ZEST ENDLINE REPORT

ZAMBIAN EDUCATION SCHOOL-BASED TRAINING

The Open University (UK) | World Vision (Zambia)
Acknowledgments

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Acronyms

DESO – District Education Standards Officer
DRCC – District Resource Centre Coordinator
ESO – Education Standards Officer
GRACE – Grade Teachers’ Meetings at Resource Centres
HIM – Headteacher In-service Meeting
MoE – Ministry of Education
MOOC - Massive Open Online Course (MOOC)
OU – The Open University (UK)
PRCC – Provincial Resource Centre Coordinator
SBCPD – School Based Continuing Professional Development
SIC – School In-service Coordinator
SIR – School In-service Record
SMART – Subject Meetings at Resource Centres
SPRINT – Schools Program of In-service Training for the Term
TESSA – Teacher Education in Sub-Saharan Africa
TGM – Teacher Group Meeting
UNZA – University of Zambia
WVZ – World Vision Zambia
ZEST – Zambia Education School-based Training
ZHT – Zonal Headteacher
ZIC – Zonal In-service Coordinator
Executive summary

About the ZEST project

Zambian Education School-based Training (ZEST) is a School-Based Continuing Professional Development (SBCPD) project based in 5 target districts in Central Province in Zambia: Chisamba, Kabwe, Mumbwa, Mkushi and Shibuyunji.

Through improvements to the classroom practices of primary teachers, and effective implementation of the Revised Zambian School Curriculum, the aim of the project is to contribute to improving the quality of teaching and learning experiences for children in primary schools in Zambia.

The project has reached over 4000 primary school teachers in 439 schools. The project is funded by the Scottish Government and implemented by The Open University UK (OU) and World Vision Zambia (WVZ) in collaboration with the Ministry of Education (MoE) in Zambia.

Between 2017 and 2023, ZEST has worked with primary teachers with the aim of enhancing their teaching skills in all subjects across the primary curriculum. The outputs from ZEST include:

- a co-designed and tested SBCPD programme of resources available online and offline;
- the implementation of the SBCPD programme in the 5 target districts;
- capacity building of Ministry of Education officials to implement the SBCPD programme as a means of ensuring its sustainability, including expansion to other Districts and Provinces if the Ministry choose;
- the innovative use of technology to provide access for teachers to high quality digital resources.

The specific logical framework (logframe) indicators include targets for improved classroom practice, teacher collaboration and the use of teacher notebooks.

Table 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Logframe indicator</th>
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<tbody>
<tr>
<td>Indicator 1</td>
<td>% participating teachers demonstrating improved classroom practice</td>
</tr>
<tr>
<td>Indicator 2</td>
<td>% of participating schools implementing the school-based professional development programme, recording an increase in collaborative work</td>
</tr>
<tr>
<td>Indicator 1.4</td>
<td>% of participating teachers recording use of collaborative classroom practices</td>
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</tbody>
</table>

These indicators were measured at Baseline and in a formal Endline study.

In this current report, we combine data from the Endline study with other project data to make a set of recommendations for the future.

As the project was initially scheduled to be completed by March 2023, the endline evaluation took place during November 2022. Shortly thereafter, the project was extended to March 2024.
(Year 7) with the Scottish Government awarding additional funding to support extension activities. A report on Year 7 will be published separately.

Aim of the Endline study

The aim of the Endline study is to describe the current situation in the 5 target districts of Chisamba, Kabwe, Mumbwa, Mkushi and Shibuyunji in Central Province, with regard to active teaching and learning and teacher engagement in collaborative SBCPD, and to examine how these elements have changed over the period of the project. It achieves this through a) analysing the outcomes of the three key Logical Framework indicators (see Table 1) and b) by carrying out a comparison with the data from the Baseline Study of 2018.

The findings of the study will primarily be used by the:

- project management team to enable reporting to stakeholders, in particular the Scottish Government (the funder), and the Ministry of Education in Zambia;
- Scottish Government to assess the delivery, effectiveness, VfM, value for money, and impact of the project;
- Ministry of Education, Zambia, to assess progress of the project implementation and the effectiveness and scalability of the SBCPD programme developed to enhance SPRINT\(^1\) and Lesson Study\(^2\);
- project management team and MoE to support the on-going development and implementation of the project’s sustainability and succession strategies;
- OU’s academic team as part of an on-going programme of research into international education development and teacher education, at the OU.

Research questions

The overarching question considered in this report is: **What is the impact of ZEST?**

The endline evaluation research questions (based on the logframe indicators) were:

1. What observable classroom practices with respect to active teaching and learning are currently taking place in primary schools in the 5 target districts of Central Province?
2. What is the amount and nature of teachers’ participation in collaborative SBCPD in primary schools in the 5 target districts of Central Province over the 3 terms in the 2022 school year?
3. To what extent do teachers record the use of collaborative classroom practice in reflective teacher notebooks? (New question for the endline as teacher notebooks were not in use previously)

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\(^1\) School Programme for Inservice Training  
\(^2\) Lesson Study is an 8-step cycle borrowed from Japan which sets out a process of collaborative planning, doing, reflecting, and refining for developing teaching skills. This is currently what MoE would like teachers to do in TGMs; ZEST offers enhancements based on feedback from teachers, head teachers and MoE officials.
**Our more detailed research considered:**

4. What is the impact of ZEST in Mumbwa District?

**Our engagement with stakeholders also considered:**

5. What are the key successes and challenges of ZEST?
6. How can these be sustained and tackled?

**Study methodology**

Following the format of the Baseline, Midline and cohort evaluations, this was a mixed method study with a sample of 56 schools engaged in the ZEST project, (including 31 from the Baseline), designed to establish current classroom practices with respect to active teaching and learning approaches; teachers’ perceived confidence in using these approaches; teachers’ engagement with SBCPD and reflection; and the extent of collaboration amongst teachers.

The study collected qualitative data (observations and interviews) and quantitative data (systematic observations and questionnaires). All participants were volunteers (in accordance with OU ethical research guidelines) and had the right to withdraw until the end of the data collection period. Each participant was provided with information about the study and how the data would be used.

Data collection was completed using face-to-face interviews, review of school documents and lesson observations using tablet-based questionnaires. The interviews were highly structured, with only a few ‘free-text responses’. The free responses were analysed using thematic analysis; codes were generated based on the range of responses.

Four evaluation tools were developed jointly by the OU academic team and the World Vision (WVZ) monitoring team; with the same tools used for all evaluations in the ZEST project:

Baseline (2018), Cohorts 1 to 3 evaluations (2019 to 2021), Midline (2021) and the current Endline (2022) (Appendices 1 to 4):

1. School data (Appendix 1)
2. Continuing professional Development (CPD) Interview (Appendix 2)
3. Teacher interview (Appendix 3)
4. Teacher lesson observation (Appendix 4)

Data collection for the Endline study was undertaken in November 2022 by a team of 18 external enumerators in Zambia. The enumerators (14 female and 4 male) were recruited using the following criteria:

- A Diploma/Degree in Education (key was a Degree in Primary and Secondary Education with teaching practice experience as an added advantage)
➢ Prior Knowledge and experience in data collection/research especially for education related projects or programmes
➢ Good communication and interpersonal skills
➢ Training or experience in the use of data collection tools such as KOBO3.

During the project, an ‘impact accelerator’ grant (£10,000) was obtained with the same survey instruments used in an in-depth study of six schools. This provided further insights into the way in which ZEST operates, the impact of technology, and the role of school leaders.

Finally, at the end of Year 6, the Endline data was presented to Stakeholders in an Evidence Café workshop, yielding further insights.

This study draws on the formal Endline evaluation; however, to make additional meaningful recommendations, this report also includes findings from the impact accelerator grant and the stakeholder engagement Evidence Café.

Classroom practices (Outcome indicator 1)

1. This aspect of the study sought to answer the first research question:

**Q1? What observable classroom practices with respect to active teaching and learning are currently taking place in primary schools in the 5 target districts of Central Province?**

Data was drawn from 164 teacher interviews and 160 lesson observations.

As a proxy measure for ‘active teaching’ we measured and reported specifically on the amount of time students spent talking in pairs or groups, in each lesson.

- The proportion of time spent on group work ranged from 0 to 55% of lesson time, with a mean of 11.2%. This is equivalent to 4.5 minutes (compared with 8% at Baseline, 5% at Midline4).
- The proportion of time spent on pair work ranged from 0 to 30% of lesson time, with a mean of 2.5%, or one minute (compared with 1% at Baseline, 3% at Midline).
- The mean proportion of time spent on both types of activity was 13.7%, or 5.5 minutes (compared with 9% at Baseline, 8% at Midline).
- The median proportion of lesson time spent on pair work and/or group work was 10% (compared with 5% at Baseline and Midline).

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3 The KOBO toolbox is a data collection tool accessible to everyone. KoboToolbox
4 The midline evaluation was affected by the global pandemic (2019-2021) in which collaborative work was not possible.
Question 1:
Key Findings on observable classroom practices with respect to active teaching and learning

1. The median, mean and maximum have improved since the baseline.
2. Looking at the data for cohorts 1-4 (all of whom have been engaged in ZEST for more than 1 year), the median time spent on group work or pair work is 15% (compared to 5% at the baseline). This corresponds to 6 mins.

*If we take 15% of lesson time (6 mins) as a minimum for a significant interactive classroom activity, we find that:*

3. There is more group work and pair work in grades 4-7 than grades 1-3
4. Numeracy lessons have more group work and pair work.
5. Cohort 1 scored more highly than subsequent cohorts with 60% of lessons reaching this level.

School based teacher collaboration and continuing professional development (Outcome indicator 2 and Outcome Indicator 1.4)

This aspect of the study sought to answer the second and third research questions:

**Q2? What is the amount and nature of teachers’ participation in collaborative SBCPD in primary schools in the 5 target districts of Central Province over the 3 terms in the 2022 school year?**

Data was drawn from 112 interviews with Headteachers and SICs; this included data collected from schools’ in-service records (SIRs) and from 160 teacher interviews.

Teacher Group Meetings (TGMs) are a well-established feature of the SPRINT SBCPD system in Zambia and schools have regular TGMs as part of their SBCPD programme. Government policy is that these should be fortnightly, but experience suggests they are less frequent.

As outlined in the In-service Strategy in Zambia (2017), the expectation from the MoE is that TGMs to support Continuing Professional Development (CPD) in the two key areas of a) content knowledge and b) pedagogy or methodology. The ZEST project has developed an enhanced CPD approach which has built on the Lesson Study model providing more targeted pedagogical support that is more suitable for Primary schools.


**Question 2:**

**Key findings on school-based collaboration and CPD**

43% of schools have 3 or more TGMs per term. This is the same as the Baseline; however, qualitative data obtained from all stakeholders shows that:

1. participation is much higher amongst teachers in TGMs.
2. activities which take place are perceived as being more useful to teachers’ classroom practice.
3. collaboration and reflection have become more normalised.
4. teachers report more informal discussion between lessons based on peer observation.
5. collaborative practice is not limited to TGMs.

Another way of determining the impact of TGMs is to consider how well attended they are.

**Attendance at TGMs**

6. A minimum of ‘Good’ attendance (60 – 79%) was achieved by every school in at least one term in 2022.
7. ‘Very good’ attendance (80 – 100%) was achieved by 45 out of 56 schools (80%) in at least 1 term in 2022.
8. 49 schools (88%) achieved either ‘good’ or ‘very good’ attendance in all three terms of 2022.

**Q3? To what extent do teachers record the use of collaborative classroom practice in reflective teacher notebooks?**

During TGMs, teachers are encouraged to take part in activities designed to help them understand the essential features of the ZEST teaching approaches. They are provided with a notebook in order to record their responses to activities, ideas for activities, their plans for classroom activities, and their reflections on how they went. The Baseline figure was 0% as this activity was new to ZEST. We were interested to see what proportion of participating teachers are making use of the notebook in this way.

**Question 3:**

**Key findings on use of teacher notebooks to record collaborative classroom practices**

1. 75% of teachers are regularly using their notebook to record their use of collaborative classroom practice.
2. There is little variation by gender.
3. More experienced teachers are slightly more likely to use their notebooks than the younger teachers.
4. Teachers with 1-5 years of experience make the least use of their notebook.

*Overall, these figures suggest that the use notebooks during TGMs has become embedded during ZEST.*
In-depth research (Impact Accelerator Grant)

This aspect of the study set out to answer research question 4

Q4? What is the impact of ZEST in Mumbwa District?

The data for this question came from an in-depth study in six schools in Mumbwa, gathered during a week in March 2022. This purposive sample was chosen owing to the promising Cohort 3 data and the close proximity to Lusaka.

### Question 4: Key Findings on the impact of ZEST in school

SBCPD has been strengthened with the more productive use of time, more active engagement by more teachers, and improved relationships in school.

1. Teachers are more confident in the use of IT and have started to use their phones in a professional capacity in ways that go beyond the project. For example, accessing other courses and resources on the internet, professional networks on WhatsApp.
2. People are keen to able to use technology and often have to ask for help. In some places this has resulted in the flattening of hierarchies. Those in positions of responsibility are more prepared to ask others for help.
3. The Raspberry Pi computers have enabled teachers to access materials including in places where there is no electricity.
4. Teachers’ planning has improved.
5. There has been a positive impact on learners. They are more engaged in lessons; attendance has improved; and some head teachers report improvements in achievement.

Engagement with stakeholders

This aspect responses to research questions 5 and 6

Q5 What are the key successes and challenges of ZEST?
Q6 How can these be sustained and tackled?

The data was collected during a three-day engagement (Evidence Café) with stakeholders from all levels of the system.
QUESTIONS 5 & 6: Key findings on the key successes and challenges of ZEST

Participants considered the impact of ZEST on learners to be the most significant success. Apart from the successes listed elsewhere, they also concluded:

1. ZEST has built the capacity of District and Provincial officers to support LCE and the use of ICT.
2. The provision of TESSA resources supports teaching and learning.
3. Schools with very limited resources (e.g. no electricity) are highly involved.

It was agreed that:

1. The program is sustainable and could be extended to other Provinces. However, to be effective beyond urban centres (which have electricity and the internet), schools need to be supplied with a solar charged power bank to support the Raspberry Pi computers (which is relatively inexpensive).
2. Resources are required to support monitoring at a District and Provincial level.

Looking forward: How has the ZEST project worked?

Throughout the 6-year period of engagement in Zambia it has been possible to gather a very rich set of data. As described in detail in the Discussion section, this accumulated data highlights many significant gains in addition to the objectives of the logframe. These encompass such areas as: teachers’ collaboration; professional discussions; support and mentoring of teachers by district officials; a positive impact on learners’ engagement; attendance and achievements; wide use of technology; more productive TGMs; and finally - as recognised by headteachers in the project - more harmonious relationships between teachers within schools.

ZEST is now considered sustainable because the capacity has been built within existing structures to train teachers and monitor progress. Schools with limited or no electricity or internet access need to be supplied with a Raspberry Pi computer, and dedicated resources need to be allocated to monitoring.
1. Introduction

1.1: About the ZEST project

Zambian Education School-based Training (ZEST) is a pedagogic School-Based Continuing Professional Development (SBCPD) project based in 5 target districts in Central Province in Zambia. The aim of the project is to contribute to improved quality of teaching and learning experiences for children in primary schools in Zambia, through improvements of the classroom practices of primary teachers, and effective implementation of the Revised Zambian School Curriculum. The project is funded by the Scottish Government and implemented by The Open University UK (OU) and World Vision Zambia (WVZ) in collaboration with the Ministry of Education (MoE) in Zambia.

Since 2017 the ZEST project has worked with primary teachers to enhance their teaching skills in all subjects across the primary curriculum. The outputs from the ZEST project include a co-designed and tested SBCPD programme of resources available online and offline; the implementation of the SBCPD programme in the 5 target districts of Chisamba, Kabwe, Mumbwa, Mkushi and Shibuyunji that has reached up to 4000 primary school teachers; and the building of capacity of MoE officials to implement the SBCPD programme more widely.

During the co-design phase (years 1-3), the training programme was developed and tested through an iterative process, by up to 3 cohorts of teachers in 34 schools in Chisamba, Kabwe and Mumbwa districts. In the subsequent phase (years 3-6), implementation was extended to reach a total of 420 schools in the five target districts, working with MoE officials to develop models of use that would enable the Ministry to make the programme available for use across Zambia. The programme was designed as a set of activities based on collaborative and active learner-centred teaching approaches to be planned by teachers working together at school level in Teacher Group Meetings (TGMs) and carried out in their lessons.

ZEST strengthened existing systems and processes for teachers’ school-based continuing professional development (SBCPD) by providing training, tools and resources – a ‘teacher’s toolbox’ -- to support teachers in planning, doing and reflecting on their practice. It used the OU’s Teacher Education in Sub-Saharan Africa (TESSA) Open Educational Resources (OER) and the TESSA Curriculum Guide, which connects the TESSA OER and the Revised Zambia School Curriculum, to help teachers develop ideas for more engaging classroom activities. For C1 and C2 resources were paper-based. In Cohort 3 the project trialled the use of Raspberry Pi computers which were used in the scale-up to ensure that all teachers could access materials using their own mobile phones.

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5 TESSA OER have been contextualised for Zambia and provide practical examples of active teaching approaches. These resources will be made available to the ZEST project target teachers.

6 The TESSA Curriculum Guide was produced in July of 2017 by a team of teachers, college lecturers (from Colleges of Education), and Ministry of General Education (MoGE) officers.
This Endline evaluation report is the latest in the suite of evaluation reports published during the lifetime of the project, starting with the baseline report (2018), the Cohorts 1 to 3 evaluation in 2019, 2020 and 2021 respectively, and the midline evaluation in 2021.

1.2: Rationale and aim of the Endline study
As with previous evaluations, the Endline evaluation focused on two areas in particular:

a. Classroom practice
b. Teachers’ participation and collaboration in SBCPD

The aim of the endline is to compare the situation with regards to active teaching and learning approaches in some of the ZEST schools against the Baseline evaluation findings from 2018.

The Endline research questions were:

1. What observable classroom practices with respect to active teaching and learning are currently taking place in primary schools in the 5 target districts of Central Province?

