	(0.403)
Observations	4,143	4,143
R-squared	0.216	0.203

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 31: School-level interactions with treatment group (B)

	(1) Rural	(2) District	(3) Quintile 1	(4) Quintile 3
T1	0.324*	0.0868	0.285**	0.0892
	(0.196)	(0.0865)	(0.114)	(0.0921)
T2	0.376**	0.104	0.180*	0.180*
	(0.179)	(0.0895)	(0.100)	(0.0916)
T3	0.0883	0.0827	-0.0839	0.163*
	(0.156)	(0.0865)	(0.0915)	(0.0827)

rural_dummyxT1	-0.235 (0.213)			
rural_dummyxT2	-0.314 (0.203)			
rural_dummyxT3	-0.00254 (0.178)			
rural_dummy	0.105 (0.149)			
districtxT1		0.238 (0.199)		
districtxT2		0.116 (0.185)		
districtxT3		-0.0696 (0.165)		
district		-0.130 (0.126)		
Q1xT1			-0.268* (0.157)	
Q1xT2			-0.122 (0.162)	
Q1xT3			0.299** (0.138)	
Q1			-0.0633 (0.126)	
Q3xT1				0.0639 (0.179)
Q3xT2				-0.242 (0.181)
Q3xT3				-0.461*** (0.162)
Q3				0.213* (0.122)
Constant	-1.863*** (0.426)	-1.672*** (0.408)	-1.668*** (0.398)	-1.559*** (0.401)
Observations	4,143	4,143	4,143	4,143
R-squared	0.202	0.201	0.208	0.207

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 32: School-level interactions with treatment group (C)

	(1) Female principal	(2) Multi-grade	(3) Class size
T1	0.133 (0.114)	0.168** (0.0817)	0.197 (0.321)
T2	0.132 (0.0955)	0.162** (0.0816)	-0.0545 (0.327)
T3	0.0529 (0.113)	0.0995 (0.0737)	-0.514 (0.333)
principal_femalexT1	0.0139 (0.168)		
principal_femalexT2	0.0229 (0.164)		
principal_femalexT3	0.0207 (0.150)		
principal_female	0.0832 (0.0952)		
multi_gradexT1		-0.250 (0.290)	
multi_gradexT2		-0.171 (0.204)	
multi_gradexT3		-0.0466 (0.373)	
multi_grade		0.171 (0.138)	
class_sizexT1			-0.00132 (0.00717)
class_sizexT2			0.00370 (0.00784)
class_sizexT3			0.0133* (0.00787)
class_size			-0.00738** (0.00300)
Constant	-1.813*** (0.421)	-1.723*** (0.402)	-1.302*** (0.419)
Observations	4,107	4,087	3,947
R-squared	0.202	0.199	0.203

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 31 (above) indicates that there is no statistically significant coefficient on any of the interaction terms between rural and treatment. However, the magnitudes of these coefficients in the cases of Treatments 1 and 2 are worth taking note of. Approximately 77% of the children in

our sample are located in schools classified as rural by school principals. It would appear that the treatment effects for treatment 1 and 2 in urban schools are as large as 0.32 SD and 0.38 SD, respectively. To a large degree there is common variation by rural, district and quintile: the smaller district (Dr Kenneth Kaunda) has more urban schools than the district of Ngaka Modiri Molema; and similarly, quintile 1 schools are predominantly rural schools. It is therefore consistent to observe a positive interaction (albeit not significant) between the smaller, more urban district, and treatments 1 and 2. Similarly, the negative interactions between quintile 1 and treatments 1 and 2 are consistent. What was somewhat unexpected is the positive and significant interaction between treatment 3 and quintile 1, and conversely the negative interaction between treatment 3 and quintile 3. This would suggest that treatment 3 may have been effective in the very poorest communities.

Table 32 shows that there were no significant heterogeneous treatment effects based on whether the gender of the school principal. Just less than 14% of learners in the sample were in schools where multi-grade teaching occurs. These are typically small rural schools where a single classroom caters for children of more than one grade. Although we had intended to avoid including such schools in the sample by excluding schools with fewer than 20 grade 1 learners in 2014, it seems that there are nevertheless some multi-grade schools in the sample. The interventions service provider has raised this as a potential difficulty in implementing treatments 1 and 2, which provide resources and training geared for single grade classrooms. Although the coefficients on the interactions between treatments and multi-grade are not significant (probably due to small number of such schools), the magnitudes thereof are substantial in the cases of treatments 1 and 2. Looking at the main treatment effects when controlling for multi-grade and the interaction, the evidence of statistically significant positive treatment effects for the two teacher support interventions is clearer than in the main results reported earlier. Both coefficients are in the region of 0.16 SD and are statistically significant at the 95% level.

Finally, we observe a somewhat unexpected positive interaction between class size and treatment 3. Given the lack of a strong theoretical reason to expect this we reserve any speculation about the reason until we compare to endline results.

Turning next to heterogeneous treatment effects by teacher-level characteristics, we first explore whether the treatment effect was different amongst teachers who were more frequently absent from school. There are several measures of teacher absenteeism available. Firstly, we asked each grade 1 teacher how many days out of the previous ten working days they were not able to be at school. Column (1) of Table 34 shows that for all three treatment groups there was a significant negative interaction with this measure of teacher absenteeism. Amongst the majority of teachers who were not absent at all the estimated impact of treatments 1 and 2 were 0.21SD and 0.18SD respectively. For treatment 3 there is now an effect size as large as 0.13SD, although it is still not statistically significant (plus we have less reason to expect a reason for a heterogeneous effect with Treatment 3). Secondly, we asked about how many days were missed due to particular reasons. As a robustness check we aggregated the answers for all these reasons to get an alternative measure of the number of days out of ten that the teacher

was absent. Column (2) shows that the results are essentially the same, although the interaction with treatment 2 is no longer significant. Column (3) indicates that self-reported teacher illness does not account for the interaction with overall absenteeism. The statistically significant interaction terms in Column (4) suggest that missing school due to teacher training activities might be largely to account for the interaction with absenteeism overall. However, we remain cautious about this since only about 6% of learners were with teachers who reported attending at least one day of training in the last ten days. We also used an alternative measure of teacher absenteeism derived from observing the previous week's entries in the school's teacher attendance register. Using this measure of teacher absenteeism we observed no significant interactions with treatment. However, this measure reflects teacher absenteeism in the school as a whole rather than the specific grade 1 teachers participating in our interventions.

Table 35 reports on heterogeneous treatment effects by whether teachers reported using the practice of "streaming" learners into groups based on reading proficiency (at baseline). This is interesting to observe since the practice of streaming is used in the lesson plans provided in Treatments 1 and 2. It appears children with teachers who, at baseline, reported that they do stream children into ability groupings for reading activities, benefited more from Treatment 2 than those whose teachers did not. The interaction term for Treatment 1 is also large, but not statistically significant. As a robustness check, we also ran this interaction using streaming as reported at midline and observe pretty much the same result. It is possible that resistance to the practice of streaming might have been linked to non-compliance with instructional methods prescribed by the lesson plans. However, this remains speculative and we will investigate this further at endline and through the planned qualitative research.

Table 35 also shows that baseline access to graded reading booklets (something which is provided by the interventions) was not associated with differential treatment impact. Other possible heterogeneous effects that were investigated and where there was no significant interaction (full results not reported here) include teacher age, teacher experience and teacher reading fluency.

