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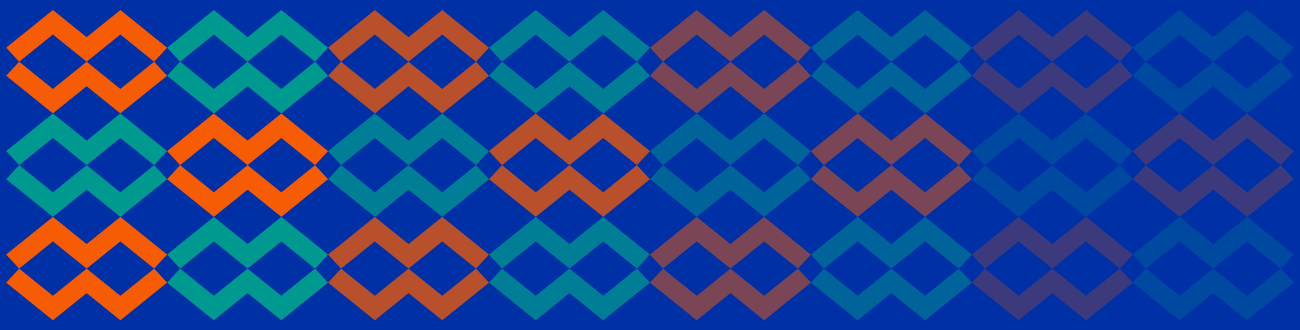
REPORT

Teacher-Centered Interventions to Improve the Quality of Catch Up Implementation in Zambia



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Contents

Executive summary

Though primary school enrolment rates in Zambia have increased in recent years, research shows that learners are not gaining the foundational literacy anad numeracy skills required to thrive[1]. In response, the Ministry of Education in Zambia approved a differentiated learning program for public schools. The program is called Catch Up and is based on the Teaching at the Right Level methodology[2].

From September 2022 to December 2024, Busara, Teaching at the Right Level Africa, and VVOB researched Catch Up implementation, focusing on designing and testing solutions to improve how teachers implement Catch Up. Specifically, we tested whether giving teachers feedback on their work would improve their performance, level of effort, self-efficacy, reflection, and course-correction.

We found that receiving on-demand feedback leads teachers to reflect on their performance and correct mistakes. This tells us that, in the Zambian context, on-demand feedback is a viable tool to improve how teachers facilitate Catch Up lessons. We also identified several positive and statistically significant correlations that highlight potential areas for improving Catch Up delivery. Notably, greater knowledge of the Catch Up program is associated with increased attention and stronger performance. Additionally, the use of teaching manuals shows a positive correlation with performance.

Taken together, these findings point to several intervention areas to support teachers in delivering quality Catch Up lessons:

- The program should offer more opportunities for teachers to receive feedback, potentially by integrating it into existing resources like teacher mentors or WhatsApp groups.
- All teachers should have an appropriate level of knowledge about Catch Up. One promising strategy for building this knowledge is the "TaRL for teachers" approach, which tailors training to each teacher's existing understanding rather than using a one-size-fits-all model.
- Teachers should receive "nudges" (e.g., reminders, commitment devices) to encourage them to use teaching manuals consistently.

To implement these recommendations successfully, larger systems-level changes may be needed. Currently, the Catch Up program is decentralized, meaning provinces can implement the program however they see fit. As a result, there is significant variation in how the program is implemented across provinces, including the resources and support that teachers receive. We recommend that stakeholders explore centralizing key functions to ensure all teachers – no matter their location – have the resources, ability, and motivation to deliver quality Catch Up lessons.

1 A study by World Vision reported that, in 2018, 58% of grade 2 learners couldn't read a single word, and by 2021, only 23% of grade 3 learners could comprehend what they read.
2 For information about the TaRL method, refer to https://teachingattherightlevel.org/classroom-methodology/

The Catch Up context

The TaRL method can address the learning crisis in Zambia.

Although primary school enrollment rates are increasing worldwide, many children do not acquire foundational literacy and numeracy (FLN) in the first few years of schooling. Children who do not learn basic FLN in the early grades often never have a chance to catch up to their peers, which can have long-term effects on their career prospects, poverty levels, and overall well-being.

In response to this learning crisis, the Zambian Ministry of Education (MoE) adopted Pratham's[3] Teaching at the Right Level (TaRL), an approach focused on foundational learning for children in primary school. Outside of regular classroom hours, teachers deliver differentiated instruction to learners based on their learning levels.

99%

of children in Zambia are not proficient in reading at a late primary age[4],[5].

Image Credit: Vaishnavi Nair using Midjourney

1 Teachers assess learners in grades 3 to 5 to identify existing FLN levels.

2 Teachers arrange learners into groups based on their learning level rather than their age or grade.

3 Teachers then administer lesson plans tailored to each group's learning level using specific tools and techniques from the TaRL approach, which include interactive, fun, and educational activities for the children.

3 Founded in 1995, Pratham is one of India's largest NGOs focused on improving education. Starting in Mumbai's slums, it now reaches millions nationwide through cost-effective programs and government partnerships. Pratham's "Teaching at the Right Level" (TaRL) approach has demonstrated success in boosting learning and is being adapted internationally

4 Adjusted for out-of-school children.

5 The World Bank (2022) Zambia: Learning Poverty Brief

Why TaRL?

Experimental research tells us that TaRL causes a positive impact on FLN. J-PAL-affiliated researchers completed six randomized evaluations in India and found that the number of children who could read a paragraph or story doubled when teachers and key stakeholders applied TaRL methods[6]. The impact of TaRL is similar in Africa. Maruyama et al. (2021) evaluated the impact of TaRL in Madagascar. They found that for learners in grade 3, math learning improved by 0.56 standard deviations of test scores, and the number of children who could read a paragraph increased by 25 percentage points[7].