2. What is the amount and nature of teachers’ participation in collaborative SBCPD in primary schools in the 5 target districts of Central Province over the 3 terms in the 2022 school year?

3. To what extent do teachers record the use of collaborative classroom practice in reflective teacher notebooks? (This is a new question for the Endline as teacher notebooks were not previously in use)

Compared to / against the Baseline data (2018) in the same participating schools the findings of the 2022 study help establish key changes in relation to the use of active teaching and learning approaches and collaborative teachers SBCPD.

Key findings of the 2022 study will primarily be used by the:

- Open University (OU) project management team to enable reporting to stakeholders; in particular the Scottish Government (the funder), and the Ministry of Education (MoE) in Zambia.
- Scottish Government to assess the delivery, effectiveness, Value for Money, and impact of the project.^[7]

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7 Please see DAC ‘Criteria for Evaluating Development Assistance’ [http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm](http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm) for further guidance
• Ministry of Education, Zambia, to assess progress of the project implementation and the effectiveness and scalability of the SBCPD programme developed to enhance SPRINT\(^8\) and Lesson Study\(^9\).
• OU project management team and MoE to support the on-going development and implementation of the project’s sustainability and succession strategies.
• OU academic team/s as part of an on-going programme of research into international education development and teacher education, at the OU.

2. Literature review

2.1 Background

School-based continuing professional development (SBCPD) has been part of the Zambian Education system since 1998. Every term each school was expected to produce a plan – or a ‘School Programme of Inservice Training’ (SPRINT). In 2005, in partnership with the Japanese International Co-operation Agency (JICA), Lesson Study was introduced into Secondary Schools to give SPRINT more purpose. Initially the focus was on improving Maths and Science Education. By 2008, it was extended to all grade levels and subjects in three Provinces although the emphasis was still on subject teaching (Jung et al., 2016).

The aim of Lesson Study was to improve the quality of classroom teaching and specifically ‘to deepen teachers’ understanding of learner-centred teaching as well as to develop their capacities and skills to implement learner-centred lessons’ (Jung et al., 2016, p7). The underlying philosophy of the system is that CPD should be driven by teachers and that by nurturing teachers’ awareness of responsibility and pride as professionals the quality of teaching will improve. In this system, teachers are seen as ‘enquirers’, working collaboratively to identify problems and local solutions and they develop their practice together (Banda et al., 2014).

The idea was to move away from traditional ‘top-down’ training - where teachers are told what to do - to a ‘bottom up’ system driven by ‘flexibility and autonomy rather than uniformity’ thereby harnessing the creativity of teachers themselves (Baba & Nakai, 2009, p59).

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\(^8\) SPRINT, or School Programme of In-service for the Term, is the MoE’s framework for school based continuing professional development for teachers in Zambia.
\(^9\) Lesson Study is an 8-step cycle borrowed from Japan which sets out a process of collaborative planning, doing, reflecting, and refining for developing teaching skills. This is currently what MoE would like teachers to do in TGMs; ZEST offers enhancements based on feedback from teachers, head teachers and MoE officials.
The four-step cycle used in Japan was adapted for Zambia to an eight-step cycle in which:

1. Teachers identify a problem or issue (usually subject based (eg. ‘What is the best way to teach fractions?’))
2. Teachers work collaboratively to plan a lesson relevant to the problem that has been identified.
3. A volunteer teaches the lesson and others observe – a demonstration lesson.
4. They collectively critique the lesson.
5. Teachers work together to collaboratively plan an improved lesson, based on the collective critique.
6. The revised lesson is conducted and observed by the group.
7. The group share their reflections, identify improvements, and make further suggestions. which individual teachers are expected to try.
8. Reflections and suggestions made throughout the process are compiled and act as a reference for teachers.

In order to support the process, systems and roles were created; this includes the appointment of a school in-service co-ordinator (SIC) in every school and a Zonal Inservice Co-ordinator (ZIC) for a group of schools. The expectations are that a headteachers in-service meeting (HIM) held at the start of every term sets out a program for the term, along with regular (fortnightly) teacher group meetings (TGMs) to discuss teaching and learning and undertake collaborative planning.

All activities are recorded in a ‘School Inservice Record’ (SIR Book) which is inspected periodically by District officials. From the outset, the emphasis was on subject teaching (particularly Maths and Science) as they were considered to be significant weaknesses in subject-based school practices and research (Baba & Nakai, 2009). This perhaps stems from the absence of pedagogical content knowledge (how to teach a subject) (Shulman, 1986) from pre-service courses with methodology being taught in Education departments and subject content taught separately in subject departments.

Early research was promising. In Science and Maths, pass rates in Grade 12 improved by around 10% (Banda et al., 2014; Jung et al., 2016) Internal evaluations of teachers’ implementation of learner-centred lessons in Maths and Science were less impressive, although their lesson planning improved.

In a study involving 84 English teachers in 10 secondary schools, Phiri, (2020) identified some small improvements in practice and learners’ performance but found that most teachers did not take part in steps 5 to 8; citing that the programme was considered difficult to organise and potentially disrupted normal teaching. There is no research evidence at present from Primary schools.

Despite noted improvements, a report published in 2020 acknowledges that Lesson Study has been successfully scaled up in Zambia but that ‘low performance is still prevalent in most schools in Zambia’ (Ishida et al., 2020, p251). It goes on to suggest that observed improvements
(2009-2013) were not sustainable and that ‘the quality improvement in basic education has slowed down or stopped.’ On top of this teachers’ understanding and delivery of learner-centred pedagogy was still relatively superficial. Teachers continue to grapple with the quality of delivering learner-lessons (i.e., incorporating a variety of learning approaches, questioning techniques, and effective use of teaching-learning materials) and often revert to traditional “chalk-and-talk” methods’ (Jung et al., 2016, p10). One explanation for this could be that although the Zambian Government champion learner-centredness, they have not articulated what it might look like in the Zambian context (Baba & Nakai, 2009).

A key tenet of Lesson Study is that it does not start from a position which emphasises what teachers lack. Lesson Study does not view teachers ‘as targets of training, forcing them to take on the added task of participating in regular professional development activities. Rather, it recognises that teachers could produce their own ideas to improve their teaching and could, with support from peers, be the main agents in their own training’ (Jung et al., 2016, p12). However, changing the mindset of teachers involves creating a culture of trust and professional accountability amongst teachers, school managers, and District and Provincial officials. Given the current emphasis on monitoring and accountability, this requires a significant shift in how the latter operate. Lesson Study is also predicated on a view of knowledge about teaching as being objective, the idea being to research and deliver a ‘perfect lesson’ that other teachers can copy. This is not consistent with the established view that knowledge about teaching is subjective, socially constructed in a cultural context (Kelly, 2006; Putnam & Borko, 2000). The implication being that teachers need access to support, tools and classroom examples, that they can adapt for their own context rather than a set of rules to follow (Leach & Moon, 2008).

Thus, an aspirational program with embedded systems and processes is not yet delivering on the intended outcomes. The aim of Zambian Education School-based Training (ZEST) is to strengthen the existing system in primary schools, building on the structures already in place, to deliver improved classroom teaching. ZEST uses what is known about teacher learning, findings from the evaluations cited above, and the outputs from a Design Workshop (February, 2018) to make small changes to embedded practices for them to become more effective.

2.2 Introducing Zambian Education School-based Training (ZEST)

There is increased international interest in the benefits of school-based continuing professional development, as evidenced by the work of the Teacher Professional Development @ Scale (TPD@scale)\textsuperscript{10} coalition for the Global South.

In this section we draw on their findings, alongside what is known about teacher learning and evaluations of lesson study to explain the changes made in ZEST to the eight-step cycle described in the previous section.

\textsuperscript{10} TPD@Scale Coalition for the Global South - TPD@Scale Coalition (tpdscalecoalition.org).
It is suggested that TPD@Scale is underpinned by the following principles (Boateng & Wolfenden, 2022):

1. recognising teachers as professionals/change agents
2. adequate support for teachers to help them to centre on pupils’ needs
3. TPD that is authentic, practice-based and relevant to teachers
4. the provision of opportunities for reflective practice, peer learning/collaboration, and the establishment of teacher communities
5. a sustained approach over time.

Much of what has been written about Lesson Study (see: Baba & Nakai, 2009; Banda et al., 2014; Jung et al., 2016; Phiri, 2020) is reflected in these principles. However, evaluations also highlight challenges. The focus for ZEST is Primary schools. Lesson Study has been particularly problematic in this environment as there may only be one teacher for each grade, and teachers often teach across subject areas.

2.2.1 Relationships
The cultural changes implied in the first principle are difficult to achieve and should take place at all levels of the system. The Zambian education system remains very hierarchical. Teachers are being asked to teach in a way that they have not experienced themselves and to work differently with learners. Yet, the attitudes and values expected of them are not always reflected in the ways in which they are treated by District and Provincial Officers. In terms of the perpetuation of colonial attitudes, this is well articulated by (Baba & Nakai, 2009):

“People in high positions are expected to behave according to the position [...]. Suddenly the teacher is required to use reflective thinking as a new competence due to education reform, but values and attitudes, which they have inherited unconsciously, may have the possibility to hinder growth of such competence’ (p56)”

This manifests itself in the field in the deference shown by teachers to Government officials and a reluctance to express their views or share knowledge. Young teachers, fresh from college who may have been exposed to innovative ideas, find it difficult to assert themselves. Like many places in the world, the practical knowledge held by teachers is not valued as highly as academic knowledge. As a result, teachers are told what to do, but not how to do it - hence the need for programs like ZEST.

2.2.2 Knowledge about teaching

Lesson Study focuses on subject teaching and to some extent is predicated on the view that there is a ‘right way’ to teach a certain topic. The idea is that over time, a school will build up a teaching manual consisting of a set of plans for ‘good’ lessons. Research evidence suggests that it is perhaps more helpful to think of knowledge about teaching as being socially constructed in a particular context and that rather than ask ‘what works?’ the question for teachers perhaps needs to be ‘what works for me in my classroom?’ (Putnam & Borko, 2000). The implication is
that teachers need to be aware of possibilities. Correspondingly, they need a toolkit of resources to help them make the sort of ‘in the moment’ pedagogical decisions that characterise effective classroom teaching (McIntyre, 2002). Authentic teacher professional development needs to acknowledge this and focus on the challenges articulated by teachers themselves which reflect the reality of their classrooms – typified by large numbers of learners, a wide age range, and few resources. They need help in how to convert theory into practice and how to develop as reflective practitioners (see point 4 above). Furthermore, the demonstration lacks authenticity with the teacher doing the demonstration teaching a ‘one off’ lesson to a class they may not know, whilst all the other children are sent home. Thus, it disrupts normal teaching and the majority of teachers are passive observers.

2.2.3 Support

Through the emphasis on collaborative planning, support for teachers is built into Lesson Study. However, the evidence indicates that without resources providing an alternative vision and practical advice, it is difficult to see where the new ideas required to implement the aspirations of the Revised Zambian School Curriculum will come from (see point 2 above). Additionally, the evidence suggests that for many teachers, Lesson Study is a passive experience; they are not involved in teaching the demonstration lesson and it is often not relevant to them. In fact, some teachers suggested that being critiqued by a group of peers affects the atmosphere in the staffroom and there is reluctance to volunteer to undertake the demonstration. Overall, it does not feel like a supportive experience.

2.2.4 Progress over time

Accounts of Lesson Study recognise that changing practice and establishing a more collaborative and less hierarchical culture takes time. One emerging issue during the design phase of ZEST was how the ‘problems’ discussed at TGMs were randomly chosen – seemingly ‘in the moment’. There was no sense of building on what was discussed previously (e.g. last term), or that Lesson Study identifies problems systematically enabling progression for teachers. So, although the structures, processes, and expectations are embedded, teachers don’t feel as if they are taking part in a systematic professional development program that addresses their needs. This is perhaps why Lesson Study is not as valued by teachers as much as the MoE would like it to be (Jung et al., 2016; Phiri, 2020).

Thus, the aims of ZEST were to:

1. strengthen the current system, by making use of the roles, system and processes already in place, modifying the eight-step cycle rather than introducing something new;
2. provide support for teachers through the provision of resources that set out an alternative vision for classroom practice;
3. focus on pedagogy so that the discussions in TGMs are relevant to everyone;
4. make sure that all teachers are actively engaged in SBCPD;
Challenge existing hierarchies by positioning everyone (teachers, district and provincial officers) as learners and ensuring that everyone in the system has access to the same resources.

This has been achieved as follows:

Table 1: the steps of Lesson Study

<table>
<thead>
<tr>
<th>Steps of Lesson Study</th>
<th>ZEST – Enhanced SBCPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teachers identify a problem or issue.</td>
<td>A theme linked to pedagogy for the term is identified. Six themes, lasting 2 years, are identified in the resources, with suggestions for how the program could continue.</td>
</tr>
<tr>
<td>2. They work together to collaboratively plan a lesson relevant to the problem that has been identified.</td>
<td>Teachers work together to complete activities that will help them to understand different teaching approaches and collaboratively plan activities to try in the classroom.</td>
</tr>
<tr>
<td>3. A volunteer teaches the lesson and others observe.</td>
<td>All teachers try an activity in their classroom using the approach they have discussed.</td>
</tr>
<tr>
<td>4. They collectively critique the lesson.</td>
<td>Teachers reflect together on how their activities went.</td>
</tr>
<tr>
<td>5. Teachers work together to collaboratively plan an improved lesson, based on the collective critique.</td>
<td>Teachers use their experience to plan another activity using the same teaching approach.</td>
</tr>
<tr>
<td>6. The revised lesson is conducted and observed by the group.</td>
<td>Teachers try the new activity and if possible short peer observations take place.</td>
</tr>
<tr>
<td>7. The group share their reflections, identify improvements and make further suggestions which individual teachers are expected to try.</td>
<td>Teachers reflect together on what they have learnt about the teaching approaches under discussion.</td>
</tr>
<tr>
<td>8. Reflections and suggestions made throughout the process are compiled and act as a reference for teachers.</td>
<td>At the end of term, teachers can complete a short digital quiz, demonstrating their understanding of the teaching approaches that have been discussed.</td>
</tr>
</tbody>
</table>

- Teachers access the digital materials on their mobile phones, tablets, or laptops.
  Each participating school has been provided with a Raspberry Pi computer, pre-loaded with digital materials. The Raspberry Pi acts as a mini-server and has a solar charger, enabling it to be used in schools with no electricity.
- A network of digital School Champions has been established to provide technical support.
• Facilitators are nominated by the SIC and are provided with a Facilitator’s Guide to ensure that TGMs are well-organised and participatory.
• An Implementation Guide sets out the responsibilities of each role within the school, district, and province.
• The first responsibility for everyone (including district and provincial officials) is to become familiar with the resources so that the level of practical knowledge in the system about learner-centred education and active teaching and learning increases and the challenges identified by Jung et al. (2016) can be addressed.

2.3. The ZEST Resources
The ZEST resources were introduced to Cohort 1 (Chisamba, 2018) and were adapted drawing on the experiences of Cohort 1 and Cohort 2 (Kabwe, 2019).

They set out a program of activities over two years:

Term 1 – Classroom management for learner-centred teaching
Term 2 – Inclusive teaching
Term 3 – Assessment for learning
Term 4 – Managing and supporting learner-centred classrooms
Term 5 – Supporting literacy across the curriculum
Term 6 – Being a reflective practitioner

In each term, there are activities for teachers to do during TGMs and classroom examples describing and explaining different teaching approaches.

ZEST is underpinned by Teacher Education in Sub-Saharan Africa (TESSA). TESSA is a bank of Open Educational Resources (OER), providing practical examples of classroom activities. Introduced in Term 4, they show teachers how to teach the primary curriculum as well as what to teach. They have been versioned for Zambia by colleagues at the University of Zambia and have been mapped to the Zambian School Curriculum. The evidence from monitoring and evaluation of the TESSA programme suggests that, where it is mediated and embedded, TESSA supports teachers in developing more active approaches to teaching and learning (Harley & Simiyu Barasa, 2012; Murphy & Wolfenden, 2013; Wolfenden, 2008; Wolfenden et al., 2010).

Although TESSA resources were initially planned to be introduced earlier, evidence from Cohort 1 and 2 suggested that TESSA should be introduced at the beginning of Year 2, when teachers were becoming more pro-active and confident in active teaching approaches.

The basis of the ZEST SBCPD programme is the developing of pedagogical content knowledge (Bold et al., 2017), the promotion of strategies that have been shown to work across contexts (Alexander, 2015) and a focus on the attitudes and values associated with learner-centred approaches (Schweisfurth, 2015). It aims to use existing structures and processes to tackle the challenges identified in the current system and to support teachers and Education Officers to operationalise the aspirations of the Revised Zambian School Curriculum.
3. Methodology

3.1 Research questions
In this report, we combine data from the Endline evaluation with other project data to make a set of recommendations for the future.

The Endline evaluation was designed to look for evidence of:

- improved classroom practice and teaching skills
- changes in the amount and nature of collaboration between teachers and participation in SBCPD
- the impact of ZEST on teachers and learners.

The Endline research questions were:

1. What observable classroom practices with respect to active teaching and learning are currently taking place in primary schools in the 5 target districts of Central Province?
2. What is the amount and nature of teachers’ participation in collaborative SBCPD in primary schools in the 5 target districts of Central Province over the 3 terms in the 2022 school year?
3. To what extent do teachers record the use of collaborative classroom practice in reflective teacher notebooks?

The project secured additional funding for impact accelerator research, which considered:

4. What is the impact of ZEST in Mumbwa District? (With a particular focus on the role of school leaders in the implementation of ZEST and the impact of technology)

Having completed an initial analysis of the findings, we held an Evidence Café (Clough and Adams, 2017) with key stakeholders. An Evidence Café is an opportunity to gather reaction to the findings alongside further insights and evidence.

The Evidence Café with stakeholders considered:
5. What are the key successes and challenges of ZEST?
6. How can these be sustained and tackled?