Table 34: Teacher absenteeism interactions with treatment group

	(1) Days Absent A	(2) Days absent B	(3) Days ill	(4) Days at training
T1	0.205** (0.0930)	0.190** (0.0894)	0.152* (0.0826)	0.172** (0.0813)
T2	0.181* (0.100)	0.167* (0.0933)	0.132 (0.0851)	0.137 (0.0856)
T3	0.126 (0.0835)	0.131 (0.0817)	0.0500 (0.0773)	0.0778 (0.0763)
t_abs_daysxT1	-0.121** (0.0495)			
t_abs_daysxT2	-0.0941* (0.0487)			
t_abs_daysxT3	-0.127** (0.0560)			
t_abs_days	0.0829** (0.0402)			
t_days_absentxT1		-0.111** (0.0562)		
t_days_absentxT2		-0.0778 (0.0481)		
t_days_absentxT3		-0.131** (0.0604)		
t_days_absent		0.0732* (0.0393)		
t_ill_daysxT1			-0.0787 (0.128)	
t_ill_daysxT2			-0.0496 (0.111)	
t_ill_daysxT3			0.0123 (0.131)	
t_ill_days			0.0246 (0.105)	
days_trainingxT1				-0.229** (0.101)
days_trainingxT2				-0.0986* (0.0587)
days_trainingxT3				-0.193** (0.0841)
days_training				0.0584* (0.0311)
Constant	-1.762*** (0.406)	-1.740*** (0.399)	-1.714*** (0.410)	-1.511*** (0.414)
Observations	3,925	4,135	3,994	3,986
R-squared	0.199	0.201	0.197	0.201

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 35: Reading pedagogy and resources interactions with treatment group

	Stream by ability (BL)	Stream by ability (ML)	Book access: low	Book access: high
T1	-0.00678 (0.128)	-0.0312 (0.168)	0.164 (0.0995)	0.0934 (0.0886)
T2	-0.0699 (0.0995)	-0.139 (0.133)	0.177* (0.0982)	0.124 (0.0902)
T3	0.00940 (0.117)	-0.0532 (0.107)	0.0981 (0.0890)	0.0898 (0.106)
stream_BLxT1	0.256 (0.170)			
stream_BLxT2	0.315** (0.151)			
stream_BLxT3	0.101 (0.163)			
stream_BL	-0.101 (0.101)			
stream_MLxT1		0.200 (0.191)		
stream_MLxT2		0.309* (0.165)		
stream_MLxT3		0.166 (0.140)		
stream_ML		-0.0191 (0.0965)		
readers_lowxT1			-0.0666 (0.161)	
readers_lowxT2			-0.0805 (0.154)	
readers_lowxT3			-0.104 (0.161)	
readers_low			-0.0204 (0.0999)	
readers_highxT1				0.122 (0.173)
readers_highxT2				0.0977 (0.180)
readers_highxT3				-0.0658 (0.151)
readers_high				0.0506 (0.0936)
Constant	-1.848*** (0.401)	-1.594*** (0.417)	-1.736*** (0.415)	-1.696*** (0.417)
Observations	3,184	3,921	3,885	3,885
R-squared	0.212	0.200	0.200	0.201

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

IMPACTS ON INTERMEDIATE OUTCOMES

We have also started to investigate several possible intermediate outcomes that might have shifted, focusing mainly on teacher-level intermediate outcomes. It is worth noting that a preliminary analysis of the impact of the parent involvement intervention on parent attitudes and behaviours indicates no discernible changes. However, more work is planned with respect to understanding any possible impact of Treatment 3, once we successfully merge parent attendance data from the service provider to the main learner dataset. The summary statistics for variables used in this section are reported in Table 36.

Table 36: Summary statistics for variables used in analysis of intermediate outcomes

	Obs.	min	p10	mean	p90	max
Stream by ability (ML)	372	0	0	0.77	1	1
Read out loud	374	1	2	3.14	5	5
Ind. assessment daily	377	0	0	0.38	1	1
Pedagogical score	397	0	1	4.08	6	6
Days Absent (A)	372	0	0	0.68	3	8
Days absent (B)	400	0	0	0.56	2	7
Days ill	379	0	0	0.21	1	6
Days at training	378	0	0	0.13	0	5
Absent: personal	379	0	0	0.15	1	5
Lesson preparation	365	0	1	1.99	3	3
Box library	357	1	1	2.38	4	4
Setswana posters	369	1	2	3.16	4	4
Book access: low	369	0	0	0.35	1	1
Book access: high	369	0	0	0.35	1	1
Any exercises	374	0	7	25.26	54	80
Writing exercises	359	0	4	20.79	50	80
Sentence writing	337	0	2	14.92	38	81

Table 37 shows the impacts of the treatments on four possible pedagogical indicators. For this analysis each teacher is the unit of analysis, which is why there are fewer observations. We ran a simple model predicting each intermediate outcome by treatment group and randomization strata. Teachers in both Treatment 1 and 2 were more likely to stream learners according to reading ability by the end of Year 1 of the programmes. One of the instructional methods prescribed twice a week in the scripted lesson plans is group-guided reading, in which groups of about 5 to 10 learners sit with the teacher and read through a graded reading booklet. These groups are supposed to be grouped according to ability. It is therefore encouraging that we do see some shift in practice in this way. There was no significant difference by treatment group in the likelihood of asking individual children to read out loud. However, teachers in Treatment 2 were more likely to report doing individualized reading assessments with children every day. Out of the entire sample of teachers, 38% reported doing individualized reading assessments

every day. This is probably an overestimate of reality given the time-consuming nature of conducting individualized assessments, although some teachers may have interpreted this to mean individualized assessments with at least some learners every day, which is probably a reasonable interpretation. At a minimum, this reflects a changed understanding of the importance of individualized assessment amongst treated teachers. Lastly, we observe no change in pedagogical “knowledge” as measured by a question asking teachers to identify the three most important components when teaching reading out of a possible six options. The educationists on the team included three truly important components and three “distractors”.

Table 37: Impact on pedagogy

	(1) Stream by ability (ML)	(2) Read out loud	(3) Ind. assessment daily	(4) Pedagogical score
T1	0.118* (0.0620)	0.0412 (0.154)	-0.0159 (0.0739)	0.211 (0.267)
T2	0.137** (0.0592)	0.0715 (0.166)	0.148* (0.0841)	0.0294 (0.253)
T3	-0.0261 (0.0659)	-0.108 (0.142)	0.0387 (0.0725)	0.248 (0.279)
Constant	0.742*** (0.0803)	3.142*** (0.206)	0.299*** (0.108)	4.264*** (0.233)
Observations	372	374	377	397
R-squared	0.064	0.018	0.048	0.028

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 38 presents estimated impacts on teacher effort, as measured by absenteeism and time spent on lesson preparation. For both methods of calculating self-reported teacher absenteeism in the previous ten working days we observe an unexpected increase (of nearly half a day) in absenteeism amongst treatment 2 teachers. Looking at columns (3), (4) and (5) it would appear that treatment 2 teachers were more likely to be absent for all three of the main reasons for absenteeism, although none is statistically significant. Therefore, it is not clear why Treatment 2 teachers reported higher levels of absenteeism. One possibility is that there was a training session in the previous ten days. However, we will continue to monitor this at endline to see whether there is a consistent story. It is also worth noting that we observe no significant difference in the self-reported amount of time spent on lesson preparation by teachers. It is possible that having scripted lesson plans might actually decrease time spent preparing lessons, but we see no such effect.

Table 38: Impact on teacher effort

	(1) Days Absent (A)	(2) Days absent (B)	(3) Days ill	(4) Days at training	(5) Absent: personal	(6) Lesson preparation
T1	0.250 (0.175)	0.204 (0.132)	-0.00620 (0.0772)	0.0572 (0.0806)	0.0276 (0.0889)	-0.0482 (0.142)
T2	0.453** (0.194)	0.382** (0.171)	0.130 (0.115)	0.120 (0.0988)	0.0890 (0.0781)	0.0174 (0.153)
T3	0.103 (0.169)	0.114 (0.143)	0.0476 (0.0951)	-0.00128 (0.0657)	-0.0707 (0.0561)	0.111 (0.144)
Constant	0.782*** (0.295)	0.539*** (0.196)	0.242** (0.0937)	-0.0118 (0.0479)	0.246 (0.165)	2.128*** (0.188)
Observations	372	400	379	378	379	365
R-squared	0.060	0.053	0.021	0.065	0.034	0.020

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Treatments 1 and 2 provided schools with a set of materials, including sets of graded reading booklets, posters, and flash cards. Table 39 shows the results of regressions predicting the availability of several classroom resources by treatment group. Classrooms in treatment 1 were significantly more likely to have a well-stocked box library compared to the control group. Both treatment 1 and 2 classrooms had significantly better availability of Setswana posters. However, there was no significant difference in access to books in the classroom between treatments 1 and 2 and the control group. Most unexpectedly, we observe that treatment 3 classrooms were significantly more likely to have high access to books (defined as one graded reader per learner). We have no plausible explanation for this result and will therefore wait till endline to observe this is a consistent result.