3.2 Study design and research tools
Following the format of the Baseline, Midline and cohort evaluations, this was a mixed method study with a sample of 56 schools, designed to establish current classroom practices with respect to active teaching and learning approaches, teachers’ perceived confidence in using these approaches, teacher’s engagement with SBCPD and reflection, and the extent of collaboration amongst teachers. All 56 schools were engaged in the ZEST project, with 31 having been part of the Baseline.
Table 2: Data collected in Endline evaluation

<table>
<thead>
<tr>
<th>District</th>
<th>Endline schools</th>
<th>Schools included in Baseline</th>
<th>Teacher interviews</th>
<th>Lesson/Teacher Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chisamba</td>
<td>12</td>
<td>8</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>Kabwe</td>
<td>15</td>
<td>4</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Mumbwa</td>
<td>19</td>
<td>14</td>
<td>73</td>
<td>72</td>
</tr>
<tr>
<td>Shibuyunji</td>
<td>6</td>
<td>5</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Mkushi</td>
<td>4</td>
<td>0</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>31</td>
<td>164</td>
<td>160</td>
</tr>
</tbody>
</table>

- In order to explore the research questions, the study collected qualitative data (observations and interviews) and quantitative data (systematic observations and questionnaires).
- All participants were volunteers and - in accordance with OU ethical research guidelines - had the right to withdraw until the end of the data collection period. Each participant was provided with information about the study and how the data would be used.
- Data collection was completed using face-to-face interviews, review of school documents e.g. the School In-service Record (SIR), and lesson observations using tablet-based questionnaires.
- The interviews were highly structured, with only a few ‘free-text responses’. The free responses were analysed using thematic analysis; codes were generated based on the range of responses.
- Four evaluation tools were developed jointly by the OU academic team and the World Vision (WVZ) monitoring team. The same tools were used for all evaluation stages in the ZEST project: Baseline (2018), Cohorts 1 to 3 evaluations (2019 to 2021), Midline (2021) and the current endline (2022) (Appendices 1 to 4):

1. **School data (Appendix 1):**
   To record data on the 56 participating schools through an interview with the head-teacher or a representative. Data included learners and staff numbers, classrooms, and teaching shifts available.

2. **Continuing Professional Development (CPD) interview (Appendix 2):**
   The purpose of this interview was to gather a picture of the frequency and nature of SBCPD taking place and the extent of participation by teachers. This involved interview questions for School In-Service Coordinator (SIC) or senior member of staff about the Teacher Group Meetings and taking photographs of pages of the School In-service Record (SIR), in order to establish the number of TGMs taking place and the topics that were discussed. There was one interview at each school with the SIC except in 4 schools where this was with a senior teacher or the Head Teacher.

3. **Teacher interview (Appendix 3):**
   A total of 164 teachers were interviewed in the participating schools, with 124 (76%) being female. Between 2 and 12 teachers were interviewed in each school, with the average being
3 per school. The purpose of the interview was to gather information about their practice, their confidence in active teaching approaches and their involvement in CPD.

4. Teacher lesson observation (Appendix 4):
A total of 160 teachers were observed with 152 of these also being interviewed. The teacher/lesson observations were undertaken using a ‘time sampling’ method, with a tool that was quantitative in nature (Appendix 4). Throughout the entire duration of the lesson, the enumerator employed an 'instantaneous time sampling' technique to record what the teacher and the learners were doing every 2 minutes (i.e., at minutes 1, 3, 5, 7, and so forth). This was arranged on the day with teacher’s consent. A few questions were completed before the lesson, a tick sheet for enumerators to complete every two minutes during the lesson (based on the activities in Table 3), and some questions for enumerators to answer after the observed lesson. The lesson observation schedule was devised based on the observable behaviours, considering the literature described above on learner-centred education, the ‘pedagogic universals’ that underpin quality education and national policy aspirations. The aim was to identify instances in which the teacher and learners were engaged in the activities in Table 3:

Table 3: Categories of activities for lesson observations

<table>
<thead>
<tr>
<th>The teacher is</th>
<th>The learners are</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presenting or explaining</td>
<td>1. One is giving answers</td>
</tr>
<tr>
<td>2. Organising learning tasks or activities</td>
<td>2. Chorusing replies</td>
</tr>
<tr>
<td>3. Asking learners open questions</td>
<td>3. Working or talking in pairs</td>
</tr>
<tr>
<td>4. Giving feedback</td>
<td>4. Working or talking in groups</td>
</tr>
<tr>
<td>5. Walking around the classroom</td>
<td>5. Singing Songs</td>
</tr>
<tr>
<td>6. Observing or listening to learners</td>
<td>6. Playing Games</td>
</tr>
<tr>
<td>7. Writing on the blackboard</td>
<td>7. Reading</td>
</tr>
<tr>
<td>8. Recapping a previous lesson</td>
<td>8. Writing (not copying)</td>
</tr>
<tr>
<td>9. Other</td>
<td>9. Listening</td>
</tr>
<tr>
<td></td>
<td>10. Copying</td>
</tr>
<tr>
<td></td>
<td>11. Working individually</td>
</tr>
<tr>
<td></td>
<td>12. Presenting</td>
</tr>
<tr>
<td></td>
<td>13. Organising a task</td>
</tr>
<tr>
<td></td>
<td>14. Other</td>
</tr>
</tbody>
</table>

Questions alongside the lesson observation asked enumerators to comment on other aspects of classroom practice: the use or evidence of learning resources (including text-books), the amount of learners’ work displayed in the classroom and the extent to which the teacher used the learners’ names. The link between the research questions and the data collection tools is given in Table 4.
Table 4: Endline research questions and study data collection tools

<table>
<thead>
<tr>
<th>Research question</th>
<th>CPD interview (Appendix 2)</th>
<th>Teacher lesson observation (Appendix 4)</th>
<th>Teacher interview (Appendix 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: What observable classroom practices with respect to active teaching and learning are currently taking place in primary schools in the 5 target districts of Central Province.</td>
<td>Q14 and Q15: improvements in teaching and learners activity every 2 mins.</td>
<td>Q8: Data from the observation showing correlated teacher and learners activity every 2 mins.</td>
<td>Questions 17 to 27: Use of LCE approaches.</td>
</tr>
<tr>
<td>Q2: What is the nature of teachers’ participation in collaborative SBCPD in primary schools in the 5 target districts of Central Province over the 2022 school year.</td>
<td>Questions 6, 7 and 8: number of TGMs</td>
<td>Questions 9: Other activities that took place other than the pre-coded tick list.</td>
<td>Questions 28 to 37: Confidence in using LCE approaches.</td>
</tr>
<tr>
<td>Q3: To what extent teachers record the use of collaborative classroom practice in reflective teacher notebooks.</td>
<td>Questions 6.1, 7.1, 8.1: Attendance at TGMs</td>
<td>Questions 10 to 14: inclusive practices, resource use, displaying of pupil’s work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Questions 6.3, 7.3, 8.3: focus of TGMs.</td>
<td>Questions 10: number of TGM attended this term.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questions 11 to 16: Peer to peer support on teaching practice (conversations. Observations)</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Data collection and timeline

Data collection for the Endline study was undertaken in November 2022 by a team of 18 external enumerators in Zambia. The enumerators (14 female and 4 male) were recruited using the following criteria:
1. A Diploma/Degree in Education (key was a Degree in Primary and Secondary Education with teaching practice experience as an added advantage)
2. Prior Knowledge and experience in data collection/research especially for education related projects or programs
3. Good communication and interpersonal skills
4. Training or experience in the use of data collection tools such as KOBO

The background of the enumerator team was mixed, with some practicing teachers and an assistant District Resource Centre Coordinator (DRCC), while the rest were trained but not yet in permanent employment. Most had been doing research work with different organizations and they came from a range of locations in Zambia including Lusaka, Central, Eastern and Southern provinces.

A total of 56 school data collection visits were undertaken over five days. Due to a number of challenges identified below which affected the number of teacher interviews and lesson observations, a further 3 days were identified to increase the number of these to offer a more complete sample.

In order to maximise time efficiency in covering the target districts, the enumerators were divided into three teams, each with an enumerator team leader and five enumerators. Each team was supervised by a WVZ education staff member. Two enumerators visited each school and spent an average of 3 hours in each school.

**Enumerators underwent four days training, which covered issues related to the ZEST project including:**

- Overview of ZEST Project
- Key terms and acronyms commonly used under ZEST, Focus of ZEST Evaluation, Learner-Centred approaches promoted by ZEST, Teacher Group Meetings
- Data collection and research aspects such as basics of data collection using KOBO, ZEST evaluation tools, or research ethics. Pre-testing in schools helped ensure familiarity and reliability with the data collection tools and system, which allowed for a degree of reliability testing, particularly in regards the timed lesson observation system.

As part of the quality assurance process, the data collection forms were uploaded to the server, downloaded to tablets and tested prior to the training. Furthermore, only after being checked for accuracy and consistency, was data was collected offline and uploaded online. Before submitting it to the supervisor for a second review, each enumerator reviewed the data entered.

During the evaluation, OU and WV staff reviewed the data (uploaded daily) on KOBO to identify any emerging challenges. This enabled the set-up of a clear coding system after the first day and facilitated linking data to individual schools or teachers as required.
To ensure access to the schools, official communication was made to the Permanent Secretary (Technical Services Ministry of Education) prior to the evaluation starting. After the approval by the Permanent Secretary (PS), communication was made to the Provincial Education Officer (PEO) who later relayed the letters to all District Education Board Secretaries (DEBS) for the districts involved.

The DEBS then communicated to all head teachers for the sampled schools. In addition, it was a busy period for partners, PEO, DEBS and head teachers were given a number of reminders through physical visits, phone calls and WhatsApp messages so as to avoid any lapses in communication. However, in order to avoid stage-managing, the school was purposely not made aware of the details of the visit in advance. The interview and observation schedules were drawn up with the school on arrival; teachers were then given the opportunity to consent or withdraw from the process.

At each school, the Head Teacher (or representative), the School in-service Coordinator (SIC) and an average of 3 teachers per school were interviewed. Lesson observations were conducted for most interviewed teachers, with a focus on observing a balance of grades and subjects where possible.

Data collected was anonymised using a code for each respondent, this ensured reported responses could not be identified as specific individuals by the data analyst. Data collection was completed using the KOBO Toolbox system input on tablets.

3.4 Data analysis

Data analysis was carried out by the same data analyst who had completed all previous evaluation analysis since Cohort 1 and who was external to the project.

Data was supplied to the analyst in four Excel spreadsheets, one for each of the following datasets:
1. Teacher interviews
2. Teacher observations
3. CPD interviews
4. School surveys

- Excel spreadsheets from the Baseline datasets were also used to compare specific aspects and subsequent analysis was also carried out in Excel.

- Initially, the datasets were checked for consistency, and any queries were discussed with the project team. In particular, some observations recorded as ‘Other’ in the Teacher observation dataset were (by agreement) reclassified into other categories. Any necessary links that could be made were then completed e.g., matching teacher interviews with the corresponding observations for cross-tabulation. Excel pivot tables were later used to aggregate the datasets according to different topics of
interest, e.g., by grade of class or location of school.

- Summary measures (mean, median, etc) were obtained along with plots and tables to illustrate different dimensions of the data. As far as possible, plots were created in the same format as those included in the Baseline and intermediate reports to facilitate comparison.

- For the TGM performance measures, the relevant data were aggregated and reported against specific performance thresholds.

### 3.5 Population and sample

A sample of 56 schools were selected for the study to be as close as possible to the number of schools in the baseline (54). All schools were part of the project, and 31 had been included in the baseline. As the endline evaluation was to take place during the rainy season (November), one of the criteria used for the selection of schools was that these needed to be accessible to the evaluation team. The Endline study included 56 schools in the 5 target districts from Central Province where the ZEST program is implemented.

The data below provide a summary of the types of schools involved in the endline evaluation:

- 12 schools in Chisamba (21.4%); 15 in Kabwe (26.7%); 19 in Mumbwa (33.9%); 6 in Shibuyunji (10.7%) and 4 in Mkushi (7.1%)
- The highest number of schools (32.1%) in the endline were from the extension stage of the project and started in January 2022. The low number of schools in Cohort 2 from Kabwe reflect the fact that only 6 schools entered the project in this district due to the size of the schools in this urban district. The number of teachers was equivalent to teachers in Cohort 1 (around 200)
- 73% of schools were government schools, and 55% were situated in rural locations.

#### Table 5: Schools in Endline by cohort (N=56)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Started in ZEST</th>
<th>Schools</th>
<th>% of Endline</th>
<th>Districts involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 2018</td>
<td>10</td>
<td>17.8%</td>
<td>Chisamba</td>
</tr>
<tr>
<td>2</td>
<td>December 2018</td>
<td>5</td>
<td>8.9%</td>
<td>Kabwe</td>
</tr>
<tr>
<td>3</td>
<td>December 2019</td>
<td>9</td>
<td>16%</td>
<td>Mumbwa</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>March 2021</td>
<td>14</td>
<td>25%</td>
<td>All</td>
</tr>
<tr>
<td>Extension</td>
<td>January 2022</td>
<td>18</td>
<td>32.1%</td>
<td>All</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6: Type of schools in study (N = 56)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Community school</th>
<th>Government school</th>
<th>Government zonal school</th>
<th>Private school</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Extension</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>4 (7%)</td>
<td>41 (73%)</td>
<td>10 (18%)</td>
<td>1 (2%)</td>
<td>56 (100%)</td>
</tr>
</tbody>
</table>

Table 7: Type of schools in Endline study

<table>
<thead>
<tr>
<th>School type</th>
<th>Number of schools in study</th>
<th>% of schools in study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community school</td>
<td>4</td>
<td>7%</td>
</tr>
<tr>
<td>Government and government zonal school</td>
<td>51</td>
<td>91%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 8: Location of schools in Endline study

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of schools in study</th>
<th>% of schools in study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>16</td>
<td>29%</td>
</tr>
<tr>
<td>Peri-urban</td>
<td>9</td>
<td>16%</td>
</tr>
<tr>
<td>Rural</td>
<td>31</td>
<td>55%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 9: Grades offered by primary schools in Endline study

<table>
<thead>
<tr>
<th>Grades offered</th>
<th>Number of schools in study</th>
<th>% of schools in study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 1-7</td>
<td>25</td>
<td>45%</td>
</tr>
<tr>
<td>Grades 1-9</td>
<td>28</td>
<td>50%</td>
</tr>
<tr>
<td>Beyond grades 1-9</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

The data below summarise the information on the range of schools, and number of teachers and learners in the schools included in the endline:

- 50% of schools offered grades 1 to 9, while 45% offered grades 1 to 7, although teacher interviews and lesson observations were only undertaken for those working in grades 1 to 7.
- Many schools in Zambia operate shifts to accommodate for the number of learners in the local area. In these schools some teachers will teach more than one cohort of learners:
  - The majority of schools (31; 55.3%) had 3 shifts
  - 19 schools (33.9%) had 2 shifts, and
– 6 schools (10.7%) had 1 shift.

- Schools in the endline had between 4 and 46 classes, with an average of 16 classes per school; however, schools had between 3 and 23 classrooms, with an average of 8.6 classrooms per school.
- The number of teachers in the schools varied from 3 to 54. In terms of gender balance, 3 schools indicated they had no male teachers (these were schools with 5, 12 and 24 teachers), and there were 47 schools (83.9%) with more female teachers than male teachers.
- The numbers of learners in the schools varied between 259 and 3034 learners, with 33 schools (58.9%) having more female learners than male learners.

Table 10 shows the mean values for female and male teachers and learners in the schools in each cohort. This is a way of describing the size and gender composition of the ‘average school’ in the cohort, but it is important to note that the description does not correspond to any specific school.

**Table 10: Mean number of male and female teachers and learners**

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Number and % of female teachers</th>
<th>Number and % of male teachers</th>
<th>Number and % of female learners</th>
<th>Number and % of male learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11 58%</td>
<td>8 42%</td>
<td>419 51%</td>
<td>398 49%</td>
</tr>
<tr>
<td>2</td>
<td>35 90%</td>
<td>4 10%</td>
<td>700 50%</td>
<td>709 50%</td>
</tr>
<tr>
<td>3</td>
<td>20 87%</td>
<td>3 13%</td>
<td>640 52%</td>
<td>586 48%</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>16 80%</td>
<td>4 20%</td>
<td>560 50%</td>
<td>554 50%</td>
</tr>
<tr>
<td>Extension</td>
<td>14 78%</td>
<td>4 22%</td>
<td>397 50%</td>
<td>403 50%</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>17 77%</strong></td>
<td><strong>5 23%</strong></td>
<td><strong>508 51%</strong></td>
<td><strong>496 49%</strong></td>
</tr>
</tbody>
</table>

**CPD interviews**

56 interviews were undertaken with staff managing SBCPD in schools. 52 were School In-service Coordinators (SICs) with the remaining 4 being senior teachers.

**Teacher Interviews and lesson observations**

172 teachers are represented in the dataset, of whom 164 teachers were interviewed and 160 were observed.
In terms of qualifications:

- Male and female teachers are roughly equal in the proportion obtaining a higher education diploma.
- A higher proportion of female teachers than male teachers have obtained a degree-level qualification.
- A higher proportion of male teachers than female teachers have a higher education certificate as their highest qualification.

Looking at the grades taught by the interviewed teachers:

- Female teachers are evenly divided between those teaching grades 1 - 3 (43%) and those teaching grades 4 – 7 (44%), with just 13% teaching across both the lower and upper primary grades.
- Male teachers in the study are much more likely to be teaching upper primary grades (59%, compared with 18% teaching grades 1 – 3).

In terms of their teaching experience:

- Half of all teachers (51%) in the study have 11 years of experience or more, and this proportion is similar for both male (46%) and female (52%) teachers.
- All but one of the newly qualified teachers in the study are female, so female teachers are over-represented in this group compared with the study as a whole. However, male teachers are over-represented in the group with 1 – 5 years’ experience. Taking these groups together, they make up approximately a quarter of the total.

In terms of the subjects teacher taught, the majority of teachers teach more than one subject.