Table 40 indicates the effect of the treatments on the amount of written work conducted by learners, as evidenced by an inspection of the “best learner’s” exercise book. The scripted lesson plans have a regular weekly routine which allocates time to writing activities for children. Encouragingly, there is consistent evidence of more exercises of all types (including drawing pictures), of written exercises, and of full sentence writing exercises.

Table 39: Impact on classroom resources

	(1) Box library	(2) Setswana posters	(3) Book access: low	(4) Book access: high
T1	0.421** (0.174)	0.316** (0.124)	0.131 (0.0912)	-0.0177 (0.0749)
T2	0.169 (0.182)	0.296** (0.131)	0.134 (0.0814)	-0.0307 (0.0798)
T3	0.116 (0.190)	-0.208 (0.152)	-0.0212 (0.0795)	0.268*** (0.0812)
Constant	2.272*** (0.219)	3.081*** (0.164)	0.262*** (0.0872)	0.407*** (0.0975)
Observations	357	369	369	369
R-squared	0.085	0.086	0.054	0.080

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We also investigated whether there was any impact on the frequency of written exercises in the Department of Basic Education's colour-printed workbooks, which all children receive and which were integrated into the treatment 1 and 2 scripted lesson plans, but there were no statistically significant differences in the amount of exercises completed in those books. Finally, we investigated whether teachers were more likely to mark and correct learner exercises but again no significant differences by treatment group were observed.

Table 40: Impact on written work by learners

	Exercise books: Any exercises	Exercise books: Writing exercises	Exercise books: Sentence writing
T1	11.28** (4.396)	12.16** (4.825)	10.82** (5.433)
T2	6.801** (3.177)	7.973** (3.685)	7.639* (4.116)
T3	-6.249** (2.907)	-4.218 (3.025)	-3.428 (3.289)
Constant	21.53*** (3.250)	15.24*** (3.178)	7.264*** (2.722)
Observations	374	359	337
R-squared	0.235	0.220	0.215

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

PROGRESS REPORT ON IMPLEMENTATION OF INTERVENTIONS

As we did in the baseline report, we provide a report below on the implementation of the three interventions during Year 1 (2015). We also provide a short section describing the content and design of the interventions, in the words of the service provider, Class Act, who have brought substantial expertise to the project. As the Research Team, we have been working closely with Class Act to ensure an alignment of the research design with their ideas for strengthening the design of the interventions.

READING DEVELOPMENT

Two approaches to support reading development in young children were developed for the EGRS, namely:

- A **direct approach** that is located within the official policy framework that supports conventional teaching and learning. This has resulted in the development of scripted lesson plans – and support materials – designed for teachers. A detailed teacher training programme has also been developed to provide the interface between the materials and the teachers' instructional practices. The training and materials developed for this approach are used in Intervention One and Intervention Two.
- An **indirect approach** that has developed materials aimed at helping parents to support and understand the reading development of their own children. The materials include parent support modules and community reading coach (CRC) training guides. The training and materials developed for this approach are used in Intervention Three.

The rest of this section details the underlying language principles that evolved during the course of the year in relation to both approaches.

A. Direct Approach

In order for the Department of Education and the teachers to support the EGRS in Intervention One and Intervention Two, the approach taken to reading development was situated within the context of the official policy, namely the Curriculum and Assessment Policy Statement (CAPS). As the framework Class Act used to develop teacher materials was defined by CAPS it was therefore located within a balanced approach to reading acquisition. And while the language components in the materials are also determined by CAPS, their interpretation is based on Class Act's expertise in the area of reading development.

A balanced and systematic approach

A balanced approach to reading instruction is a combination of whole language and phonics methods. Researchers and practitioners alike assert that children need training in both phonemic awareness – by which they develop an awareness of individual sounds (phonics) – and in cueing strategies – through which they learn to decode the text and comprehend the material (whole language). This balanced approach meets the needs of children with different learning styles. For example, children who are more analytic and auditory benefit from phonics instruction; while children with more visual and tactile learning styles benefit from a whole language approach. The balanced approach underpins the development of the different kinds of lesson needed to deliver the official curriculum to the learners. Details of the language components built in to the scripted lesson plans are provided later in this section.

In addition to the policy requirements of a balanced approach to language development, the developers built a systematic and structured framework into the lesson plans and into how teachers manage their classrooms. This structure provides teachers and learners with a systematic weekly teaching and learning routine. Class Act's experience in the field has shown that teachers teach best and learners learn more effectively in a predictable environment. Core methodologies for each language component were developed to systematize the curriculum and to enhance teachers' pedagogical knowledge. Curriculum trackers were also developed to help teachers and school managers systematically track curriculum coverage according to CAPS requirements.

Listening and speaking

In the lesson plans there are two different kinds of listening and speaking activities. The first kind of lesson use interesting and complex posters to develop children's vocabulary in authentic contexts. The teacher models the different language usages and then the children produce the new words and sentences. The second kind of listening and speaking lesson focuses on age appropriate and enjoyable games, songs and rhymes where the children practice the new vocabulary that they have acquired. The level of enjoyment in these lessons builds confidence in young children as everyone is given the opportunity to talk in a safe and nurturing environment.

This is a very important language component as it has long been acknowledged that vocabulary is a strong indicator of learner success. Young children should learn approximately 3 000 new vocabulary words every year in order to meet the academic demands of the school curriculum. The vocabulary development built into the lesson plans provides learners with opportunities to reach towards this goal.

Phonics

In order to assist teachers with the phonics component, the CAPS Setswana Home Language phonics programme has been further developed and unpacked. The phonics programme now helps teachers to know exactly which sounds and blends they need to teach and the order in which they should teach them. The lesson plans contain daily phonics lessons which are either focused on children learning new sounds or on practice activities in relation to learnt sounds. In line with the balanced approach to language development, the phonics lessons teach phonemic decoding, word recognition and cognitive understanding of the meanings of words. Teachers are given a range of phonic activities from which they can choose based on the knowledge they have of their learners' needs. This has been built into the lesson plans address the issue of teacher autonomy in a structured programme.

Group guided reading

Teachers in Intervention One and Intervention Two were given sets of Vula Bula reading books. These readers are graded according to the standardised reading abilities of young learners. The materials developed to support this language component provide teachers with strategies to assign learners to similar reading ability groups. They also show teachers how to manage group reading in a way that maximizes the opportunity for every child to read to the teacher, while at the same time providing activities that keep the rest of the class meaningfully engaged. Providing opportunities for children to read at their own level builds reading confidence and helps them to practise their technical word attack skills in a safe environment.

Shared reading

Shared reading is built into the lesson plans to help young children appreciate that they can both read for enjoyment and for learning. In this whole class language component everyone uses the same text; which in the EGRS is taken from the nationally provided DBE Workbooks. The teacher models fluent reading and exposes the children to the concepts of plot, story and character in the shared reading lessons. Before the children are expected to read the text, the teacher demonstrates the skill of prediction and teaches the vocabulary words that the learners need to understand the story. Generally three readings of the story take place: first the teacher reads the story alone with expression and actions to embed meaning, second the whole class reads along with the teacher, and third groups or individual children read the story out loud. The teacher checks learners' understanding of the meaning of the story during all readings through asking oral comprehension questions.

Creative writing

The aim of the creative writing lessons is to assist children to put their own thoughts down on paper. This is done through developing the concept of writing throughout the school year. Based on a process approach to writing and editing that models the actions of 'real' writers, the learners are taught several independent writing strategies which the teacher continuously models. These strategies include the following:

- That writers always think about their writing before committing themselves to paper.
- That before children can actually write they can read the stories embedded in pictures.
- That words can be added to pictures to help tell stories.
- That to learn how writing flows, children count the words they want to write and then draw lines to represent individual words. This helps develop the left to right flow of writing.
- That writing takes effort and deserves praise.
- That there are strategies young children can use to find words they do not know, for example:
 - They can look for words on the flash card wall in the classroom.
 - They can find words in their personal dictionaries.
 - They can use their phonemic skills to write some of the sounds used in the words they are looking for.
 - They can ask each other.
 - They can ask their teacher.