### Table 11: Teacher interviews and lesson observations

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Interview only</th>
<th>Observation only</th>
<th>Interview and Observation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>3</td>
<td>2</td>
<td>32</td>
<td>37</td>
</tr>
<tr>
<td>Extension</td>
<td>3</td>
<td>3</td>
<td>42</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>8</td>
<td>152</td>
<td>172</td>
</tr>
</tbody>
</table>

125 female teachers were interviewed (76%) as opposed to 39 male teachers (24%).
Table 12: Subjects taught (broken down by gender)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Female teachers (N = 124)</th>
<th>Male teachers (N = 39)</th>
<th>All teachers (N = 163)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lit</td>
<td>Maths</td>
<td>S&amp;T</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>23</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Extension</td>
<td>21</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>91</td>
<td>102</td>
</tr>
<tr>
<td>Percentage</td>
<td>85%</td>
<td>73%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Teacher / lesson observations

A total of 160 lessons were observed, all between Grades 1 and 6 with an even balance of lessons between lower and upper grades.

Table 13: Observed classes by grade and teacher gender

<table>
<thead>
<tr>
<th></th>
<th>Female teachers (N = 122)</th>
<th>Male teachers (N = 38)</th>
<th>All teachers (N = 160)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 - 3</td>
<td>4 - 7</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Grade 1</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Grade 2</td>
<td>28</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>Grade 3</td>
<td>22</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Grade 4</td>
<td>11</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Grade 5</td>
<td>25</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>Grade 6</td>
<td>25</td>
<td>14</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>61 (50%)</td>
<td>61 (50%)</td>
<td>13 (34%)</td>
</tr>
</tbody>
</table>

Comparing the observation data with the interview data, the majority of observed lessons were taught by teachers who reported that they teach this subject or another subject in the same grouping.

Table 14: Observed classes by subject taught and subjects reported (N = 152)

<table>
<thead>
<tr>
<th>Observation data</th>
<th>Interview data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject group</td>
<td>Lessons observed</td>
</tr>
<tr>
<td>Literacy</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Literacy</td>
</tr>
<tr>
<td></td>
<td>Zambian Languages</td>
</tr>
<tr>
<td></td>
<td>All Literacy</td>
</tr>
<tr>
<td>Mathematics</td>
<td>All Maths</td>
</tr>
</tbody>
</table>
As table 15 indicates, more than three-quarters of the lessons in the observation dataset lasted for 40 minutes (122 out of 160). Of the other 38 lessons, 16 were recorded by the enumerator as finishing before 40 minutes had elapsed. The remaining 22 lessons are of uncertain duration: observations cease before the 40th minute, but no reason is given.

For the purposes of this analysis, it has been assumed that a lesson in this condition ended halfway between the last completed observation point and the first blank observation point. For example, if the last recorded observation is at minute 26, the lesson is assumed to have finished at minute 27.

In addition, the median length of lesson is 40 minutes.

Table 15: Number and average length of lessons by duration (N = 160)

<table>
<thead>
<tr>
<th>Lesson length</th>
<th>Number of lessons</th>
<th>Mean length (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recorded</td>
<td>Assumed</td>
</tr>
<tr>
<td>Less than 20 mins</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 - 24 mins</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>25 - 29 mins</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>30 - 34 mins</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>35 - 39 mins</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>40 mins</td>
<td>122</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>138</td>
<td>22</td>
</tr>
</tbody>
</table>

3.6. In-depth study of ZEST in schools: Impact accelerator grant

In March 2022, an in-depth study of how ZEST was implemented in 6 schools was undertaken in Mumbwa. WVZ staff from the project and the M&E team spent 2 days in 6 schools studying the implementation models used in the 6 schools. The same evaluation tools as the endline were used, complemented by regular conversations with school staff throughout the day. In June, the OU team visited 3 of the schools to sense-check emerging findings and observe TGMs, before discussing these with different stakeholders at the Evidence Cafe.
3.7. Exploring initial Endline findings: Evidence Café

An Evidence Café is a workshop in which all stakeholders have opportunity to interact with and review the evidence from a study. In February 2023, representatives were invited from each stakeholder group including:

- Ministry of Education HQ (4)
- Provincial officers (4)
- Districts officers (DEBS and DRCC) (10)
- Zones and schools (4)
- World Vision (5)

The initial findings from the endline evaluation were sorted into seven ‘successes’ and four ‘remaining challenges’.

Following a presentation by the OU of the initial findings, participants in the Evidence Café worked in stakeholder groups and then in mixed groups to identify the most significant successes and challenges; to highlight any success or challenges that are apparent in their role, but not represented in the data; and to identify actions that they could take in their role to build on the successes and address the challenges.

These are reflected in the ‘Recommendations’ from this study. The successes and challenges which were identified are in a summary at the end of the ‘Findings’ section.

3.8 Limitations and challenges

The endline evaluation team encountered several challenges:

Rainy season and impassable roads:
Data collection was conducted during the rainy season which impacted on the school selection. As a result certain zones were identified as being the most accessible, and schools within the zones were selected randomly. During the evaluation school access was not affected by rains.

Grade 1 and 4 Exams:
In some schools Grade 1 and 4 learners were undergoing National Literacy and Numeracy examinations. This had an impact on teachers available, when other grade teachers had to invigilate the exams, and on learners present in the school, when classrooms from other grades had to be utilized for examinations and learners had been asked to stay at home.

No grade 7 observations:
Grade 7 learners were not in school after the exams, so no grade 7 lessons were observed.

Changed shifts in schools:
After grade 7 examinations the week before, some schools had changed lessons for some learners to morning only. This meant that when enumerators visited the school in the
afternoon, the number of classes was limited which had an impact on the range of grades that could be observed and teachers interviewed.

**Teacher cover for interviews:**
In some schools enumerators had to wait a long time to complete the 2nd teacher interview or lesson observation because there was no one to cover lessons while they were interviewed, so enumerators had to wait until the teacher finished teaching to complete the interview.

**Learner burial:**
In one school there was no teaching for the day when the enumerator team arrived due to the burial of one of the learners. The school was in a remote location, and it was not possible to repeat the visit during the evaluation planned dates.

**School record keeping:**
Schools in Zambia maintain a School In-service Record (SIR) with details of dates and items discussed at TGMs. Photographs of the SIRs for TGMS held in the past terms were taken.

- The analysis of these demonstrated a lack of consistency, clarity and quality in records pertaining to the number and content of teacher group meetings held.
- It was not possible to be completely sure about the proportion of these meetings which involved collaborative activity. For the purposes of this study, we defined meetings which involved ‘lesson study’, and discussion about ‘teaching’, ‘learning’ or ‘pedagogy’ as collaborative.
- Meetings devoted to administrative matters, inductions or formal lectures were not defined as ‘collaborative’. The result of this limitation is that the figure of 48% of meetings potentially involving collaboration presented in the findings, represents an absolute maximum. The reality is likely to be lower than that.

**Interpretation of lesson observation activities:**
Table 3 (p24) provides the categories included in the lesson observation tool for enumerators. As explained above, reading, writing, and questioning was found to be difficult for enumerators to interpret, so the only categories which could be reliably attributed to ‘active learning’ was the time in which learners were working or talking in groups or pairs. This can be reliably observed and therefore used for comparison purposes over time.
4. Findings

4.1 Quantitative data

This section includes a summary of the data which is directly relevant to the logframe.

4.1.1 Observations of teachers and learners: outcome indicator 1

The purpose of ZEST is to improve the quality of classroom teaching. By ‘quality’ we are looking for the active engagement of learners.

*We therefore expect to see more learner behaviours such as:*

- working or talking in pairs
- working or talking in groups
- singing songs
- playing games which support learning
- presenting
- working individually

*….and less time spent*

- listening
- chorusing replies
- copying
- one student giving answers

As a proxy measure for ‘more active teaching’ we measured and reported specifically on the amount of time students spend talking in pairs or groups, in each lesson. The average lesson length for the lesson observed was 38 mins and the median was 40 mins. The vast majority (122 out of 160) were 40 mins.

At the baseline the mean for students working in pairs or groups, was 9%; and the median 5% (equivalent to 2 mins of a 40-minute lesson). The spread was 0-52% of the lesson time, with relatively few lessons giving higher percentages. These few high values, however, affect the mean, so we identified the median as being a more representative measure of ‘active engagement’ for the sample. In the endline the equivalent figures are shown in table 16.
Table 16: Pair work/group work observed in lessons for all grades (N = 160)

<table>
<thead>
<tr>
<th>All lessons</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Min</th>
<th>Max</th>
<th>25th percentile</th>
<th>75th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working or talking in groups</td>
<td>11.2%  (8%)</td>
<td>10% (4%)</td>
<td>12% (11%)</td>
<td>0%</td>
<td>55% (52%)</td>
<td>0% (0%)</td>
<td>20% (13%)</td>
</tr>
<tr>
<td>Working or talking in pairs</td>
<td>2.5%   (1%)</td>
<td>0% (0%)</td>
<td>5% (3%)</td>
<td>0%</td>
<td>30% (20%)</td>
<td>0% (0%)</td>
<td>0% (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>13.7%  (9%)</td>
<td>10% (5%)</td>
<td>12% (11%)</td>
<td>0%</td>
<td>55% (52%)</td>
<td>1% (0%)</td>
<td>20% (14%)</td>
</tr>
</tbody>
</table>

We can see that:
- The proportion of time spent on group work ranged from 0 to 55% of lesson time, with a mean of 11.2% which is equivalent to 4.5 minutes (compared with mean = 8% at baseline, 5% at midline)¹
- The proportion of time spent on pair work ranged from 0 to 30% of lesson time, with a mean of 2.5% or one minute (compared with 1% at baseline, 3% at midline)
- The mean proportion of time spent on both types of activity was 13.7% or 5.5 minutes (compared with 9% at baseline, 8% at midline)
- The median proportion of lesson time spent on pair work and/or group work was 10% (compared with 5% at baseline and midline). (Outcome indicator 1)
- Pair work is less popular that group work: with younger and less independent learners teachers seem to find that small groups are easier to organise.

Further analysis of these figure reveals no significant difference between grades 1-3 and grades 4-7. However, the distribution of time spent on either group work or pair work is revealing (table 17).

Table 17: Distribution of time spent on either pair or group work in lessons for all grades (N = 160)

<table>
<thead>
<tr>
<th>Number and percentage of lessons in each time band</th>
<th>Proportion of lesson time spent on activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Group work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>38%</td>
</tr>
<tr>
<td>Pair work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>76%</td>
</tr>
<tr>
<td>Total pair or group work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>25%</td>
</tr>
</tbody>
</table>
• In 75% of lessons either pair work or group work was observed, with group work being observed most often (62% of lessons, compared with 24% for pair work).
• Both pair and group work were observed in 18 lessons (11% of all lessons).
• Of the 120 lessons where pair or group work were observed, the majority (69 lessons, or 58% of 120) spent from 5 – 15% of the lesson time on this activity.
• 25% of lessons had no group work or pair work (compared to 41% in the baseline).

From a pedagogical perspective, it is perhaps worth considering what these figures mean for learners. We suggest that if a lesson has one pair or group work activity lasting about 6 mins (15% of the lesson time for a 40 min lesson) then learners will have had the opportunity to contribute. This might involve a card sort, a matching exercise, a short discussion with a partner, a brainstorm or solving a problem. This offers the teacher the opportunity to monitor learners around the room. We consider this a minimum to aim for.

The data therefore shows that 47% of lessons (75 of the total amount) had a significant amount of group or pair work. Breaking this down for grades 1-3 and grades 4-7, the figures become 45% of lessons and 57% respectively.

The data for the time spent on group work or pair work was broken down further for each cohort (table 18):

**Table 18: Cohort comparison of outcome indicator 1**

<table>
<thead>
<tr>
<th>Cohort (Start date)</th>
<th>Lessons observed</th>
<th>Working or talking in groups</th>
<th>Working or talking in pairs</th>
<th>Total (Outcome Indicator 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>1 (May 2018)</td>
<td>20</td>
<td>12.3%</td>
<td>10%</td>
<td>3.3%</td>
</tr>
<tr>
<td>2 (Dec 2018)</td>
<td>13</td>
<td>17.3%</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td>3 (Dec 2019)</td>
<td>48</td>
<td>9.1%</td>
<td>10%</td>
<td>3.9%</td>
</tr>
<tr>
<td>4 (scale up) (March 2021)</td>
<td>34</td>
<td>12.8%</td>
<td>10%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Extension (Jan 2022)</td>
<td>45</td>
<td>9.9%</td>
<td>5%</td>
<td>1.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>160</strong></td>
<td><strong>11.2%</strong></td>
<td><strong>10%</strong></td>
<td><strong>2.5%</strong></td>
</tr>
</tbody>
</table>
Table 19: Distribution of time spent on pair and group work by cohort \((N = 160)\)

<table>
<thead>
<tr>
<th>Number and percentage of lessons in each time band</th>
<th>Proportion of lesson time spent on pair and group work activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Cohort 1 (20 lessons)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Cohort 2 (13 lessons)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Cohort 3 (48 lessons)</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>27%</td>
</tr>
<tr>
<td>Cohort 4 (34 lessons)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Extension (45 lessons)</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>38%</td>
</tr>
</tbody>
</table>

Using the same criteria as described above, this shows that as expected, progress is greatest in the cohorts who have been involved for the longest. (Table 20)

Table 20: Percentage of lessons with >15% (6 mins) of group or pair work

<table>
<thead>
<tr>
<th>Cohort</th>
<th>No. lessons observed</th>
<th>No. &gt;15% pair and group work</th>
<th>% with &gt;15% pair and group work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>7</td>
<td>54</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>23</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>34</td>
<td>18</td>
<td>53</td>
</tr>
<tr>
<td>Extension</td>
<td>45</td>
<td>34</td>
<td>33</td>
</tr>
</tbody>
</table>

Of the Cohort 1 schools in the sample, 60% had at least one significant interactive activity. This is consistent with research evidence that suggests that pedagogic change takes place gradually, over time.

In terms of subject breakdown, numeracy lessons are the most interactive by this measure (Table 21).
Table 21: Percentage of lessons with more than 15% of the time involving learners in group or pair work

<table>
<thead>
<tr>
<th>Subject group</th>
<th>No of lessons observed</th>
<th>No lessons &gt;15% pair and group work</th>
<th>% lessons with &gt;15% pair and group work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>58</td>
<td>22</td>
<td>38</td>
</tr>
<tr>
<td>Numeracy</td>
<td>53</td>
<td>30</td>
<td>57</td>
</tr>
<tr>
<td>Science and Technology</td>
<td>30</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Humanities</td>
<td>19</td>
<td>30</td>
<td>47</td>
</tr>
</tbody>
</table>

**Cohorts 1 – 4 only**

Of the sample (160), 45 lessons were observed in the ‘extension’ cohort. These schools have only been doing ZEST for 2 terms. Omitting the Extension cohort from the analysis, as research evidence suggests that change in teaching practice takes time to become evident, the ‘time learners were involved in group work or pair work’ was re-calculated for cohorts 1-4 (115 lessons) (Table 22)

Table 22: Pair work/group work observed in lessons for cohorts 1 – 4 (N = 115)

<table>
<thead>
<tr>
<th>All lessons</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Min</th>
<th>Max</th>
<th>25th percentile</th>
<th>75th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working or talking in groups</td>
<td>11.7%</td>
<td>10%</td>
<td>12%</td>
<td>0%</td>
<td>45%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Working or talking in pairs</td>
<td>3.0%</td>
<td>0%</td>
<td>6%</td>
<td>0%</td>
<td>30%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>14.7%</td>
<td>15%</td>
<td>12%</td>
<td>0%</td>
<td>50%</td>
<td>5%</td>
<td>20%</td>
</tr>
</tbody>
</table>

- The proportion of time spent on group work ranged from 0 to 45% of lesson time, with a mean of 11.7% which is equivalent to 4.7 minutes.
- The proportion of time spent on pair work ranged from 0 to 30% of lesson time, with a mean of 3.0% or 1.2 minutes.
- The mean proportion of time spent on both types of activity was 14.7% or 5.9 minutes.
- The median proportion of lesson time spent on pair work and/or group work was 15% (6 minutes).

The following analysis is based on the same principles as Table 19. Each lesson is assigned to a category based on the proportion of pair and group work in that lesson but only the total figure (pair work + group work) is used.
Table 23: Distribution of time spent on pair and group work in cohorts 1 – 4 (N = 115)

<table>
<thead>
<tr>
<th>Number and percentage of lessons in each time band</th>
<th>Proportion of lesson time spent on activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Group work</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>35%</td>
</tr>
<tr>
<td>Pair work</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>74%</td>
</tr>
<tr>
<td>Total pair or group work</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>20%</td>
</tr>
</tbody>
</table>

The median value is 10% for group work, 0% for pair work, and 15% for ‘pair or group work’.

**Statistical significance**

The Baseline and Endline data were analysed by different analysts and a direct comparison of the number of lessons achieving 15% of the time for learners to be engaged in group work or pair work was not possible. However, by re-organising the data, it was possible to map the endline date to the baseline data to establish equivalent categories. This is shown in Table 24.

Table 24: Categories used in the baseline report, mapped to the endline data.

<table>
<thead>
<tr>
<th>Category</th>
<th>Proportion of lesson time demonstrating pair or group work</th>
<th>Endline data categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>More than zero but less than 10%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>At least 10 but less than 20%</td>
<td>10%, 15%</td>
</tr>
<tr>
<td>4</td>
<td>At least 20 but less than 30%</td>
<td>20%, 25%</td>
</tr>
<tr>
<td>5</td>
<td>30% or more</td>
<td>30%, 35%, 40%, 45%, 50%, 55%</td>
</tr>
</tbody>
</table>
Using the percentages derived from the Baseline analysis above, we can calculate how many lessons we would expect to find in each category at the Endline analysis if nothing had changed and compare this with the number of lessons actually observed. This is shown in Table 25.

**Table 25: Number of lessons expected and observed in each category at Endline**

<table>
<thead>
<tr>
<th>Cat</th>
<th>Proportion of lesson time demonstrating group or pair work</th>
<th>% calculated from Baseline analysis</th>
<th>Number of lessons at Endline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expected</td>
</tr>
<tr>
<td>1</td>
<td>0%</td>
<td>41.43%</td>
<td>66.288</td>
</tr>
<tr>
<td>2</td>
<td>More than zero but less than 10%</td>
<td>19.28%</td>
<td>30.848</td>
</tr>
<tr>
<td>3</td>
<td>At least 10 but less than 20%</td>
<td>24.29%</td>
<td>38.864</td>
</tr>
<tr>
<td>4</td>
<td>At least 20 but less than 30%</td>
<td>8.57%</td>
<td>13.712</td>
</tr>
<tr>
<td>5</td>
<td>30% or more</td>
<td>6.43%</td>
<td>10.288</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100.00%</td>
<td>160.000</td>
</tr>
</tbody>
</table>

This data is displayed graphically in Figure 1.

*Figure 1: Number of lessons expected and observed in each category at Endline.*
Having presented the data in this way, it was possible to perform a chi-squared test. For a chi-squared test with four degrees of freedom, the test statistic is 51.68 (48.28 with Yates’ correction). This corresponds to a p-value of less than 0.001, which means that there is very strong evidence that the distribution at Endline is different from the distribution at Baseline.

In other words, the proportion of lesson time spent on pair and group work has changed since the start of the project in a way which is statistically significant. Figure 1 shows that this change is in the direction of increasing the proportion of time spent on group work and pair work.

**Summary**

**Key Findings on observable classroom practices with respect to active teaching and learning**

- The median, mean and maximum have improved since the baseline.
- Looking at the data for cohorts 1-4 (all of whom have been engaged in ZEST for more than 1 year), the median time spent on group work or pair work is 15% (compared to 5% at the baseline). This corresponds to 6 mins.

If we take 15% of lesson time (6 mins) as a minimum for a significant interactive classroom activity, we find that:

- There is more group work and pair work in grades 4-7 than grades 1-3
- Numeracy lessons have more group work and pair work
- Cohort 1 score more highly than subsequent cohorts with 60% of lessons reaching this level.

**4.1.2 What do learners and teachers do in lessons?**

For the purposes of the logframe, the focus was group work and pair work. However, the data has yielded more detail about the nature of the lessons taking place which is presented here.

All the plots and tables in this section are based on 3200 recorded data points (160 lessons x 20 data points per lesson).

This plot and the table below show the overall percentage of time spent on each type of activity by learners in the classroom. It corresponds to Figure 5 in the Baseline report, although the plot below is broken down into more categories of activity.
Figure 2: Percentage of time spent on learning activities

<table>
<thead>
<tr>
<th>Learning Activity</th>
<th>Mean % of lesson time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chorusing replies</td>
<td>7.6%</td>
</tr>
<tr>
<td>Copying</td>
<td>6.2%</td>
</tr>
<tr>
<td>Listening</td>
<td>24.1%</td>
</tr>
<tr>
<td>One is giving answers</td>
<td>15.3%</td>
</tr>
<tr>
<td>Organising a task</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other</td>
<td>8.7%</td>
</tr>
<tr>
<td>Playing games</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Activity</th>
<th>Mean % of lesson time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting</td>
<td>5.8%</td>
</tr>
<tr>
<td>Reading</td>
<td>3.7%</td>
</tr>
<tr>
<td>Singing songs</td>
<td>1.1%</td>
</tr>
<tr>
<td>Working individually</td>
<td>7.7%</td>
</tr>
<tr>
<td>Working or talking in groups</td>
<td>11.2%</td>
</tr>
<tr>
<td>Working or talking in pairs</td>
<td>2.5%</td>
</tr>
<tr>
<td>Writing (but not copying)</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

- If we assume that the first four learning activities in this table are largely ‘passive’ (chorusing replies, copying, listening, one is giving answers), they account for 53.2% of the lesson time. The equivalent figure for the baseline data is 60.1%. Overall, compared to the Baseline, this suggests that learners are more actively engaged in lessons.
When comparing this to what teachers do in the lessons, the comparison is more difficult. The sorts of behaviours we want to encourage include, ‘asking open questions’, ‘giving feedback’, ‘observing and listening to learners’, ‘walking around the classroom’. In this analysis, these behaviours account for 52.6% of lesson time (compared to 53.66% in the Baseline). However, at the Baseline time spent presenting was 23.5%; this has dropped to 16.4% in the Endline giving a clear indication of less teacher-led activity.

When comparing Endline to Baseline figures, teachers spent slightly less time asking open questions (16.3% versus 19.7%). However, individual learners spent more time answering (15.3% versus 14.6%) suggesting the questioning is more ‘open’ – requiring longer responses and thinking time.

Questioning is problematic as an indicator owing to the difficulty for observers in making judgements about the nature of the questions. This is evidenced by the fact that for 55% of the time teachers were asking questions, learners were chorusing replies, indicating that they are not open questions.

One behaviour that ZEST has been trying to encourage is ‘walking around the classroom’. This enables teachers to notice learners at the back of the class and intervene if they need support. When comparing Endline to Baseline, this figure has dropped slightly (9.5% versus 10.4%). We believe this to be a legacy from the Covid pandemic (2020-2022) in which social distancing was encouraged and teachers were expected to remain at the front of the class and not interact too closely with learners.

4.1.3 Teachers’ use of collaborative practice: outcome indicator 1.

**Teachers’ recording use of collaborative classroom practice**

During TGMs, teachers are encouraged to take part in activities designed to help them understand the essential features of the ZEST teaching approaches. They were provided with a notebook in order to record their responses to activities, ideas for activities, their plans for classroom activities, and their reflections on how they went. We were interested to see what proportion of participating teachers are making use of the notebook in this way. As this activity was new to ZEST the baseline figure was 0%.

Initially there were some issues with the notebook as teachers were very tentative and not sure what to write. The message ‘whatever is useful to you’ proved not to be helpful in an environment in which there are rules about how to write lesson plans. This was compounded by the fact that some head teachers collected the notebooks and inspected them, making teachers feel that there was a ‘right’ way to record their thoughts.

This is not the intention of the project; the idea is to provide teachers with a personal resource so that they can get more from the activities and see their own progression; thereby developing further as reflective practitioners. It is pleasing, therefore, that the Endline study recorded that 75% of teachers are regularly using their notebook to record their use of collaborative classroom practice (Table 27a).
Table 27a: Teachers' written records of collaborative classroom practice (N = 164)

This table shows the number and proportion of teachers who recorded their use of collaborative classroom practice in their Teacher Notebook.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Teachers who had made written notes</th>
<th>Teachers with no written notes</th>
<th>Total Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>1</td>
<td>18</td>
<td>78%</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>75%</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>67%</td>
<td>16</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>22</td>
<td>63%</td>
<td>13</td>
</tr>
<tr>
<td>Extension</td>
<td>41</td>
<td>91%</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>75%</td>
<td>41</td>
</tr>
</tbody>
</table>

We can see that 75% of teachers (123 teachers) had made written notes on the use of collaborative classroom practice in their Teacher Notebook. (Output Indicator 1.4)

Table 27b: Teachers’ use of written records broken down by gender

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Female teachers (N = 125)</th>
<th>Male teachers (N = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Written record</td>
<td>No written record</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>14</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Extension</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>32</td>
</tr>
<tr>
<td>Percentage</td>
<td>74%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Table 27c: Teachers’ use of written records broken down by years of experience

<table>
<thead>
<tr>
<th>Cohort</th>
<th>New teachers (N = 10)</th>
<th>1 – 5 years (N = 27)</th>
<th>6 – 10 years (N = 44)</th>
<th>11+ years (N = 83)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Written record</td>
<td>No written record</td>
<td>Written record</td>
<td>No written record</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Extension</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>3</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Percentage</td>
<td>70%</td>
<td>30%</td>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>
We can see that:

- There is little variation by gender.
- More experienced teachers are slightly more likely to use their notebooks than the younger teachers.
- Teachers with 1-5 years of experience make the least use of their notebook.

Overall, these figures suggest that the use of a notebook during TGMs has become embedded during ZEST.

**Teachers’ confidence and practice in ZEST teaching approaches**

As part of the teacher interviews, we asked teachers to say how confident they felt about using collaborative practices in the classroom (group work and pair work) and how often they use them.

**Table 28: Teachers’ reported confidence in use of active teaching approaches (N = 164)**

This corresponds to Table 5 in the Cohort 1 Evaluation report.

<table>
<thead>
<tr>
<th>How confident are you in using collaborative active teaching approaches in your lessons?</th>
<th>Asking open questions</th>
<th>Pair work or discussions</th>
<th>Group work or discussions</th>
<th>Role play</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very confident</td>
<td>98</td>
<td>60%</td>
<td>67</td>
<td>41%</td>
</tr>
<tr>
<td>Confident</td>
<td>61</td>
<td>37%</td>
<td>77</td>
<td>47%</td>
</tr>
<tr>
<td>I try this</td>
<td>4</td>
<td>2%</td>
<td>13</td>
<td>8%</td>
</tr>
<tr>
<td>I will try this with help</td>
<td>1</td>
<td>1%</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>Not confident</td>
<td>0</td>
<td>0%</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>I have not done this</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

- 97% of teachers reported that they felt confident or very confident about asking open questions.
- A large majority of teachers reported that they felt confident or very confident in using pair work (88%) or group work (91%).
- A majority (61%) of teachers reported that they felt confident or very confident in using role play.
Table 29: Teachers’ reported use of collaborative classroom practices (N = 164)

This corresponds to Table 4 in the Cohort 1 Evaluation report and is based on the self-reported behaviours in the teacher interviews.

<table>
<thead>
<tr>
<th>In the past month how frequently did you...</th>
<th>Ask learners to work or discuss in pairs?</th>
<th>Ask learners to work or discuss in a group?</th>
<th>Use a resource you made from local materials or that you found locally?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every lesson</td>
<td>30</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>Most lessons</td>
<td>75</td>
<td>87</td>
<td>69</td>
</tr>
<tr>
<td>Once or twice a day</td>
<td>12</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>2 or 3 times in a week</td>
<td>33</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>Once a week</td>
<td>8</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Less than once a week</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

- 64% of teachers reported that they asked learners to work in pairs in most (46%) or every (18%) lesson. 3% reported that they used pair work less than once week or never.
- 73% of teachers reported that they asked learners to work in groups in most (53%) or every (20%) lesson. Only 1% reported that they used group work less than once a week or never.
- 65% of teachers reported using a resource they had made or found locally in most (42%) or every (23%) lesson. Only 2% reported that they had not used a local resource in the last month.

On the surface these findings are encouraging. However, when compared with the classroom observation data, we see that this reported confidence is not yet being translated into regular classroom practice.

The following tables are organised by the percentage of lesson time which was spent on pair or group work. They report the number of teachers in each category who reported that they felt very confident, confident etc in asking learners to work in this way.

- Most teachers reported feeling confident or very confident, whether or not the practice was observed in their lesson.
- A few teachers who did not report feeling confident in the practice nonetheless used pair work (5 teachers) or group work (6 teachers) in the observed lesson.
Table 30a: Teachers’ confidence and practice in pair work (N = 152)

<table>
<thead>
<tr>
<th>Teachers’ reported confidence</th>
<th>Percentage of lesson time which learners spent working in pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Very confident</td>
<td>45</td>
</tr>
<tr>
<td>Confident</td>
<td>56</td>
</tr>
<tr>
<td>I try this</td>
<td>9</td>
</tr>
<tr>
<td>I will try this with help</td>
<td>3</td>
</tr>
<tr>
<td>Not confident</td>
<td>2</td>
</tr>
<tr>
<td>I have not done this</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 30b: Teachers’ confidence and practice in group work (N = 152)

<table>
<thead>
<tr>
<th>Teachers’ reported confidence</th>
<th>Percentage of lesson time which learners spent working in groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Very confident</td>
<td>27</td>
</tr>
<tr>
<td>Confident</td>
<td>24</td>
</tr>
<tr>
<td>I try this</td>
<td>8</td>
</tr>
<tr>
<td>I will try this with help</td>
<td>0</td>
</tr>
<tr>
<td>Not confident</td>
<td>2</td>
</tr>
<tr>
<td>I have not done this</td>
<td>0</td>
</tr>
</tbody>
</table>

4.1.4 Continuing professional development in schools: outcome indicator 2

**How often are TGMs taking place?**

One of the problems identified in the design workshop (March 2018) was that TGMs were not taking place as often as expected and were not very well attended. This was considered to be a result of the unpopularity of Lesson Study and the lack of resources to support the meetings.

The aim of ZEST was to ensure that TGMs took place more regularly; that they were useful to teachers; and that they were well-attended. It was therefore decided to measure the % of participating schools implementing the school-based professional development programme, recording an increase in collaborative work amongst teachers above the baseline, (measured as participating schools which hold ≥3 TGMs per term). The Baseline figure was 43%.
Table 31a: TGMs per term in the evaluated schools (N = 56)

This is similar to Table 12 in the Baseline report but is limited to averages and is broken down by cohort. Each row shows the average number of meetings held in cohort schools in each term in 2022 and over the whole year. Baseline figures are reported below for comparison.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Term 1 2022</th>
<th></th>
<th>Term 2 2022</th>
<th></th>
<th>Term 3 2022</th>
<th></th>
<th>2022</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>1</td>
<td>3.50</td>
<td>3.60</td>
<td>3.00</td>
<td>2.90</td>
<td>3.00</td>
<td>2.90</td>
<td>10.00</td>
<td>9.40</td>
</tr>
<tr>
<td>2</td>
<td>4.00</td>
<td>4.40</td>
<td>5.00</td>
<td>6.60</td>
<td>3.00</td>
<td>3.78</td>
<td>14.00</td>
<td>19.00</td>
</tr>
<tr>
<td>3</td>
<td>3.00</td>
<td>3.44</td>
<td>3.00</td>
<td>3.78</td>
<td>3.00</td>
<td>2.89</td>
<td>9.00</td>
<td>10.11</td>
</tr>
<tr>
<td>4 (scale up)</td>
<td>3.50</td>
<td>3.86</td>
<td>3.50</td>
<td>3.71</td>
<td>2.00</td>
<td>2.07</td>
<td>10.00</td>
<td>9.64</td>
</tr>
<tr>
<td>Extension</td>
<td>2.50</td>
<td>4.33</td>
<td>3.00</td>
<td>4.56</td>
<td>2.50</td>
<td>3.89</td>
<td>8.00</td>
<td>12.78</td>
</tr>
<tr>
<td>Total</td>
<td>3.00</td>
<td>3.95</td>
<td>3.00</td>
<td>4.11</td>
<td>3.00</td>
<td>3.46</td>
<td>9.00</td>
<td>11.52</td>
</tr>
</tbody>
</table>

Table 31b: TGMs per term Baseline (NB The Baseline took place in March/April 2018, at the end of term 1 so data from the previous 3 terms was used)

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Term 2 2017</th>
<th>Term 3 2017</th>
<th>Term 1 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Median)</td>
<td>4.24 (3.0)</td>
<td>2.28 (2.0)</td>
<td>2.50 (2.0)</td>
</tr>
</tbody>
</table>

We can see that:

- More meetings are held in Term 2.
- In terms 1 and 3 the figures are better than in the baseline.
- In term two the median is the same and the average is very slightly less.
- Term 3 is less productive in terms of SBCPD which is probably because of the disruptive effect of national examinations.

This data was broken down by District which showed that Kabwe and Chisamba have more TGMs than other Districts.

Table 31c: TGMs per term broken down by district (N = 56)

<table>
<thead>
<tr>
<th>District</th>
<th>Term 1 2022</th>
<th></th>
<th>Term 2 2022</th>
<th></th>
<th>Term 3 2022</th>
<th></th>
<th>2022</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>Chisamba</td>
<td>3.00</td>
<td>3.17</td>
<td>3.00</td>
<td>2.83</td>
<td>3.00</td>
<td>3.00</td>
<td>10.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Kabwe</td>
<td>4.00</td>
<td>6.13</td>
<td>4.00</td>
<td>6.67</td>
<td>3.00</td>
<td>6.00</td>
<td>13.00</td>
<td>18.80</td>
</tr>
<tr>
<td>Mkushi</td>
<td>4.00</td>
<td>4.00</td>
<td>3.50</td>
<td>3.75</td>
<td>1.00</td>
<td>1.50</td>
<td>9.50</td>
<td>9.25</td>
</tr>
<tr>
<td>Mumbwa</td>
<td>3.00</td>
<td>2.95</td>
<td>3.00</td>
<td>3.21</td>
<td>3.00</td>
<td>2.63</td>
<td>8.00</td>
<td>8.79</td>
</tr>
<tr>
<td>Shibuyunji</td>
<td>3.00</td>
<td>3.17</td>
<td>3.00</td>
<td>3.33</td>
<td>2.00</td>
<td>2.00</td>
<td>8.50</td>
<td>8.50</td>
</tr>
</tbody>
</table>
• It is difficult to draw firm conclusions from this data. Kabwe has a small number of very large schools. Teachers work in groups of different grades, and may hold meetings on different days, with the result that a larger number of meetings are recorded.

• An alternative way to present this data is in terms of the number and percentage of schools who achieved specified numbers TGMs in 2022. This data was collected in the first week in November, so there was still one month of term to go, which might have impacted slightly on this data (particularly for term 3).

Table 32: Schools by average number of TGMs held (N = 56)
This table shows the number and percentage of schools which achieved specified numbers of TGMs in 2022. It is equivalent to Table 7 in the Cohort 1 Evaluation report.

<table>
<thead>
<tr>
<th>Threshold value of</th>
<th>In Term 1 2022</th>
<th>In Term 2 2022</th>
<th>In Term 3 2022</th>
<th>2022 Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of TGMs held in a term</td>
<td></td>
<td></td>
<td></td>
<td>1*</td>
</tr>
<tr>
<td>0 TGMs held on average</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>≥ 1 TGMs held on average</td>
<td>53</td>
<td>54</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>≥ 2 TGMs held on average</td>
<td>48</td>
<td>50</td>
<td>46</td>
<td>39</td>
</tr>
<tr>
<td>≥ 3 TGMs held on average</td>
<td>37</td>
<td>39</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>≥ 4 TGMs held on average</td>
<td>25</td>
<td>22</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>≥ 5 TGMs held on average</td>
<td>13</td>
<td>14</td>
<td>9</td>
<td>4</td>
</tr>
</tbody>
</table>

*Average 1 indicates the schools that had the specified number of TGMs in each of the relevant terms
** Average 2 indicates the schools that had on average the specified number of TGMs across the relevant terms, e.g. 9 or more total for the three terms.