Handwriting

Given the age of the children in the EGRS schools it is important that they also be taught the technical skill of handwriting. For the first 6 months of Grade One, the children learn how to write the lower case of the phonic sounds that they are taught each week. By the end of June the children will have learnt how to write all of the letters used in Setswana in lower case; they will also have been taught the names of these letters. For the rest of the year the children learn how to write the capital letters of the alphabet in order from A to Z. The children are even taught how to write the letters that are not used in the Setswana language, for example C and X so that they can read and write locally used words like Carletonville and X-ray. The lesson plans provide teachers with handwriting patterns that emergent writers can use to learn how to form letters. They also supply teaching strategies like how to demonstrate writing actions to both right- and left-handed learners. After modelling the different actions and patterns, learners experience writing the letters in different tactile ways before they actually write in their exercise books.

B. Indirect Approach

The approach taken for the development of Intervention Three is more indirect given that the beneficiaries are parents and that there is no official policy to define the scope and nature of the programme. But the programme is still located in the balanced approach to reading acquisition as this is how their children will learn to read at school, and parents need to understand this method in order to be able to provide appropriate help at home. The systematic nature of the materials provided for teachers is also built into the parent materials in a range of ways that will be explained below. In this intervention Class Act exposed parents to reading and support skills through eight modules that the CRCs used to enhance parents' abilities to help and support their children as they learn to read.

Setting the context for reading acquisition

The first module developed for parents was titled *Small Things Can Make a Difference* and aimed to help parents create a conducive home environment supportive of reading development. The importance of routines was stressed especially in relation to homework, eating and sleeping. The link between good nutrition, at least eight hours of sleep and physical development as well as school performance was discussed. Parents were also encouraged to actively talk to their children about school and about their friends.

Sounds that support reading

The second module, *Playing with Sounds to Support Reading*, aimed at developing the parents' phonemic awareness as an acknowledged precursor to learning to read. Identifying sounds, their directionality and sequencing were skills practised by the parents through games. Parents were encouraged to play these games with their children.

Visual literacy

The third module developed for parents was titled *Reading Pictures* and aimed to enhance parents' understanding of visual literacy. The role that pictures play in stories for young children was explained and discussed. Games were played with the pictures of faces displaying different emotions. This was an important communication tool for parents who were given the vocabulary necessary to discuss emotions and emotional issues with their children.

Letter sounds

The fourth module, *Letter Sounds*, was aimed at teaching parents the phonic sounds made by the different letters of the alphabet used in Setswana. Parents were given cards containing different sounds and were encouraged to use these with their children to check letter sound

relationships. Other games that parents were asked to play with their children included I-spy, identifying words that started with a particular sound and sounding out new words.

Incidental reading

The fifth module was titled *Incidental Reading* and aimed to help parents understand that reading does not just happen at school and that the community provides many opportunities for children to practice their reading. Parents were taught how to recognise and exploit opportunities for incidental reading with their children.

Preparing to read

The sixth module, *Preparing to Read a Story Part One*, was aimed at taking parents systematically through the steps their children go through at school when learning to read. Parents were given experience with phonic decoding through sounding out words; they then learnt how to develop the memory skills needed for learning sight words through games such as elimination and bingo.

Reading a story

The seventh module was titled *Reading a Story* and focused on showing parents how to use a real book to develop reading competencies in their children. The physical structure of a book was discussed as were the prediction processes that proficient readers use to establish the contents of a book before they begin reading. Parents were also exposed to strategies such as identifying words that children might find difficult, teaching these as sight words, reading a story together and checking understanding through asking comprehension questions. The module ended with ideas for post-reading activities including asking children to re-tell or act out a story they had just read.

Ongoing reading

The eighth and last module for 2015, *Preparing to Read a Story Part Two*, provided parents with expanded opportunities to read with their children. Essentially this module provided parents with a fast track through the skills learnt in the previous two modules, namely phonic decoding, sight words, pre-reading skills, actual reading and post-reading activities.

The next three sections in this report detail the activities that took place during 2015 in each intervention.

INTERVENTION ONE

This section begins with a brief description of the intervention and of the materials developed to support its implementation. It then illustrates the activities that took place in this intervention and provides the supporting data. Challenges experienced in this intervention and recommendations suggested are tabulated before the section ends with the EGRS plans for 2016.

Intervention Description and Materials

During 2015 Intervention One targeted **Grade One teachers** in a randomly selected group of 50 schools across two districts in North West Province, namely Ngaka Modiri Molema and Doctor Kenneth Kaunda. The teachers were **trained** twice during the year following a conventional model of large-scale teacher training. The teachers received the official support of the North West Department of Education and were in contact with Class Act during the year through social media platforms.

The table below details the **teaching and learning materials** that Grade One teachers were provided with during 2015.

Table 41: Intervention 1 materials

ITEM	DESCRIPTION	QUANTITY
Vula Bula Reading Books	Commercially produced Grade One Setswana graded reading books. These were used in group guided reading lessons	20 titles; eight copies of each title
Book register	An exercise book set up as an accession register for the Vula Bula reading books	One per school
Teacher file	A management file to keep teaching and learning materials	One per teacher
Setswana HL scripted lesson plans	This document contains the individual lesson plans that teachers followed in 2015	One per teacher per term
Flashcard words	Printed sets of the words teachers needed to teach sight words in reading lessons	One set per teacher per term
Reading words	A learner resource that listed the sight words taken from the Vula Bula books. These word lists were taken home so that the learners could practise reading	One set per teacher per term; produced locally for each learner
Assessment records	CAPS and SA-SAMS compliant assessment record tables. Teachers used this resource to record formal assessments per learner	One per teacher per term
Assessment rubrics	Criteria for teachers to use to award objective assessment ratings for learner tasks	For certain lessons
Curriculum tracker	A tool for teachers to manage curriculum coverage	One per teacher per term
Weekly routine	A tool for teachers to manage curriculum pacing	One per teacher per term
Core methodologies	Detailed pedagogical support that helped teachers learn how to use tried and tested methodologies for different language components	One per teacher

Handwriting poster	A poster that demonstrated the form and directionality of lower and upper case letters	One per teacher
Theme posters	Posters that detailed interesting scenes that were used for vocabulary development	Two per teacher per term
Facilitators' Guides	Detailed handbooks for trainers to follow when they trained teachers.	One per training session
Teacher Test	Content and pedagogical test to ascertain teacher learning during training sessions	One test

Activities and Data

The table below lists the **activities** that took place in this intervention during 2015.

Table 42: Intervention 1 activities

ACTIVITY	DESCRIPTION	TIME FRAME
Project start up	The EGRS implementation team was put together. This team consists of: programme manager; materials development team; logistics administrator; data capture; Setswana trainers and coaches; supervisor	January to February 2015
Project advocacy	A presentation on the content of the project was made to the North West Provincial Department of Education to explain the focus of each intervention and the implementation plans. The project was launched in the two participating districts (Dr Kenneth Kaunda and Ngaka Modiri Molema) with representatives from all schools and from the provincial and district offices.	February 2015
Materials development	Work was completed on the Grade One Setswana lesson plans and associated materials for Term Two, Term Three and term Four.	February to September 2015
Provincial involvement	Ongoing communication took place between the service provider and the two districts. Generally this took the form of: <ul style="list-style-type: none"> Joint trouble-shooting implementation challenges. Information sharing concerning curriculum and assessment processes. Collaboration concerning the logistics involved in large-scale training events. Contact with subject advisors regarding teacher support. 	Ongoing
Reference group	Two reference group meetings were convened during 2015 where Foundation Phase language subject advisors were given the opportunity to engage with draft lesson plans. This was with an aim of ensuring sustainability via provincial and district ownership. In addition, a small sample of participating school managers and teachers was invited to the second reference group.	29 January 2015 23 June 2015

ACTIVITY	DESCRIPTION	TIME FRAME
Training	Service provider trainers were trained twice by the programme manager. These Setswana trainers provided two training sessions for Grade One teachers and their curriculum managers twice during the year. Materials for Term 2 were distributed during session one; while Term 3 materials were distributed during session two. The provincial department assisted with the distribution of materials for Term 4.	Session One: <ul style="list-style-type: none"> 24 to 25 Feb 2015 26 to 27 Feb 2015 Session Two: <ul style="list-style-type: none"> 14 to 15 July 2015 16 to 17 July 2015
Social media	In order to provide teachers with a remote support forum, social media groups were set up between Class Act and Grade One teachers. More than 20 teachers actively used this forum during 2015.	Ongoing since June 2015
Year-end presentation	At the end of the year Class Act was invited to make a presentation to the principals from Intervention One. Progress during the year was discussed and questions were answered.	23 November 2015

The tables below represent the **data** that Class Act collected in relation to this intervention during 2015.