We can see that:

• In each of the three terms at least 30 schools (54%) achieved the threshold of 3 TGMs per term.
• The greatest number of schools achieved the threshold in term 2 (39 schools, or 70%).
• Over the year, 24 out of the 56 schools (43%) managed to meet the threshold of at least 3 TGMs in every term. (Outcome indicator 2)
• A further 8 schools, making a total of 32 out of 56 (57%), achieved an average of at least 3 TGMs per term in this period, though they may have had four meetings in one term and two in another.
• Every school held at least one TGM in 2022. 50 schools (89%) held at least one TGM in every term.

The most significant finding here perhaps is that the headline figure (43% of school having 3 or more TGMs per term) is the same as the baseline, even though in Cohorts 2 and 3, it was higher (C1: 43%; C2: 67%; C3:64%). The midline figure was 34% (Covid affected)).
Analysis of qualitative data, however, suggests that more informal collaborative working is taking place, among teachers with peer observations and reflective discussions between colleagues, taking place outside formal TGMs.

There were six schools which had at least one term with no TGMs, and these varied widely in their overall rate of TGMs as shown in the table below.

**Table 33: Schools where there were no TGMs in at least one term**

<table>
<thead>
<tr>
<th>Code</th>
<th>District</th>
<th>TGMs in 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Term 1</td>
</tr>
<tr>
<td>CH02</td>
<td>Chisamba</td>
<td>0</td>
</tr>
<tr>
<td>CH03</td>
<td>Chisamba</td>
<td>0</td>
</tr>
<tr>
<td>CH09</td>
<td>Chisamba</td>
<td>2</td>
</tr>
<tr>
<td>KB14</td>
<td>Kabwe</td>
<td>13</td>
</tr>
<tr>
<td>MB11</td>
<td>Mumbwa</td>
<td>0</td>
</tr>
<tr>
<td>SH01</td>
<td>Shibuyunji</td>
<td>3</td>
</tr>
</tbody>
</table>

The contextual data reveals that MB11 and SH01 schools have very large teacher/pupil ratios (130 and 77 per teacher) which suggests that shift systems are probably operating, impacting on the time available for TGMs.

**Table 34: Contextual data for the schools in Table 32**

<table>
<thead>
<tr>
<th>Code</th>
<th>Cohort</th>
<th>Number of shifts per day</th>
<th>Socio-economic status</th>
<th>School type &amp; grades</th>
<th>Number of teachers F M</th>
<th>Number of learners F M</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH02</td>
<td>4</td>
<td>2</td>
<td>Rural</td>
<td>Govt (1–9)</td>
<td>25 8</td>
<td>479 513</td>
</tr>
<tr>
<td>CH03</td>
<td>1</td>
<td>3</td>
<td>Rural</td>
<td>Comm (1–7)</td>
<td>10 4</td>
<td>319 289</td>
</tr>
<tr>
<td>CH09</td>
<td>Ext</td>
<td>3</td>
<td>Rural</td>
<td>Govt (1–7)</td>
<td>7 3</td>
<td>250 270</td>
</tr>
<tr>
<td>KB14</td>
<td>4</td>
<td>3</td>
<td>Urban</td>
<td>Comm (1–9)</td>
<td>23 10</td>
<td>296 429</td>
</tr>
<tr>
<td>MB11</td>
<td>Ext</td>
<td>3</td>
<td>Rural</td>
<td>Govt (1–7)</td>
<td>5 5</td>
<td>692 609</td>
</tr>
<tr>
<td>SH01</td>
<td>4</td>
<td>2</td>
<td>Rural</td>
<td>Govt (1–9)</td>
<td>11 8</td>
<td>750 791</td>
</tr>
</tbody>
</table>

Breaking down this data by District we can see that there is some variation, although the varying size of the schools and the District make direct comparisons difficult.
Table 35: Schools achieving three TGMs per term by district

<table>
<thead>
<tr>
<th>District</th>
<th>Schools</th>
<th>≥ 3 TGMs held on average</th>
<th>2022 Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In Term 1 2022</td>
<td>In Term 2 2022</td>
</tr>
<tr>
<td>Chisamba</td>
<td>12</td>
<td>7 58%</td>
<td>7 58%</td>
</tr>
<tr>
<td>Kabwe</td>
<td>15</td>
<td>12 80%</td>
<td>13 87%</td>
</tr>
<tr>
<td>Mkushi</td>
<td>4</td>
<td>3 75%</td>
<td>2 50%</td>
</tr>
<tr>
<td>Mumbwa</td>
<td>19</td>
<td>10 53%</td>
<td>12 63%</td>
</tr>
<tr>
<td>Shibuyunji</td>
<td>6</td>
<td>5 83%</td>
<td>5 83%</td>
</tr>
</tbody>
</table>

- The best-performing district is Kabwe, where two-thirds of the 15 schools held at least three TGMs in every term. It is worth noting that the Kabwe schools are significantly bigger than the schools in the other Districts which may affect how they organise TGMs.
- Mkushi and Shibuyunji are both very small districts. The variation in performance naturally appears greater, since only one or two schools can have a big impact on the figures.

Although the headline figure (43% of school having 3 or more TGMs per term) is the same as the baseline, qualitative data obtained from all stakeholders shows that:
- participation is much higher amongst teachers in TGMs
- activities which take place are perceived as being more useful to teachers’ classroom practice
- collaboration and reflection have become more normalised. Teachers also report more informal discussion between lessons based on peer observation, so collaborative practice is not limited to TGMs.

Another way of determining the impact of TGMs is to consider how well attended they are.

**Attendance at TGMs**

This table shows the level of attendance at TGMs.
- A minimum of ‘Good’ attendance (60 – 79%) was achieved by every school in at least one term in 2022.
- ‘Very good’ attendance (80 – 100%) was achieved by 45 out of 56 schools (80%) in at least 1 term in 2022.
- 49 schools (88%) achieved either ‘good’ or ‘very good’ attendance in all three terms of 2022.
Table 36: Attendance at TGMS by term ($N = 56$)

<table>
<thead>
<tr>
<th>Number of terms where attendance level achieved</th>
<th>Good *</th>
<th>Very good **</th>
<th>Good or Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 terms</td>
<td>16</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>≥ 1 terms</td>
<td>40</td>
<td>45</td>
<td>56</td>
</tr>
<tr>
<td>≥ 2 terms</td>
<td>21</td>
<td>31</td>
<td>55</td>
</tr>
<tr>
<td>≥ 3 terms</td>
<td>8</td>
<td>15</td>
<td>49</td>
</tr>
</tbody>
</table>

* ‘Good’ attendance: 60 – 79%
** ‘Very good’ attendance: 80 – 100%

This data is consistent with qualitative evidence that teachers find TGMS more productive and are more likely to attend. We looked at the reasons for non-attendance with ‘health’, ‘family issues’, ‘shift working’ or ‘residential studies’ being the most common.

4.2 Findings – Qualitative data

- In March 2022, a team visited Mumbwa District in order to conduct an in-depth study of six schools. Two researchers spent two days in each school in which they interviewed the head teacher, the SIC, the school ICT champion and a teacher.
- They observed at least one lesson, and where possible a TGM. In some cases, they also conducted a ‘learning walk’ with the head teacher.
- Data from each school was collected together to create six narratives – each telling the story of one school. This data has been analysed from multiple perspectives. Here we consider the overall question: what is the impact of ZEST in Mumbwa District? (In other publications we have taken a more detailed look at the specific impact on a school of the technology and used the data to analyse what it is that effective leaders do to support SBCPD (Stutchbury et al., 2022; Woodward et al., 2022).

4.2.1 The impact on schools

In schools, we have evidence that SBCPD has been strengthened. Three key issues have emerged:
   a) the more productive use of time
   b) the fact that everyone is actively involved and
   c) the positive effect on the relationships in school.

Head teachers, SICs, and teachers appreciate the fact that SBCPD no longer disrupts normal teaching.

- ‘Before with CPD school had to close with disruption to teaching, now this is not needed’ (SIC)
- ‘Now instead of leaving your class unattended, now it is just one or 2 who attend the lesson.......before, we all had to attend so learners were left behind’ (Teacher)
In the past, most teachers were only passively involved, so they did not always see the value of the process. One teacher remarked

- ‘It was not being done and never taken seriously’.
- ‘The way TGMs [used to be] conducted made teachers see it as a waste of time considering only one teacher was conducting a lesson demo as opposed to now when lessons .....are conducted by all teachers’ (HT)

The fact that all teachers are actively involved in ZEST is bringing direct benefits:

- ‘Now whatever they discuss it scatters to all classrooms at once, so learners are benefiting a lot from that’ (HT)

Relationships have improved as a result of a more supportive atmosphere, and hierarchies have been flattened, with head teachers attending TGMs in order to learn about new teaching approaches and school champions being given greater responsibility as a result of their skills, even though they may be young and inexperienced.

- ‘There is no criticism now...peer mentoring makes you free to learn, unlike in a group’ (Teacher)
- ‘Teachers used to show that phobia, but this one enables us to plan and monitor together. Teachers do not feel criticised’ (SIC)
- ‘We have run away from the time that we just used to mingle about in school. Just wasting time......we had the situation where the attendance was very bad, because what they thought ......was it was all about attacking teacher, or maybe they wanted to attack a certain teacher, so they want to see can that teacher teach’. (SIC)
- ‘I also attend some of the meetings – when I am in a meeting, I say now don’t call me head colleagues and they put me in one of the groups’ (HT)
- ‘I feel like a boss, as I am able enrol my supervisor. I can enrol my head teacher, the deputies, they have to ask me questions [laughs]’ (School Champion)

Overall, the six schools visited demonstrated that SBCPD is more purposeful, the technology is highly motivating, and more collaboration is taking place, not just during TGMs. People are more open about the challenges they face and more willing to ask for help from colleagues.

The teaching approach that has been embraced most enthusiastically is ‘using local resources’. This was mentioned a great deal during the interviews, but also during learning walks, when researchers were shown examples of resources made from all sorts of waste materials being stored and made available for teachers. An impact is also being seen on learners, through access to available resources.

- ‘They involve the learners also in making teaching and learning materials. And as the learners are doing so, from the few that we have talked to, they say they learn better, they understand better.’ (PRCC Central Province)
Once resources are available for learners to engage with, group and pair work activities become easier to organise. So, the increase in the number of resources in schools is very encouraging at this stage; it is likely to lead to more active engagement from students and more opportunities to talk about their learning.

4.2.2 The impact on teachers
A significant impact on teachers has been the opportunity to use technology in order to access resources. Many have bought phones and those who have them are beginning to appreciate the opportunities that this technology provides, beyond the use of WhatsApp and Facebook.

The Raspberry Pis have created excitement and some apprehension. But with the School Champion to help, all the head teachers in our research saw the use of technology as having a positive impact on teachers.

- ‘we see teachers who are getting confident. There are those who thought the RP only came to those who knew ICT, but it is not, it is helpful to those you had no idea also...it is simple’ (SIC)
- ‘There has been an improvement in how teachers are using their personal phones’ (HT)
- ‘teachers have acquired new skills like downloading files, connecting to Wi-Fi and others’ (School champion)

Through ZEST, teachers are also learning new skills in teaching, and their planning has improved. The suggestion in the materials is that TGMS should provide teachers with the opportunity to plan activities to try in their own classrooms, thus saving them time.

- ‘There is astute planning and implementation of SBCPD. It has made it easier for teachers to relate reality to the things they teach’ (HT)

The provision of resources to support TGMs has made a significant difference to teachers.

- ‘The resources have had a great impact, through interaction with the materials teachers have gained skills [in teaching approaches] ....There is increased engagement with SBCPD. There is improved collaboration among teachers, they plan activities as a group’ (HT)

Before ZEST ‘There was a limit in terms of information for TGMs.....there is information gain .....from the resources and the technology is a game changer’ (Teacher)

- ‘Now whatever they discuss it scatters to all classrooms at once, so learners are benefiting a lot from that’ (HT)
- ‘It gives materials which talk about learner-centred techniques, which to me was something teachers run away from......they have started using approaches like group work and pair work’ (SIC)
4.2.3 The impact on learners

ZEST is about improving teaching and improving the classroom experiences for learners. This affects all subjects, so it has not been possible to devise a simple measure of the impact of ZEST on learners. However, in the interviews and observations we have conducted, head teachers, SICs and teachers have identified impacts of ZEST on learners.

- ‘performance of pupils has improved especially when it comes to the issue of reading and writing’ (SIC)
- ‘Learners are able to respond to the approaches used, learners take part in lessons. It has also helped to bring out more from learners......learners give you information when you ask. Attendance has improved.....the approaches have helped improve the writing among learners’ (Teacher).

In interviews with learners, their enthusiasm for more active learning activities is clearly evident.

- We like to do group work, pair work, use of local resources and games. I like playing games because they are exciting to do. And when I go in front and solve the equations, I’ll be comfortable doing it. (Learner)
- I’ve done role play Before and I think it’s great. I think using role play is good because people understand more and they learn better and it’s not easy to forget (Learner)

4.2.4 Qualitative data from the endline

During school visits, researchers spoke to the SIC and some teachers. The comments are summarised in Appendix 5 and confirm that the conclusions from research in Mumbwa are repeated across the province.

4.3 Evidence Café

Drawing on the Endline evidence presented, the following successes were identified:

1. There is more collaboration between teachers
2. TGMs are more purposeful and perceived to be more useful for teachers
3. Learners are more actively engaged in lessons
4. Teachers are making more use of local materials
5. Relationships in school and between school and District have improved
6. Teachers are more confident in using technology. Technology is motivating.
7. ZEST has had a positive impact on learners’ achievement, particularly in literacy

During discussions in and between stakeholder groups four further successes were identified:

8. The increased capacity at District and Provincial level to support schools in learner-centred education
10. The provision and use of TESSA resources to support teaching and learning
11. Schools with limited resources are highly involved

The challenges that were presented to the group were:

1. Teachers report increased confidence in group work and pair work but this is not reflected in the classroom observation data
2. Engagement with the resources is still quite superficial
3. Pair work is proving more challenging for teachers than group work, even though it is easier to organise
4. The requirement to engage in other programs creates challenges for schools

Two further challenges were identified during discussions:

5. The SD cards on the Raspberry Pi computers are vulnerable (some have been stolen)
6. There is an influx of new teachers who have not been inducted into ZEST owing to changes in Government policy

The most significant success identified by all stakeholder groups was the positive impact that ZEST has had on learners, followed by the appreciation that more TGMs are taking place and that they are perceived to be useful to teachers.

The evidence of pressure on schools owing to multiple initiatives came from the qualitative research in Mumbwa and was not followed up in the Endline study but emerged as a significant issue during stakeholder discussions. There was also concern about the lack of pair work taking place and this will be a focus in the final year.
5. Discussion

In this section we will consider the reasons behind the successes, the remaining challenges and some recommendations for the Ministry of Education.

5.1 Drivers for change and sustainability

5.1.1 Institutionalisation

School Based Continuing Professional Development (SBCPD) is well established in Zambian schools, generally taking place in regularly timetabled Teacher Group Meetings (TGMs). The Japanese system of ‘lesson study’ was adopted by the Zambian Ministry of Education in 2005 to support teachers (as explained in detail in Section 2.1). From the outset to avoid setting parallel systems, ZEST was purposefully embedded in the existing Zambian model, utilising the timetabled TGM slots and working closely with the School In-service Coordinator (SIC) whose role is to organise and manage SBCPD. The aim of Zambian Education School-based Training (ZEST) was to strengthen the existing system in primary schools, building on the structures already in place to deliver improved classroom teaching. ZEST preserves the aspects of current practice which work well (collaborative planning in regular teacher group meetings), and operationalises the MOE’s revised Zambian school curriculum, supporting teachers and stakeholders in making a pedagogic shift to a more learner-centred approach to learning and teaching. This decision to work alongside rather than in conflict with the existing SBCPD provision has led to some of the successes that the project has demonstrated in the Findings section of this report.

From the outset, the programme has been underpinned by the assumption that achieving ‘buy in’ from the MOE, provincial and district officials assist in creating the circumstances in which the activities of ZEST can become embedded in the Zambian education system. Throughout the 6 years of the project district officials have frequently taken part in school monitoring visits with World Vision although a lack of vehicles has hampered their ability to conduct more independent visits. Through being consistently involved in the co-design of workshops and activities, provincial and district level officers have become more engaged in the objectives of ZEST and are increasingly focused on supporting teachers as well as monitoring their activities. However more attention needs to be paid to supporting these officials in changing their practice to enable them to provide an effective mentoring and coaching role and thus create a sustainable and locally owned system.

5.1.2 Creating a system which reflects what is known about teacher learning and effective CPD

While support for teachers was built into the original model of Lesson Study through the emphasis on collaborative planning, the evidence suggests that without resources providing an alternative vision and practical advice, it is difficult to see where the new ideas required to implement the aspirations of the Revised Zambian School Curriculum can come from. ZEST has
used what is known about teacher learning, findings from the regular project evaluations and outputs from the initial Design Workshop (February 2018) to make small changes to embedded practices so that they become more effective. One of the drawbacks of Lesson Study noted by teachers was the lack of resources to use during TGMs. ZEST has tried to combat this by providing support for teachers through the provision of resources that set out an alternative vision for classroom practice. The provision of resources to support TGMs has made a significant difference to teachers. Alongside the ZEST resources, Teacher Education in Sub-Saharan Africa (TESSA) is a bank of Open Educational Resources (OER), providing practical examples of classroom activities. Introduced in Term 4, they show examples for teachers of how to teach the primary curriculum as well as what to teach and have been mapped to the Zambian primary curriculum.

The teaching approach that has been very actively embraced is ‘using local resources’. Classroom resources have been made from all sorts of waste and locally available materials and are visibly in use in all schools. The creation of these resources offers opportunities for learners to engage more meaningfully in group and pair work activities. So interest in this teaching approach is very encouraging at this stage; it is likely to lead to more active engagement from students and more opportunities to talk about their learning.

Section 4.1.3 looks in detail at teachers’ use of collaborative practice: outcome indicator 1. From the outset, ZEST’s pedagogical emphasis has been on teachers learning together and it would appear from the data that collaboration and reflection have become normalised not only in formal TGMs but also through peer observation and more informal discussions. As collaboration and reflective practice become more meaningfully embedded in local teaching systems, reinforced by teaching and learning resources, it is hoped that the identified changes in classroom practice can be sustained and developed at school and district level.

5.1.3 The use of technology

The project team has explored a novel technological approach to supporting the programme through the use of low-cost, digital network hubs: ‘Raspberry Pi’ computers. These have been uploaded with the project’s OER which can then be downloaded onto teachers’ own smartphones offline. The Raspberry Pis are working well in helping SBCPD in what are frequently very low resourced settings, including rural schools with no stable source of electricity and there is a generally positive attitude towards accessing the resources on the Raspberry Pi (RP).

ZEST’s pedagogical emphasis has been on teachers learning together and there is evidence in initial examination of the data that the technology is encouraging this approach; participants speak of teachers working together in groups with smartphones on which resources from the RP have been downloaded, which mitigates against the exclusion of teachers who do not own or use smartphones.
Another strength of the RP is the *online assessment* which comes at the end of each course, in the form of a short quiz. Upon successful completion of the assessment, the teacher is awarded a digital certificate. There is evidence that these certificates are seen as having value by school leaders, discussions are taking place to have them recognised by the Zambian Teaching Council. Local adaptation and appropriation are also seen. In some schools the quizzes, which were originally intended to be completed via the RP by teachers individually, were completed by groups of teachers in the TGMs, with quizzes acting as catalysts for group discussions.

To support sustainability, a School IT Champion has been appointed in each school from within the teaching staff and trained to maintain the device and support other teachers. This is a new role which previously did not exist within schools in Central Province. A teacher is identified by the Headteacher as being confident and knowledgeable about technology; they receive training in the Raspberry Pi from WVZ and then play a key role in supporting teachers as they engage with the devices, downloading resources to their phones. In many cases these School IT Champions have formed their own peer support network, keeping in contact with each other via WhatsApp and collaborating to explore unexpected problems that have arisen. It was felt in ZEST that IT champions as peers who have responsibility for helping teachers to develop technology-related confidence and skills could play an important role in addressing barriers such as confidence and lack of technical knowledge. A new role has also been created at District level – the District IT Champion. This person has been trained to configure and resolve IT challenges, thus supporting the sustainability of the work.

The collaborative nature of the TGMs, the positive response to the resources and the support offered by school leaders and School IT Champions all work towards the adoption and acceptance of the technology enhanced approach to the delivery of SBCPD within schools, although further work is needed to take place to ensure the sustainability of the approach.

### 5.2 Remaining challenges

The model of change embodied in ZEST is one of transformation through incremental change over time. In some schools, when they compare working practices and teaching approaches to those in place a year ago, considerable change can be seen. But this has taken place gradually over the year, with teachers making small changes to their practice, which increase as they build their confidence. Students also need time to adapt. If they are used to being asked to remain silent or not copy from their peers, being asked to discuss their work, or jointly solve some problems, feels strange. They can be reluctant to speak, which is discouraging for teachers. The first challenge therefore is patience. Sustainable pedagogic change takes time.

The role of District and Provincial officials is to support and monitor schools in implementing the revised school curriculum. Most of them have no personal experience of the sort of teaching being asked for, making it challenging for them to provide effective support. The ZEST materials are available and relevant to everyone in the system. ZEST works best where the District and Provincial officials have engaged with the detail and are able to use the opportunity that they have to visit many schools to recognise and spread good practice. The challenge is to persuade them of this and to encourage them to engage with the detail of the Training Handbook.
We have found that schools—particularly those in Central Province—face pressure from multiple initiatives. Because ZEST has been designed to fit in with existing systems, it can be easily adapted to fit in with new initiatives. District and Provincial officers need to be able to analyse new initiatives (e.g., Teaching at the Right Level—TaRL) and work out how they fit with ZEST. For example, TaRL involves assessment for learning and group work. Both these approaches are covered in ZEST. The resources don’t necessarily have to be followed in the order in which they have been set out, and the activities for TGMs that are associated with those teaching approaches are directly relevant to the TaRL initiative. There is a tendency to rely on instruction from elsewhere. The ZEST resources can enable Districts officers and SICs to exercise their agency and implement the initiatives in a way that suits their context. The challenge is for teachers and Government officers to develop this agency and take ownership of new initiatives.

One surprising finding from the classroom observation data was the fact that very little pair work is taking place, despite the fact it is easier to organise and less disruptive than group work. Giving pupils a few minutes to discuss an open-ended question with their partner a few times in each lesson, will help them to get used to the new expectations. The challenge is for District and Provincial officers to better support teachers in using pair work.

As with all initiatives at scale, they work better in some places than others. The data from ZEST suggests that overall, there have been improvements, but also reveals areas where there are more TGMs and lessons which actively engage pupils and areas where change is very slow. The challenge is to identify and learn from good practice, and to find ways of supporting schools that are struggling. That support needs to be tailored to their particular needs and relies on Government officers approaching the situation sensitively rather than automatically blaming schools for not engaging.

Finally, in the last two years of ZEST, Community schools in Zambia were incorporated into the mainstream. These schools operate in a very different context from Government schools, having previously had no access to resources other than those donated by the community, and being staffed by volunteers. 70 Community schools have now been introduced to ZEST. The challenge is to make sure that ZEST meets their needs, and if necessary, to adapt the way the cycle operates.

5.3 Recommendations

Drawing on all this data, our recommendations are as follows:

- The recommendation to schools and teachers is that they focus on TGMs; that they continue to hold regular TGMs and use the resources provided to guide these meetings. Meetings should be carefully planned and should model the approaches being promoted.
- Priority should be given to training Facilitators so that they have the skills and knowledge to conduct meaningful TGMs.
• District and Provincial Officers should be encouraged to complete the courses themselves and gain the certification;
• the materials are approved for use by the Curriculum Development Centre (CDC) and Teacher Education Specialized Services (TESS), so that ZEST can be rolled out with confidence in other Provinces.
• Ministry of Education work pro-actively with funders and other initiatives, encouraging them to engage with the ZEST materials and adapt them to support their initiatives. They are available with an open license, they draw on international evidence about good teaching, and they are contextualized for Zambia.
• Ministry of Education work with Central Province to work out how to implement ZEST in other Provinces.
• Government and local communities should find ways of providing schools, particularly those in rural areas with a Raspberry Pi computer.
• District, Province, and Ministry officials should shift the focus of monitoring activities to monitoring and support. If ZEST is not being implemented, find out why and help schools to overcome any challenges.
References


Appendices

Appendix 1: ZEST Endline School data tool
Endline Evaluation: ZEST School Data Survey - D1

* I consent for myself, my colleagues and my school to take part in this Evaluation.

If consent is not given, the Evaluation cannot continue in this school.

☐ OK

Codes

1. Enumerator code

* Please obtain this from data collection supervisor.

2. School code

* Please obtain this from data collection supervisor.

3. ZEST project cohort number

* Please obtain this from data collection supervisor.

☐ 1
☐ 2
☐ 3
☐ 4 (scale up)
☐ Extension

School Details

4. School name

* Please ensure this is spelt, spaced and punctuated correctly

5. School type

Select just one.

☐ Government zonal school
☐ Government school
☐ Community school
☐ Private school

6. Grades covered by the school

Select just one.

☐ Less than grades 1-5
☐ Grades 1-5
☐ Grades 1-7
☐ Grades 1-9
☐ Beyond grades 1-9
7. GPS location

latitude (x,y °)

longitude (x,y °)

altitude (m)

accuracy (m)

8. District

☐ Chisamba
☐ Kabwe
☐ Mumbwa
☐ Shibuyunji
☐ Mkushi

9. Zone

Please ensure this is spelt, spaced and punctuated correctly.

10. Community name

Please ensure this is spelt, spaced and punctuated correctly.

11. Socio-economic status

Select just one.

☐ Rural
☐ Peri-urban
☐ Urban

12. Name of the Zonal school this school is linked to

Please ensure this is spelt, spaced and punctuated correctly.

13. Zone In-service Coordinator (ZIC) details
13.1 Zone in-service Coordinator (ZIC) gender
- Male
- Female

14. Headteacher details

14.1 Headteacher gender
- Male
- Female

14.2 Headteacher highest qualification level
Select just one.
- Certificate
- Diploma
- Degree
- Masters
- PhD

14.3 Headteacher years of teaching experience
Answer to the nearest full year. Enter 0 for less than one year.

14.4 Headteacher years of experience as a Headteacher
Answer to the nearest full year. Enter 0 for less than one year.

14.5 Headteacher years in this school
Answer to the nearest full year. Enter 0 for less than one year.

15. Deputy Headteacher details

15.1 Deputy Headteacher gender
- Male
- Female

16. School In-service Coordinator (SIC) details

16.1 School In-service Coordinator (SIC) gender
- Male
- Female
School Classes

17. Number of primary school classes this school year 2022
This is the total number of primary classes in all shifts in the school. Primary is up to grade 7.

18. Number of primary school classrooms this school year 2022
This is the total number of classrooms used by the school's primary classes. Primary is up to grade 7.

19. This year, has this school operated more than one set of primary school classes each day?
Primary is up to grade 7. Please note that this is not the number of simultaneous 'streams' but rather if the school has to run classes in shifts, such as AM classes and PM classes each day. Select yes or no.

☐ Yes
☐ No

19.1 Number of shifts of primary school classes the school operates each day this school year 2022
This should be 2 or 3. Primary is up to grade 7.

Teachers

20. Number of FEMALE primary school TEACHERS
Total number of female primary teachers in the school. Primary is up to grade 7.

20.1 Number of FEMALE primary school teachers who taught more than one class in Term 1 (January-April 2022)
Only the number of female teachers who teach in multiple primary school shifts. Primary is up to grade 7.

20.2 Number of FEMALE primary school teachers who taught more than one class in Term 2 (May-August 2022)
Only the number of female teachers who teach in multiple primary school shifts. Primary is up to grade 7.

20.3 Number of FEMALE primary school teachers who teach more than one class this Term (since September 2022)
Only the number of female teachers who teach in multiple primary school shifts. Primary is up to grade 7.

21. Number of MALE primary school TEACHERS
Total number of male primary teachers in the school. Primary is up to grade 7.
21.1 Number of MALE primary school teachers who taught more than one class in Term 1 (January-April 2022)
Only the number of male teachers who teach in multiple primary school shifts. Primary is up to grade 7.

21.2 Number of MALE primary school teachers who taught more than one class in Term 2 (May-August 2022)
Only the number of male teachers who teach in multiple primary school shifts. Primary is up to grade 7.

21.3 Number of MALE primary school teachers who teach more than one class this Term (since September 2022)
Only the number of male teachers who teach in multiple primary school shifts. Primary is up to grade 7.

Learners

22. Number of FEMALE primary school LEARNERS
Total number of female primary school learners or pupils in all shifts. Primary is up to grade 7.

23. Number of MALE primary school LEARNERS
Total number of male primary school learners or pupils in all shifts. Primary is up to grade 7.
Appendix 2: ZEST Endline CPD interview tool
Endline Evaluation: ZEST CPD Interview - D1

Codes

1. Enumerator code
   *Please obtain this from the data collection supervisor.*

2. School code
   *Please obtain this from the data collection supervisor.*

3. ZEST project cohort number
   *Please obtain this from the data collection supervisor.*
   
   - [ ] 1
   - [ ] 2
   - [ ] 3
   - [ ] 4 (Scale up)
   - [ ] Extension

4. Interviewee code
   *Please obtain this from the data collection supervisor.*

5. Interviewee role
   *NOTE: The interviewee should be the School In-Service Coordinator (SIC), or a senior representative in their absence.*
   
   - [ ] School In-service Coordinator (SIC)
   - [ ] Headteacher
   - [ ] Deputy Headteacher
   - [ ] Senior Teacher
   - [ ] Other

   If 'Other', please explain here:

TGMs - Term 1 2022 (January-April 2022)

6. Number of Teacher Group Meetings (TGMs) held in TERM 1 of 2022
   *Enter 0 if none.*
6.1 Attendance at the Teacher Group Meetings (TGMs) held in TERM 1 of 2022

- Very good (80% - 100%)
- Good (60% - 79%)
- Low (40% - 59%)
- Very low (0% - 39%)

6.2 Main reasons for non-attendance at the Teacher Group Meetings (TGMs) in TERM 1 of 2022

Select the TWO main or most frequent reasons.

- Health issues prevented staff attending
- Family or personal issues prevented staff attending
- Shift teaching commitments kept staff from being able to attend
- General absence kept staff from attending
- Other

If 'Other', please explain here:

6.3 Focus of the Teacher Group Meetings (TGMs) held in TERM 1 of 2022

Please list all the topics covered or focused on in the TGMs that were held.

---

TGMs - Term 2 2022 (May-August 2022)

7. Number of Teacher Group Meetings (TGMs) held in TERM 2 of 2022

Enter 0 if none.

---

7.1 Attendance at the Teacher Group Meetings (TGMs) held in TERM 2 of 2022

- Very good (80% - 100%)
- Good (60% - 79%)
- Low (40% - 59%)
- Very low (0% - 39%)

7.2 Main reasons for non-attendance at the Teacher Group Meetings (TGMs) in TERM 2 of 2022

Select the TWO main or most frequent reasons.

- Health issues prevented staff attending
- Family or personal issues prevented staff attending
- Shift teaching commitments kept staff from being able to attend
- General absence kept staff from attending
- Other

If 'Other', please explain here:
7.3 Focus of the Teacher Group Meetings (TGMs) held in TERM 2 of 2022

Please list all the topics covered or focused on in the TGMs that were held.

---

**TGMs - THIS TERM (since September 2022)**

8. Number of Teacher Group Meetings (TGMs) held THIS TERM

*This is THIS Term, which is since September 2020. Enter 0 if none.*

---

8.1 Attendance at the Teacher Group Meetings (TGMs) held THIS TERM

- [ ] Very good (80% - 100%)
- [ ] Good (60% - 79%)
- [ ] Low (40% - 59%)
- [ ] Very low (0% - 39%)

---

8.2 Main reasons for non-attendance at the Teacher Group Meetings (TGMs) in THIS TERM

*Select the TWO main or most frequent reasons.*

- [ ] Health issues prevented staff attending
- [ ] Family or personal issues prevented staff attending
- [ ] Shift teaching commitments kept staff from being able to attend
- [ ] General absence kept staff from attending
- [ ] Other

If 'Other', please explain here:

---

8.3 Focus of the Teacher Group Meetings (TGMs) in THIS TERM

*Please list all the topics covered or focused on in the TGMs that were held.*

---

**Headteacher In-Service Meeting (HIM) Records**

9. Date LAST Headteacher In-service Meeting (HIM) was conducted

*This should be THIS Term, which is since September 2022. If NO meeting has been held yet this Term, then please record the date of the LAST meeting, whenever this was.*

yyyy-mm-dd

---

9.1 The school has records from the LAST Headteacher In-service Meeting (HIM) conducted

*The record should be found in the School In-service Record (SiR) book, minutes of the meeting, plans or charts, etc. The Interviewee will guide you to the correct records.*

- [ ] Yes
- [ ] No

If 'No' please explain why here:
If 'Yes' select 'Add Group' next to begin capturing these records.

Note: After each photo select 'Add Group' again to take another photo, and when you have finished capturing these records, select 'Do Not Add' to go on to the next part of the interview.

---

**HIM Photo Records**

9.2 Photo record of the LAST Headteacher In-service Meeting (HIM)

Please photograph clearly each record of the last meeting conducted as indicated in question 9. Photograph all the records, documents and pages that apply. Remember, after taking the photo, select 'Add Group' again to take another photo or when done select 'Do Not Add' to go on to the next part of the interview.

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---

**Teacher Group Meeting (TGM) Records**

10. Date when the LAST Teacher Group Meeting (TGM) was conducted

This should be THIS Term, which is since September 2022. If NO meeting has been held yet this Term, then please record the date of the LAST meeting, whenever this was.

______ yyyy-mm-dd

---

10.1 The school has records from the LAST Teacher Group Meeting (TGM) conducted

The record should be found in the School In-service Record (SiR) book, minutes of the meeting, plans or charts, etc. The Interviewee will guide you to the correct records.

- [ ] Yes
- [ ] No

If 'No' please explain why here:

---

If 'Yes' select 'Add Group' next to begin capturing these records.

Note: After each photo select 'Add Group' again to take another photo, and when you have finished capturing these records, select 'Do Not Add' to go on to the next part of the interview.

---

**TGM Photo Records**

10.2 Photo record of the LAST Teacher Group Meeting (TGM)

Please photograph clearly each record of the last meeting conducted as indicated in question 10. Photograph all the records, documents and pages that apply. Remember, after taking the photo, select 'Add Group' again to take another photo or when done select 'Do Not Add' to go on to the next part of the interview.

Click here to upload file. (< 5MB)
Grade Teacher Meeting at the Resource Centre (GRACE) Records

11. Date when the LAST Grade Teacher Meeting at the Resource Centre (GRACE) meeting was conducted

This should be THIS Term, which is since September 2022. If NO meeting has been held yet this Term, then please record the date of the LAST meeting, whenever this was.

yyyy-mm-dd

11.1 The school has records from the LAST Grade Teacher Meeting at the Resource Centre (GRACE) meeting conducted

The record should be found in the School In-service Record (SIR) book, minutes of the meeting, plans or charts, etc. The Interviewee will guide you to the correct records.

☐ Yes
☐ No

If 'No' please explain why here:

If 'Yes' select 'Add Group' next to begin capturing these records.

Note: After each photo select 'Add Group' again to take another photo, and when you have finished capturing these records, select 'Do Not Add' to go on to the next part of the interview.