Table 43: School Attendance at Treatment 1 training

POSSIBLE	ACTUAL TERM 2 FEB 2015	ACTUAL TERM 3 JULY 2015
50	50	49
% ATTENDANCE	100	98

Comment:

Both training sessions served to induct teachers to the learning programmes for a particular term. Arrangements were made to provide catch-up training to staff members from the school that was not represented at the July training. This was successfully done.

Table 44: Teacher attendance at Treatment 1 training

PROVISIONAL NUMBER OF TEACHERS	ACTUAL TERM 2 FEB 2015	MORE ROBUST NUMBER OF TEACHERS	ACTUAL TERM 3 JULY 2015
90	90	100	84
% ATTENDANCE	100		85

Comment:

The number of Grade One teachers in the schools was provisional during the Term 2 training. Working with the North West Department of Education, steps were taken to ensure that the correct numbers of Grade One teachers were invited to the subsequent training session. This led to an increase in the expected number of teachers to attend the second training session in July 2015. The teachers who did not attend the July training were provided with catch-up training.

Table 45: School leaders attendance at Treatment 1 training

POSSIBLE	ACTUAL TERM 2 FEB 2015	ACTUAL TERM 3 JULY 2015
50	37	39
% ATTENDANCE	74	78

Comment:

While it is a very positive step for the school leadership to be supportive of the project especially as they provide teachers with in-school support, their attendance was not mandatory during 2015. It must also be noted that in several cases the Grade One teachers are also school leaders as they are Foundation Phase HODs.

Table 46: Teacher assessments in Term 3

TEACHERS	PRE-TEST	POST-TEST
79		
% ACHIEVEMENT	46	56

Comment:

During the training in preparation for Term 3, teachers were given a pre- and post-test. The test covered important content and methodological issues in the lesson plans. 79 teachers voluntarily submitted their tests for marking. On average the teachers' content and methodological knowledge increased by 10% as a result of the training provided.

Challenges and Recommendations

The table below represents challenges faced in Intervention One and recommendations suggested for this reporting phase.

Table 47: Intervention 1 challenges and recommendations

CHALLENGES	RECOMMENDATIONS
<ul style="list-style-type: none"> Data collection processes and strategies remained a challenge throughout 2015. It is very difficult to keep a data base updated in a remote context where schools do not necessarily have the means or opportunity to communicate changes with the service provider. Yet this data is crucially important for planning purposes. 	<ul style="list-style-type: none"> Data collection: Class Act tried to keep in constant contact with teachers and schools in an effort to foreground the importance of accurate and clean data. Where data anomalies were noted, the issues were quickly investigated. But this does remain an ongoing challenge.
CHALLENGES	RECOMMENDATIONS
<ul style="list-style-type: none"> After one year of implementation Class Act has no way of knowing how the lesson plans were implemented in Intervention One schools. 	<ul style="list-style-type: none"> Lesson plans implementation and Teacher isolation: Social media groups between teachers and Class Act were established. The purpose of this was to keep the teachers focused on the project and to participate in discussions together. These groups also provided Class Act with some sense of how teachers were managing in their classrooms with curriculum delivery.
<ul style="list-style-type: none"> The isolation of teachers for long periods between training sessions was of concern as much meaningful support happens between teachers. 	
<ul style="list-style-type: none"> The programme manager was concerned that the planned twice-yearly training for Intervention One teachers would not sufficiently meet the needs of the project. 	<ul style="list-style-type: none"> Twice-yearly training: A suggestion was made that the training model could be changed to include more contact sessions, namely one per term. This could not happen as the original dates had already been agreed to during ELRC council meetings. It is hoped that the social media groups also helped in this regard.
<ul style="list-style-type: none"> The engagement with officials at reference group meetings did not always yield the necessary information. 	<ul style="list-style-type: none"> Reference group meetings: Class Act would like the focus of attention at these meetings to broaden from merely a technical edit of materials to include a more strategic engagement with officials concerning the strategy and how best to support teachers. This will be built in to any reference group meetings scheduled for 2016.

Plans for 2016

The table below represents the plans for Intervention One for 2016.

Table 48: Intervention one plans 2016

BENEFICIARIES	MATERIALS	TRAINING
<ul style="list-style-type: none"> Grade 2 teachers SMT representatives to attend training 	<ul style="list-style-type: none"> Grade 2 Vula Bula readers Grade 2 Setswana HL Lesson Plans Additional posters Grade 2 Tracker Grade 2 Routine New flashcard words New assessment plan 	Teacher training: <ul style="list-style-type: none"> Session 1 (18 to 21 Jan 2016) Session 2 (11 to 15 Jul 2016)

INTERVENTION TWO

This section begins with a brief description of the intervention and of the materials developed to support its implementation. It then illustrates the activities that took place in this intervention and provides the supporting data. Given that there is a more intensive support and supervision focus in this intervention, a section is included that tracks teachers' developments in pedagogical practices during 2015. Challenges experienced in this interventions and recommendations suggested are tabulated before the section ends with the EGRS plans for 2016.

Intervention Description and Materials

Intervention Two targeted **Grade One teachers** in randomly selected group of 50 schools; though one school withdrew early in the year leaving a total of 49 schools in the cohort. The teachers received three sessions of **intensive cluster-based training** in preparation for each term that was included in 2015 (Term 2 to 4). The teachers also received three kinds of support: the work of **instructional coaches** in schools and in classrooms; the official support of the North West Department of Education; ongoing support during the year through social media groups managed by Class Act

The table below details the **teaching and learning materials** that Grade One teachers were provided with during 2015 (please note that these are the same materials as provided to Intervention One teachers).

Table 49: Intervention 2 materials

ITEM	DESCRIPTION	QUANTITY
Vula Bula Reading Books	Commercially produced Grade One Setswana graded reading books. These were used in group guided reading lessons	20 titles; eight copies of each title
Book register	An exercise book set up as an accession register for the Vula Bula reading books	One per school
Teacher file	A management file to keep teaching and learning materials	One per teacher
Setswana HL scripted lesson plans	This document contains the individual lesson plans that teachers followed in 2015	One per teacher per term
Flashcard words	Printed sets of the words teachers needed to teach sight words in reading lessons	One set per teacher per term
Reading words	A learner resource that listed the sight words taken from the Vula Bula books. These word lists were taken home so that the learners could practise reading	One set per teacher per term; produced locally for each learner
Assessment records	CAPS and SA-SAMS compliant assessment record tables. Teachers used this resource to record formal assessments per learner	One per teacher per term
Assessment rubrics	Criteria for teachers to use to award objective assessment ratings for learner tasks	For certain lessons
Curriculum tracker	A tool for teachers to manage curriculum coverage	One per teacher per term
Weekly routine	A tool for teachers to manage curriculum pacing	One per teacher per term
Core methodologies	Detailed pedagogical support that helped teachers learn how to use tried and tested methodologies for different language components	One per teacher
Handwriting poster	A poster that demonstrated the form and directionality of lower and upper case letters	One per teacher
Theme posters	Posters that detailed interesting scenes that were used for vocabulary development	Two per teacher per term
Facilitators' Guides	Detailed handbooks for trainers to follow when they trained teachers.	One per training session
Teacher Test	Content and pedagogical test to ascertain teacher learning during training sessions	One test

Activities and Data

The table below lists the **activities** that took place in this intervention during 2015.

Table 50: Intervention 2 activities

ACTIVITY	DESCRIPTION	TIME FRAME
Project start up	The EGRS implementation team was put together. This team consists of: programme manager; materials development team; logistics administrator; data capture; Setswana trainers and coaches; supervisor	January to February 2015
Project advocacy	A presentation on the content of the project was made to the North West Provincial Department of Education to explain the focus of each intervention and the implementation plans. The project was launched in the two participating districts (Dr Kenneth Kaunda and Ngaka Modiri Molema) with representatives from all schools and from the provincial and district offices.	February 2015
Materials development	Work was completed on the Grade One Setswana lesson plans and associated materials for Term Two, Term Three and term Four.	February to September 2015
Provincial involvement	Ongoing communication took place between the service provider and the two districts. Generally this took the form of: <ul style="list-style-type: none"> • Joint trouble-shooting implementation challenges. • Information sharing concerning curriculum and assessment processes. • Collaboration concerning the logistics involved in large-scale training events. • Contact with subject advisors regarding teacher support. 	Ongoing
Reference group	Two reference group meetings were convened during 2015 where Foundation Phase language subject advisors were given the opportunity to engage with draft lesson plans. This was with an aim of ensuring sustainability via provincial and district ownership. In addition, a small sample of participating school managers and teachers was invited to the second reference group.	29 January 2015 23 June 2015
Training	Service provider trainers were trained three times by the programme manager. These Setswana trainers provided three intensive cluster-based training sessions for Grade One teachers; once at the start of each term. Materials were distributed during the training sessions.	<ul style="list-style-type: none"> • February 2015 • July 2015 • September 2015
Classroom support	Instructional coaches worked in the classroom with individual teachers on a combination of the following activities: <ul style="list-style-type: none"> • Lesson demonstrations by coaches to illustrate the core methodologies in practice • Lesson observations by coaches • Critical but positive feedback to teachers regarding lessons observed • Opportunities for teachers to reflect on their practise • Monitoring of learner exercise and workbooks • Monitoring of curriculum coverage • Monitoring of learner assessment results • Professional interaction with principals and HoDs regarding implementation 	Ongoing
After school	Coaches provided teachers with demand-driven workshops	Ongoing

workshops	during the term.	
Supervision	Coaches were supervised onsite three times during the year (once per term). The supervisor did the following: <ul style="list-style-type: none"> Accompanied coaches on teacher support visits Observed of the coaches in practice Provided critical but positive feedback to coaches regarding the manner in which they supported teachers Held informal discussions with teachers concerning the lesson plans and their implementation Facilitated informal discussions with principals and HODs concerning curriculum and assessment issues Monitored the coaches' work schedules and attendance registers 	March, June and October 2015
Social media	In order to provide teachers with additional support from their coaches, social media groups were set up between coaches and Grade One teachers. This worked extremely well in 2015 in this intervention.	Ongoing since June 2015
Year-end presentation	At the end of the year Class Act was invited to make a presentation to the principals from Intervention Two. Progress during the year was discussed and questions were answered.	23 November 2015

The tables below represent the **data** that Class Act collected in relation to this intervention during 2015.

Table 51: Intervention 2 coach details

COACH	DISTRICT	SCHOOLS	GRADE ONE TEACHERS
Kgomotso Phalatse	Ngaka Modiri Molema	17	27
Helen Kgobane	Ngaka Modiri Molema	18	34
Sabi Mlambo	Dr Kenneth Kaunda	14	34
TOTAL		49	95

Comment:

The schools were divided geographically across the three coaches. Many schools had more than one Grade One teacher to support.

Table 52: School attendance at Intervention 2 training

POSSIBLE	ACTUAL TERM 2 FEB 2015	ACTUAL TERM 3 JULY 2015	ACTUAL TERM 4 SEPT 2015
49	49	45	49
% ATTENDANCE	100	92	100

Comment:

Each training sessions served to induct teachers to the lesson plans for each term. Arrangements were made to provide catch-up training to staff members from the schools that were not represented at the July training.

Table 53: Teacher attendance at Intervention 2 training

POSSIBLE	ACTUAL TERM 2 FEB 2015	ACTUAL TERM 3 JULY 2015	ACTUAL TERM 4 SEPT 2015
95	95	85	95
% ATTENDANCE	100	89	100

Comment:

High attendance levels were noted throughout the year. The teachers who did not attend the July training were provided with catch-up training.

Table 54: Dosage of on-site coaching visits

TEACHERS	TERM 2 (PER TEACHER)		TERM 3 (PER TEACHER)		TERM 4 (PER TEACHER)	
	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL
95	2	3	2	2	2	2

Comment:

It is pleasing to note that teachers were supported throughout the year in their classrooms. It is also important to note that teachers received additional support during needs-driven afternoon workshops facilitated by coaches.

Table 55: Curriculum coverage terms 2 to 4

TEACHERS	PHONICS			HAND WRITING			LISTENING & SPEAKING			SHARED READING			GUIDED READING			CREATIVE WRITING		
95																		
TERMS	T2	T3	T4	T2	T3	T4	T2	T3	T4	T2	T3	T4	T2	T3	T4	T2	T3	T4
% COVERAGE	87	83	76	87	84	76	80	81	71	81	80	71	71	60	66	77	81	71

Comment:

Coaches used the curriculum trackers and the work in learners' exercise books to ascertain the level of curriculum coverage across each language component area. The high levels of curriculum coverage that they reported are very pleasing. It is interesting to note that Group

Guided Reading receives the lowest level of curriculum coverage across the language components. Supervision visits noted that many teachers found this process difficult to manage in their classrooms.

Table 56: Assessment results terms 2 to 4

TEACHERS	LISTENING & SPEAKING	READING	PHONICS	CREATIVE WRITING	HAND WRITING	EXAM TERMS 2 & 4
95						
TERM TWO	68	68	72	70	65	65
TERM THREE	59	56	58	63	65	-
TERM FOUR	65	64	60	65	68	60
YEARLY AVE	64	63	63	66	66	63

Comment:

The learner results in Table 56 are taken from the formal assessment tasks required by CAPS. It is interesting to note that all of the assessment results are over 50%.

Tracking Instructional Practices

During support visits the supervisor took note of overall developments in teachers' instructional practices. This was done through aligning teachers' actions in the classrooms to the requirements of the core methodologies in the lesson plans. Through doing this a picture emerged of how teachers develop pedagogical competency through using the lesson plans; initially teachers demonstrate emerging competence, while later a more proficient level of competency can be observed. It is important to note that this was done narratively and intuitively by the supervisor, though it nevertheless sets the scene for a more rigorous investigation by the research team.

The table below describes these competency levels in relation to the language components covered in the lesson plans.