GRACE Photo Records

11.2 Photo record of the LAST Grade Teacher Meeting at the Resource Centre (GRACE) meeting

Please photograph clearly each record of the last meeting conducted as indicated in question 11. Photograph all the records, documents and pages that apply. Remember, after taking the photo, select 'Add Group' again to take another photo or when done select 'Do Not Add' to go on to the next part of the interview.

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School In-Service Monitoring (SIMON) Records

12. Date when the LAST School In-service Monitoring (SIMON) was conducted

This should be THIS Term, which is since September 2022. If NO monitoring has been conducted yet this Term, then please record the date of the LAST monitoring, whenever this was.

yyyy-mm-dd

12.1 The school has records from the LAST School In-service Monitoring (SIMON) conducted

The record should be found in the School In-service Record (SIR) book, minutes of the meeting, plans or charts, etc. The Interviewee will guide you to the correct records.

☐ Yes
☐ No

If 'No' please explain why here:
If 'Yes' select 'Add Group' next to begin capturing these records.

Note: After each photo select 'Add Group' again to take another photo, and when you have finished capturing these records, select 'Do Not Add' to go on to the next part of the interview.

---

**SIMON Photo Records**

12.2 Photo record of the LAST School In-service Monitoring (SIMON)

Please photograph clearly each record of the last meeting conducted as indicated in question 12. Photograph all the records, documents and pages that apply. Remember, after taking the photo, select 'Add Group' again to take another photo or when done select 'Do Not Add' to go on to the next part of the interview.

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---

**Miscellaneous In-service Activity (MIA) and other Continuing Professional Development (CPD) Activity**

13. Miscellaneous In-service Activity (MIA) and other Continuing Professional Development (CPD) activity conducted THIS Term

List each activity, and the date conducted. Write 'None' if there was no MIA or other CPD activity this Term. Note that this Term is since September 2022

---

13.1 The school has records from the Miscellaneous In-service Activity (MIA) and other Continuing Professional Development (CPD) activity conducted THIS Term

The record should be found in the School In-service Record (SIR) book, minutes of the meeting, plans or charts, etc. The Interviewee will guide you to the correct records.

- Yes
- No

If 'No' please explain why here:

---

If 'Yes' select 'Add Group' next to begin capturing these records.

Note: After each photo select 'Add Group' again to take another photo, and when you have finished capturing these records, select 'Do Not Add' to go on to the next part of the interview.

---

**MIA/CPD Photo Records**

13.2 Photo record of the LAST Miscellaneous In-service Activity (MIA) and other Continuing Professional Development (CPD) Activity

Please photograph clearly each record of the last meeting conducted as indicated in question 13. Photograph all the records, documents and pages that apply. Remember, after taking the photo, select 'Add Group' again to take another photo or when done select 'Do Not Add' to go on to the next part of the interview.

Click here to upload file. (< 5MB)
Improvements in Teaching

14. Have there been improvements in teaching as a result of the various meetings (HIM, TGM, GRACE, etc.) and CPD since ZEST started?

This should focus on improvements made since ZEST started in the school

☐ Yes
☐ No
☐ Don't know

14.1a How do you know there have been improvements in teaching

14.1b How do you know there have not been improvements in teaching

14.1c Why don't you know if there have been improvements in teaching

14.2 Please provide 2 examples of how teaching has improved

Changes in Learners

15. Have there been changes in learners since ZEST started?

☐ Yes
☐ No
☐ Don't know

15.1a How do you know there have been changes in learners?

15.1b How do you know there have not been changes in learners?

15.1c Why don't you know if there have been changes in learners?

15.2 Please provide 2 examples of the changes you have seen in learners.
Appendix 3: ZEST Endline Teacher interview tool
Endline Evaluation: ZEST Teacher Interview - D1

Codes

1. Enumerator code
   Please obtain this from the data collection supervisor.

2. School code
   Please obtain this from the data collection supervisor.

3. Teacher code
   Please obtain this from the data collection supervisor.

Teacher Details

4. Teacher gender
   Select one.
   - Male
   - Female

5. Teacher’s highest qualification level
   Select just one.
   - Less than the Highschool Leaving Certificate
   - Highschool Leaving Certificate
   - Certificate
   - Diploma
   - Degree
   - Masters

6. Teacher’s years of teaching experience
   Answer to the nearest full year. Enter 0 for less than one year.

7. Teacher’s years in this school
   Answer to the nearest full year. Enter 0 for less than one year.

8. Do you normally teach more than one primary school class or subject?
   - Yes
   - No
9. What Grade(s) do you teach?

*This question applies to teachers who teach specific grades. This does not apply to teachers who only teach Specialised subjects. Please select all that apply.*

- [ ] Grade 1
- [ ] Grade 2
- [ ] Grade 3
- [ ] Grade 4
- [ ] Grade 5
- [ ] Grade 6
- [ ] Grade 7
- [ ] Other (e.g. Early Years / Secondary)

9.1 What subject(s) do you teach?

*This question applies to teachers who have a specialised subject. Please select all that apply*

- [ ] Literacy
- [ ] Mathematics
- [ ] Creative & Technological Studies
- [ ] Integrated Sciences
- [ ] Social Sciences
- [ ] English
- [ ] Zambian Languages
- [ ] Home Economics
- [ ] Social Studies
- [ ] Expressive Arts
- [ ] Other

9.1a If you selected Other, please provide more details.

______________________________

**TGMs**

10. This term, how many Teacher Group Meetings have you attended?

*The number of TGMs the teacher has attended since September 2022.*

______________________________
10.1 How helpful were the Teacher Group Meetings you attended?

Teacher Group Meetings are supposed to help you in your role as a teacher. Reflect on how helpful the meetings you attended this Term have been to you. Select one response.

- Very helpful
- Helpful
- A little helpful
- Not very helpful

<table>
<thead>
<tr>
<th>In the past MONTH how many times did you...</th>
<th>0</th>
<th>1-2</th>
<th>3-5</th>
<th>6-10</th>
<th>10+</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Talk to other colleagues about classroom approaches that you could use in your teaching?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>12. Give advice to a colleague about a lesson they were going to teach?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>13. Receive advice from a colleague about a lesson you were planning to teach?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>14. Talk to a colleague about a lesson you had taught and how it went?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>15. Observe a colleague teaching?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>16. Have a colleague observe you teaching?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In the past MONTH, how many times did you...</th>
<th>Every Lesson</th>
<th>Most Lessons</th>
<th>1-2 a day</th>
<th>2-3 a week</th>
<th>1 a week</th>
<th>Less than 1 a week</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Ask learners to work/discuss in pairs?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>18. Ask learners to work/discuss in a group?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>19. Use a resource you made from local materials/found locally?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>20. Use open questions to promote thinking?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>21. Use storytelling, songs, games or role-play with learners</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>22. Consciously make effort to involve all learners</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>23. Monitor learning</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>24. Give learners feedback</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>25. Ellicit prior knowledge</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>26. Use assessment for learning or formative feedback</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
27. In the past month, how frequently did you deliberately support learners’ literacy in other subject lessons? 
For example helping learners spell out key words, practise pronunciation, using home language to explain a word, or using pictures, actions and objects to explain the meaning of a word, in a numeracy, social studies or science lesson. Select just one.

☐ Every lesson
☐ Most lessons
☐ Once or twice in a day
☐ 2 or 3 times in a week
☐ Once a week
☐ Less than once a week
☐ Never

Group
VC - Very Confident; C - Confident; T - I Try This; TH - Will Try with Help; NC - Not Confident; N - I Have Not Done This

How confident are you in using the following collaborative active teaching approaches in your lessons?

28. Asking open questions
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

29. Pair work or discussions
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

30. Group work or discussions
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

31. Role play
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

32. Using local resources
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

33. Involving ALL learners in lessons
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

34. Monitoring learning
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

35. Giving feedback to learners
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

36. Eliciting prior knowledge
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

37. Use assessment for learning for formative feedback
☐ VC
☐ C
☐ T
☐ TH
☐ NC
☐ N

Teacher Notebook

38. Has the teacher written notes on the use of collaborative practices in their Teacher’s Notebook?
☐ Yes
☐ No
Appendix 4: ZEST Endline Teacher lesson observation tool
Pre-Observation Questions

1. Enumerator code
   *Please obtain this from the data collection supervisor.*

2. School code
   *Please obtain this from the data collection supervisor.*

3. ZEST project cohort number
   *Please obtain this from the data collection supervisor.*
   - □ 1
   - □ 2
   - □ 3
   - □ 4

4. Teacher code
   *Please obtain this from the data collection supervisor.*

5. Teacher gender
   *Select one.*
   - □ Male
   - □ Female

6. Grade of the lesson observed
   *This should be grade 1-7.*

7. Subject of the lesson observed
   *The subject of the lesson you observed, for example English, Maths, Social Studies, Zambian Language, etc. If you are unsure check with the class teacher.*

Lesson observation instructions

Every two minutes of the lesson:

Tick ONLY ONE box in section A (to describe what the teacher is doing). If the activity is not available tick the ‘other’ box. At the end of the lesson you will be asked to record the ‘other’ activities.

Tick ONLY ONE box in section B (to describe what the learners are doing). If the activity is not available tick the ‘other’ box. At the end of the lesson you will be asked to record the ‘other’ activities.
Tick ONLY ONE box in section C (to describe if teaching and learning materials are being used at that point).

In the space of 2 mins the Teacher or learners might do more than one thing – the aim is to record their actions at a point in time, which is given at the top of the screen (i.e. minute 1, minute 3, minute 5, etc.)

Examples:

1. If the teacher brings a plant to the classroom and asks a learner (pointing to the stem) ‘what is this part of the plant called?’ you would select ‘Asking Learners Open Questions’ in Section A (the Teacher is), and ‘Listening’ or ‘One is Giving Answers’ in Section B (the Learner is). You would also select ‘Yes, teaching and learning materials, other than textbooks and the blackboard, are being used’ in Section C.

2. If the learners are discussing the answer to a question the teacher posed in pairs, you would select ‘Observing or Listening to Learners’ in Section A (the Teacher is) and ‘Working or Talking in Pairs’ in Section B (the Learner is). You would select ‘No teaching and learning materials are being used.’

Start recording when actual lesson teaching starts – do not record during the register or while learners are organising themselves. Once teaching starts and you start recording, do not linger. This should be an instantaneous record. If you miss recording at a certain point, simply move on to the next minute indicated so that you keep up with the lesson. When the lesson is finished stop your observation and skip any remaining screens if necessary, and complete the form.

8. The time your lesson observation starts

Record the time the teaching starts and you begin your observation.

hh:mm

AT MINUTE 1 of the lesson observation...

A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other
B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 3 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 5 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 7 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 9 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 11 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 13 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 15 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 17 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 19 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 21 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 23 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 25 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

**AT MINUTE 27 of the lesson observation...**
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 29 of the lesson observation...
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 31 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 33 of the lesson observation...
A. **The Teacher is:**
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. **The learners are:**
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. **Teaching and Learning Materials**
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

**AT MINUTE 35 of the lesson observation...**
A. The Teacher is:
- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:
- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials
- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 37 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

AT MINUTE 39 of the lesson observation...
A. The Teacher is:

- Presenting or explaining
- Organising learning tasks or activities
- Asking learners open questions
- Giving feedback
- Walking around the classroom
- Observing or listening to learners
- Writing on the blackboard
- Recapping a previous lesson
- Other

B. The learners are:

- One is giving answers
- Chorusing replies
- Working or talking in pairs
- Working or talking in groups
- Singing songs
- Playing games
- Reading
- Writing (but not copying)
- Listening
- Copying
- Working individually
- Presenting
- Organising a task
- Other

C. Teaching and Learning Materials

- Yes, teaching and learning materials, other than textbooks or the blackboard, are being used
- Yes, textbooks or the blackboard are being used
- No teaching and learning materials are being used

"Other" Activities You Observed

9. Your lesson observation is now complete. If during the observation you selected that the Teacher or the learners were engaged in 'other' activities, please make a simple list of them here
9a. 'Other' Activities - Teachers

9b. 'Other' Activities - Learners

Reflective Questions

Take a few moments to reflect on what you saw in the classroom, and answer the following questions.

10. Did the Teacher use a textbook in the lesson?
   - Yes
   - No

11. Did the learners use a textbook in the lesson?
   - Yes
   - No

11.1 You said that the learners used a textbook in the lesson. How many textbooks were there for the learner to use?
   - One textbook for each learner
   - One textbook for each pair of learners
   - One textbook for each small group of learners (3-6 learners)
   - One textbook for each large group of learners (6+ learners)

12. How much evidence is there of learning and teaching materials, other than text books, in the classroom? This includes the use of local resources.
   - Plenty
   - Some
   - None

13. How much evidence is there of learner's work on display in the classroom?
   - Plenty
   - Some
   - None

14. How often did the Teacher use pupils' names during the lesson?
   - Frequently (most of the time learners were addressed as individuals by name)
   - Occasionally (a few times in the lesson learners were addressed as individuals by name)
   - Seldom or never (learners were not addressed as individuals by name)
Appendix 5: ZEST- Endline- Changes in Teaching and Learners- CPD interviews
Appendix 5: ZEST- Endline- Changes in Teaching and Learners- CPD interviews

Improvements in Teaching (Q14.1 and 14.2)

All 56 respondents to the CPD interview indicated they could identify improvements in teaching since ZEST started. These improvements covered a number of aspects such as

More collaboration among teachers
- Consultation amongst teachers has improved
- Teachers are encouraging each other to work together
- Teachers are able to observe each other
- Teachers are able to share the challenges that they face individually
- Teachers are able to find solutions to their challenges so as to improve the teaching and learning in classrooms
- Shared experiences from teachers, how they have successfully applied ZEST approaches.
- Group planning of the lesson has helped to have more knowledge on the teaching approaches from teachers
- Since the collaborating planning teachers have been able to consult each other
- Teachers have become open to one another and ask for help from the colleagues when they are behind in teaching.
- Teachers are able to ask their fellow teachers without fear.

More varied teaching including use of different resources
- Teachers are able to plan on time and have acquired knowledge on how to use different approaches on different topics and lessons.
- Lessons are now more interesting
- Teachers teach with confidence now and are able to apply the approaches in a lesson
- Teacher planning has improved

Improved confidence and motivation among teachers
- Teachers are being motivated through the approaches, have gained skills and approaches are being used consciously.
- Teachers seemed reluctant in teaching but now every teacher’s goal is to see every learner improve in classroom
- Teachers are more aware of teaching techniques and have increased their confidence to use them all in lessons.
- Teachers are more committed and active
- A teacher is able to open up whenever they have a challenge

Improved relationships between teachers and learners
- Work overload has reduced to the side of the teachers as work is being shared with learners during teaching
- Teachers are enjoying the teaching because work is being shared with learners in class
- Teachers are easily able to assess and get feedback from learners
- Teachers are able to interact with their learners and help them in the areas where they are not doing well.
- Teachers are able to have one on one contact with learners

More instances of learner participation and involving all learners in lessons
- The teachers are more focused on the learners so that they understand and participate during lessons.
- Response from learners is overwhelming.
• Teachers are now involving all the learners in the lessons and are now able to give feedback on time.
• Absenteeism has improved in learners
• Teachers are now able to involve all learners in teaching such the use of questions and answers techniques

**Impact on learners’ performance, particularly literacy**

• Methodologies employed have made it possible for learners to improve on reading
• Improved results
• Learners are able to read starting from grade 1
• Learners have improvement in their performance
• Learners have become more friendly
• Learners are now able to express themselves because of the frequent use of group work and pair work.

**Changes in Learners (Q15.1a and 15.2)**

55 respondents indicated they had seen changes, while one school who had started in ZEST in March 2021 (Cohort 4- Scale up) indicated they had not. In their opinion ‘Learners are still learning, since learning is an ongoing process, thus it is difficult to tell if there have been any changes in learners’.

The changes identified in learners includes aspects related to

**Learner participation in learning**

• Learners are actively engaged and ZEST has brought about positive change among learners and there is improvement in performance academically
• Learners have developed the confidence to participate and contribute during classroom activities.
• Learners are able to participate freely in class unlike in the past
• Learners are able participate with confidence
• Learners are able to make and use local resources
• Learners engagement in resource mobilization
• Learners are able to share knowledge and learn from fellow learners as a result of group work.
• Learners are now able to participate and contribute in class during lessons especially during group discussions.
• Before few learners could participate in a lesson but this time all learners are participating due to learner centred approach

**Increased interest and motivation towards learning**

• Learning has become interesting to learners.
• Excitement from the learners.
• Attitude towards learning has improved, learners have developed interest in learning
• Positive attitudes towards learning and performance has improved.
• Because of involving all learners, all learners are motivated to study more
• Pair work has made learners to start working in pairs even when the teacher is not around
• Learners are able to understand topics better because of the use of local resources. Learners are more creative.
• The learners are excited when they are learning and using these approaches
- Learners provide support with local materials.
- Due to the use of different approaches learners are not bored
- Learners have become more responsible and there are improvements in performance

**Impact on reserved or shy learners**
- Reserved learners can now express themselves
- Shy learners are able to participate
- Group work has helped even shy learners to interact and engage in lessons.

**Reduced absenteeism**
- Learners have stopped staying away from school because of the games introduced.
- Improvement in learners attendance

**Improved performance, particularly in literacy**
- There has been an increase in the number of Learners making breakthrough to literacy
- The literacy levels are improving. The learners are pushing themselves to read and write.
- The learners performance has improved and they are learning to collaborate.
- Reading and writing skills have improved as result of consultation from each other
- Learners are doing well in monthly assessments
- Pass rate of the learners has improved
- Last year December 2021 the evaluation indicated the literacy levels to be 33% and this has increased to 51% by June 2022. (MB12; Mukanda PS; Extension cohort)

**Improved interaction between learners or with teachers**
- Learners express themselves well to teachers and are able to ask questions where they do not understand.
- There is improvement in interactions of learners with teachers when teaching
- Learners are able to open up, to speak to the teachers
- Questions has made the learners to be sharing with their views
- Improved interaction among Learners
- Learners help each other to read
- Group and pairing has enabled learners to improve in that they share ideas.