Table 57: Developments in instructional practice

COMPONENT	EMERGENT PRACTICE	PROFICIENT PRACTICE
Listening and Speaking (Poster activities)	<ul style="list-style-type: none"> The poster is distant from the learners. Learners listen to the teacher. Learners are not given the opportunity to produce new language. 	<ul style="list-style-type: none"> Learners seated close to the poster. Learners engage actively with the poster. Teacher provides learners with new vocabulary. Learners listen to the teacher. Learners produce new language.
Phonic Activities	<ul style="list-style-type: none"> The phonic activities are unrelated 	<ul style="list-style-type: none"> Teacher uses a range of strategies

	to the phonic sounds taught during the lesson.	<p>to teach phonics.</p> <ul style="list-style-type: none"> Learners practice the new phonic sounds in different ways. The teacher's instructions are clear and the learners know exactly what to do.
Group Guided Reading	<ul style="list-style-type: none"> Learners are randomly assigned to groups. The teacher does not provide guidance to learners in the group. Learners read independently while seated together. The rest of the class is not constructively engaged and many learners in the class are restless. 	<ul style="list-style-type: none"> Learners are organised into ability groups. The teacher manages the process well. The teacher teaches new vocabulary to the group so that the children will understand the story to be read in the group. Individual learners in the group read to the teacher and receive individualised instruction. The rest of the class is constructively engaged while the teacher concentrates on a small group of learners.
Shared Reading	<ul style="list-style-type: none"> The teacher confuses shared reading with guided reading. An inappropriate text is used. 	<ul style="list-style-type: none"> The teacher teaches new vocabulary words to the learners. Everyone uses the same text. The teacher acts out elements of the story to further embed meaning. The teacher models fluent reading. Different groups of learners are given the opportunity to read out loud under the guidance of the teacher.
Handwriting	<ul style="list-style-type: none"> No assistance is given to assist left-handed learners to form the letters. 	<ul style="list-style-type: none"> The teacher models letter formation to all learners (left- and right-handed) Learners follow a structured and systematic handwriting programme. Evidence can be seen of learners writing patterns as well as letters.
Creative Writing	<ul style="list-style-type: none"> Learners copy the teacher's words. There is no link between the different writing strategies used to produce a piece of writing. 	<ul style="list-style-type: none"> Learners write their own words. Evidence can be seen of writing scaffolding strategies. Learner writing develops systematically across the academic year both in quality and in quantity.

Challenges and Recommendations

The table below represents challenges faced and recommendations suggested for this reporting phase.

Table 58: Intervention 2 challenges and recommendations

CHALLENGES	RECOMMENDATIONS
<ul style="list-style-type: none"> Data collection processes and strategies remained a challenge throughout 2015. It is very difficult to keep a data base updated in a remote context where schools do not necessarily have the means or opportunity to communicate changes with the service provider. Yet this data is crucially important for planning purposes. 	<ul style="list-style-type: none"> Data collection: Class Act tried to keep in constant contact with teachers and schools in an effort to foreground the importance of accurate and clean data. Where data anomalies were noted, the issues were quickly investigated. But this does remain an ongoing challenge.
<ul style="list-style-type: none"> Various logistical challenges arose throughout since the start of Intervention Two implementation. These include minor challenges, like schools that are difficult to access; and more serious challenges around staffing in some schools. 	<ul style="list-style-type: none"> Logistic challenges: The usual channels of communication were followed, starting with communication with the principal, and moving to communication with the Senior Education Specialists (SES). This has not always proved to be successful and more assistance is required from official stakeholders.
<ul style="list-style-type: none"> Coaches reported that the level of absenteeism made their work difficult. They reported many instances where they had to reschedule planned and confirmed appointments with teachers due to absenteeism. And they also reported that many teachers experienced the lack of a stable cohort of learners who they could work with developmentally. This was due to high levels of learner absenteeism especially prevalent in farm schools. 	<ul style="list-style-type: none"> Level of absenteeism: The EGRS requires the assistance of official stakeholders with regard to this particular challenge. More assistance is needed on teacher accountability and on helping school leaders to manage the issue of absenteeism in both teachers and learners.
<ul style="list-style-type: none"> Many teachers reported that they found the pace of lessons too fast. They experienced difficulties in finishing all of the planned work for the week. 	<ul style="list-style-type: none"> Pace of lessons: This is a multifaceted challenge to manage. On the one hand, the lesson plans are based on the minimum CAPS requirements; while on the other hand the teachers think they are not coping with a fast pace. In addition, the curriculum coverage data (see Table 15 above) seems to suggest that the teachers are covering the curriculum. In year two coaches need to explain this dichotomy to the teachers and assure them that while they think they cannot cope, actually they can.
<ul style="list-style-type: none"> Teachers in multi-grade schools found the programme difficult to implement. They did not know how to manage the lessons plans in their circumstances. 	<ul style="list-style-type: none"> Multi-grade schools: It is important to remember that the EGRS is a research study that is aiming to answer a particular set of questions. None of the questions relate to the issue of teaching reading in multi-grade classrooms, thus Class Act cannot make

	significant shifts for this particular group of teachers. However, the instructional coaches can provide teachers with some management ideas for multi-grade teaching during their support visits.
<ul style="list-style-type: none"> The engagement with officials at reference group meetings does not always yield the necessary information. 	<ul style="list-style-type: none"> Reference group meetings: Class Act would like the focus of attention at these meetings to broaden from merely a technical edit of materials to include a more strategic engagement with officials concerning the strategy and how best to support teachers.

Plans for 2016

The table below represents the plans for Intervention Two for 2016.

Table 59: Intervention 2 plans for 2016

BENEFICIARIES	MATERIALS	TRAINING
<ul style="list-style-type: none"> Grade 2 teachers 	<ul style="list-style-type: none"> Grade 2 Vula Bula readers Grade 2 Setswana HL Lesson Plans Additional posters Grade 2 Tracker Grade 2 Routine New flashcard words New assessment plan 	Teacher training: <ul style="list-style-type: none"> Session 1 (25 to 27 Jan 2016) Session 2 (16 to 18 Mar 2016) Session 3 (22 to 24 Jun 2016) Session 4 (28 to 30 Sep 2016)

INTERVENTION THREE

This section begins with a brief description of the intervention and of the materials developed to support its implementation. It then illustrates the activities that took place in this intervention and provides the supporting data. Challenges experienced in this intervention and recommendations suggested are tabulated before the section ends with the EGRS plans for 2016.

Intervention Description and Materials

Unlike the previous two interventions, Intervention 3 focused on **parental involvement** through the work of **community reading coaches** (CRCs). The CRCs were appointed by principals in the 49 schools that formed the context of the intervention. Originally 50 schools were randomly selected but one withdrew as it was a boarding school with no parents living in the community near the school. The CRCs provided **weekly training sessions** which were aimed at helping Grade One parents understand how their children learn to read. These sessions also provided

parents with strategies to use at home to stimulate a culture of reading. As with the other interventions, social media was used to help the CRCs keep in contact with Class Act.

The table below details the **materials** that Grade One parents were provided with during 2015.

Table 60: Intervention 3 materials

ITEM	DESCRIPTION	QUANTITY
Module One	'Small things can make a difference' plus a set of family reading cards	One per training
Module Two	'Playing with sounds to support reading' plus a set of family reading cards	One per training
Module Three	'Reading pictures' plus a set of family reading cards	One per training
Module Four	'Letter sounds' plus a set of family reading cards	One per training
Module Five	'Incidental reading' plus a set of family reading cards	One per training
Module Six	'Preparing to read a story – Part One' plus a set of family reading cards	One per training
Module Seven	'Reading a story' plus a set of family reading cards	One per training
Module Eight	'Preparing to read a story – Part Two' plus a set of family reading cards	One per training
Grade One reader	Platinum Series Le Re Tlhabetse Readers published by Maskew Miller Longman / Pearson: Book 1	One per parent
Facilitators' Guides	Detailed handbooks for trainers to follow when they trained CRCs. These were also used for parent training.	One per training session per module

Activities and Data

The table below lists the **activities** that took place in this intervention during 2015.

Table 61: Intervention 3 activities

ACTIVITY	DESCRIPTION	TIME FRAME
Project start up	The EGRS implementation team was put together. This team consists of: programme manager; materials development team; logistics administrator; data capture; Setswana trainers and coaches; supervisor	January to February 2015
Project advocacy	A presentation on the content of the project was made to the North West Provincial Department of Education to explain the focus of each intervention and the implementation plans. The project was launched in the two participating districts (Dr Kenneth Kaunda and Ngaka Modiri Molema) with representatives from all schools and from the provincial and district offices.	February 2015
Materials development	Work was completed on the eight modules planned for the year and on the family reading cards and accompanying facilitator's guides.	February to September 2015
Provincial involvement	Ongoing communication took place between the service provider and the two districts. Generally this took the form	Ongoing

	of: <ul style="list-style-type: none"> Joint trouble-shooting implementation challenges. Information sharing concerning curriculum and assessment processes. Collaboration concerning the logistics involved in large-scale training events. Contact with subject advisors regarding teacher support. 	
CRC Training	CRCs received training six times during the course of 2015. In some instances more than one module was covered in a training session.	<ul style="list-style-type: none"> April 2015 (Module 1) May 2015 (Modules 2 and 3) July 2015 (Module 4) September 2015 (Modules 5 and 6) October 2015 (Module 7) November 2015 (Module 8)
Parent Training	CRCs ran weekly training sessions for parents on the modules. Parents were trained on each module separately over the course of three contact sessions.	Ongoing
Social media	In order to provide CRCs with more contact with their trainers, social media groups were set up between CRCs and ClassAct. This process worked well.	Ongoing since March 2015
Monitoring and Supervision	CRCs were monitored by Intervention Two coaches during afternoon sessions. One formal supervision visit was also conducted during the year.	Ongoing since June 2015
Year-end presentation	At the end of the year Class Act was invited to make a presentation to the principals from Intervention Three. Progress during the year was discussed and questions were answered.	24 November 2015

The tables below represent the **data** that Class Act collected in relation to this intervention during 2015.

Table 62: Community Reading Coach attendance at training

POSSIBLE	APRIL 2015 MODULE 1	MAY 2015 MOD 2 & 3	JULY 2015 MODULE 4	SEPT 2015 MOD 5 & 6	OCT 2015 MODULE 7	NOV 2015 MODULE 8
49	49	44	35	42	44	40
% ATTENDANCE	100	90	71	86	90	82

Comment:

The CRCs who did not attend the scheduled training were provided with catch-up training.

Table 63: Number of learners represented by parents/guardians at meetings

POSSIBLE	MOD 1	MOD 2	MOD 3	MOD 4	MOD 5	MOD 6	MOD 7	MOD 8 ⁵
3402	1436	1372	1072	876	1385	1191	1036	199
% ATTENDANCE	42	40	32	26	41	35	31	22

Comment:

The average parental involvement throughout the year was approximately 34 % as the balance of attendance data from Module 8 is still outstanding. In the absence of robust data it is hard to know if this is the usual percentage of parental involvement in school events or not. Incentives were introduced after Module 4 to try and encourage more parental involvement. More time is needed to evaluate the effectiveness of these incentives.

Challenges and Recommendations

The table below represents challenges faced and recommendations suggested for this reporting phase.

Table 64: Intervention 3 challenges and recommendations

CHALLENGES	RECOMMENDATIONS
<ul style="list-style-type: none"> Data collection processes and strategies remained a challenge throughout 2015. It is very difficult to keep a data base updated in a remote context where schools do not necessarily have the means or opportunity to communicate changes with the service provider. Yet this data is crucially important for planning purposes. 	<ul style="list-style-type: none"> Data collection: Class Act tried to keep in constant contact with CRCs and schools in an effort to foreground the importance of accurate and clean data. Where data anomalies were noted, the issues were quickly investigated. But this does remain an ongoing challenge.
<ul style="list-style-type: none"> There is concern over the number of parents who regularly attend CRC training sessions. The research team is concerned that only non-robust data would be collected from this intervention as a result of low attendance. 	<ul style="list-style-type: none"> Regular attendance: The issue of parental participation is a complex one as little evidence exists concerning the norms for this issue. There are also very practical reasons why parents cannot attend (work commitments; travel costs; live in urban area). There is some anecdotal evidence to suggest that many of the parents dropped out of school early as young people and that as a result they do not see the value in formal education. Class Act has asked principals to assist in revitalising attendance in this intervention through starting off 2016 with a wide scale parent meeting.

⁵ Please note that the attendance data for Module 8 is for 13 CRCs as Class Act was still awaiting the postal delivery of attendance registers from the balance of coaches.

<ul style="list-style-type: none"> The recruitment of suitable CRCs is also problematic in some instances. This is due to members of the resident population not being willing to work for a small volunteer stipend, or because there is no suitably skilled candidate available for the position. 	<ul style="list-style-type: none"> Recruitment of suitable CRCs: Class Act will continue to offer interesting and exciting training to CRCs to help them develop additional skills.
<ul style="list-style-type: none"> Transport to and from the school for parent training sessions can be problematic. 	<ul style="list-style-type: none"> Transport: Many parents come to the school on the common transport provided by the DBE for learners. They then stay at the school until the training session begins in the afternoon. Principals are encouraged to make use of the parents while they are waiting to be trained.
<ul style="list-style-type: none"> Unplanned scheduling changes has interfered with the smooth running of the programme in some schools. 	<ul style="list-style-type: none"> Unplanned scheduling changes: Class Act will provide CRCs with a process to follow should they have to reschedule training events. This process will include strategies to communicate more effectively with parents.

Plans for 2016

The table below represents the plans for Intervention Three for 2016.

Table 65: Intervention 3 plans for 2016

BENEFICIARIES	MATERIALS	TRAINING
<ul style="list-style-type: none"> Grade 2 parents 	<p>Modules:</p> <ul style="list-style-type: none"> Deepen understanding of reading acquisition Reading fluency Reading for enjoyment <p>Materials:</p> <ul style="list-style-type: none"> Platinum Series Le Re Tlhabetse Readers published by Maskew Miller Longman / Pearson: Book 2 Family Reading Cards Flashcards per story 	<p>CRC training:</p> <ul style="list-style-type: none"> Session 1 (25 to 29 Jan 2016) Ongoing sessions every 6 weeks <p>Parent training:</p> <ul style="list-style-type: none"> Begins first week in February 2016

NEXT STEPS IN THE EGRS

Interventions are continuing during 2016. The endline data collection will take place during late October and early November 2016. This will allow us to measure the impacts of two years of treatment on reading outcomes at the end of grade 2. In the event of at least one of the interventions showing a significant impact on reading outcomes at the end of grade 2, we plan on using DBE administrative test data and possibly even raising funds for a further round of data collection to measure the longer-term impacts of the interventions.

REFERENCES

- Andrabi, T. D. (2013). *Report Cards: The impact of providing school and child test scores on educational markets*. Unpublished mimeo.
- Department of Basic Education. (2014). *Report on the Annual National Assessment of 2014*. Pretoria: Department of Basic Education.
- Fleisch, B., & Schöer, V. (2014). Large-scale instructional reform in the Global South: insights from the mid-point evaluation of the Gauteng Primary Language and Mathematics Strategy. *South African Journal of Education*, 34(3), 1-12.
- Fleisch, B., Taylor, S., Schöer, V., & Mabogoane, T. (2015). The impact of a remedial reading programme on second language grade 4 students in KZN: Evidence from a randomised impact evaluation. *South African Monitoring and Evaluation Conference*. Johannesburg.
- Gove, A., & Wetterberg, A. (2011). *The Early Grade Reading Assessment: Applications and Interventions to Improve Early Grade Literacy*. RTI Press.
- He, F., Linden, L. L., & MacLeod, M. (2009). *A better way to teach children to read? Evidence from a randomized control trial*. Retrieved September 12, 2012, from <https://webpace.utexas.edu/linden/www/Teach%20Children%20to%20Read.pdf>
- Howie, S., Van Staden, S., Tshele, M., Dowse, C., & Zimmerman, L. (2012). *South African Children's Reading Literacy Achievement: Summary Report*. Pretoria.
- Lieberman, E. P. (2013). *Does Information Lead to More Active Citizenship? Evidence from an Education Intervention in Rural Kenya*. MIT Working Paper.
- Pandey, P., Goyal, S., & Sundararaman, V. (2009). Community participation in public schools: Impact of information campaigns in three Indian states. *Education Economics*, 17(3), 355-375.
- Sailors, M. H. (2010). The Effects of First- and Second-Language Instruction in Rural South African Schools. *Bilingual Research Journal*, 33, 21-41.
- Spaull, N., & Taylor, S. (2015). Access to what? Creating a composite measure of educational quantity and educational quality for 11 African countries. *Comparative Education Review*, 59(1), 133-165.
- Taylor, S., & Von Fintel, M. (2016). Estimating the impact of language of instruction in South African primary schools: A fixed effects approach. *Economics of Education Review*, 50, 75-89.