TaRL in Zambia is a widely implemented, multi-stakeholder program called Catch Up.

The MoE contextualized TaRL for Zambian learners and currently implements the method as a part of a program called Catch Up. As of April 2025, Catch Up is implemented across:

844,307 learners

5475 schools

93 districts

9 provinces

While teachers play a critical role in the success of Catch Up at the school level, several key stakeholder groups also determine how Catch Up is implemented in schools. For example, mentors visit schools and guide Catch Up teachers through planning and how to deliver Catch Up activities. Government facilitators (e.g., zonal officers) are also closely involved and are typically responsible for training mentors.

Catch Up is a decentralized program, giving zones and schools the flexibility to adapt implementation to their unique contexts and needs. Zonal officers oversee how the program is rolled out in their areas, including key decisions like the timing of trainings and the frequency of mentor visits to schools. At the school level, leaders and administrators determine when and where Catch Up lessons take place, provided they occur outside regular school hours as remedial sessions. Typically, these classes are scheduled between 12:00 p.m. and 2:00 p.m., after morning lessons and before afternoon classes begin.

6 Banerjee, A., Banerji, R., Berry, J., & Kannan, H. (2016). Mainstreaming an Effective Intervention: Evidence from Randomized Evaluations of 'Teaching at the Right Level' in India. DOI: 10.2139/ssrn.2846971

7 Igei, K., & Maruyama, T. (2022). Community-Wide Support for Primary learners to Improve Basic Reading and Math Learning: Empirical Evidence from Madagascar. http://dx.doi.org/10.2139/ssrn.4076787

We conducted mixed-methods research to design and test solutions to improve Catch Up delivery for teachers.

From September 2022 through to December 2024, we conducted research with teachers in Eastern, Southern, and Lusaka provinces in Zambia. Our methodology was based on behavioral science, experimental economics, and human-centred design.

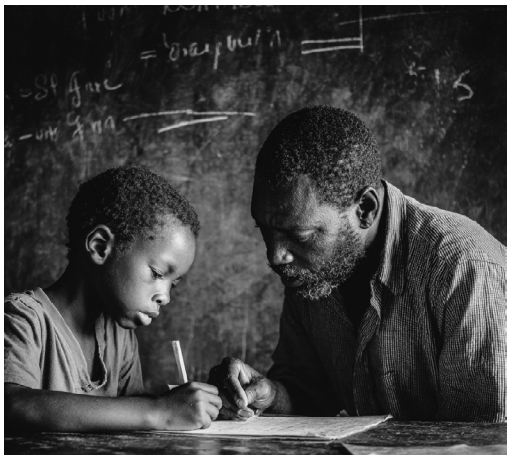

Image Credit: Vaishnavi Nair using Midjourney

September 2022

We established an advisory committee to provide expert guidance. It included Ministry of Education staff closely involved with Catch Up, as well as Zambian academics and researchers familiar with the program.

January 2023

February 2023

We conducted diagnostic mixed-methods research with Catch Up teachers to better understand their experiences. This began with 30 in-depth interviews with teachers from urban, rural, and peri-urban schools to explore the barriers and enablers they encounter when delivering Catch Up lessons. We then conducted 2,000 phone surveys to identify the most prevalent enablers and barriers.

September 2023

October 2023

We facilitated two co-design workshops with Catch Up teachers and stakeholders from the MoE, VVOB, and TaRL Africa to co-design solutions to the identified barriers. We used feedback from these workshops to form hypotheses about how the proposed solutions can have a positive impact on teachers.

January 2024

February 2024

We developed the co-designed solutions into prototypes and tested whether they overcame the barriers they were meant to address using lab-in-the field experiments.

December 2024

Hypothesis

Giving teachers detailed feedback will improve their performance, increase their effort and self-efficacy, and encourage them to revisit and correct answers to previous tasks.

Teachers facilitate Catch Up lessons daily for one hour, evaluating learners throughout the year and submitting assessment data to mentors. However, they lack objective information about their performance and do not receive any official recognition, leading them to doubt their teaching skills. This absence of feedback and affirmation diminishes their motivation to teach Catch Up and undermines their self-efficacy, resulting in less effort in planning, facilitation, and course correction.

Image Credit: Vaishnavi Nair using Midjourney

Lab games to test behavioral drivers

We ran lab-in-field experiments to test the potential impact of giving teachers feedback.

We used lab-in-the-field experiments to test our hypothesis. Rather than implementing the solutions in the field, we invited teachers to a central testing location where they completed a series of games. The goal was to put participants in situations where they had to perform a task and make decisions. We designed the games to closely reflect a real-world classroom setting, incorporating key elements of Catch Up.

We randomly sorted participants into different groups. Then, we presented each group with a different solution and had them play the games. This setup gave us a controlled environment to directly observe participants' behaviors and decision-making patterns in response to our solutions. As a result, we were able to draw rigorous, causal conclusions about how each solution influenced their choices and actions.

Source: Busara - Our lab-in-field setup with teachers in Zambia

To test the effect of feedback, we designed a digital grouping game[8]. We presented teachers with a hypothetical student, gave them information about the student's numeracy and literacy, and asked them to sort the student into an appropriate learning group. We asked them to do this 90 times, but they could exit the game at any time. They also had the option to go back and redo a grouping at the end of the game if they got it incorrect. Whenever they were finished with the rounds, we asked them to complete a survey with questions to gauge their level of self-efficacy.

To make the scenarios more realistic, we incorporated classroom resources that teachers actually use, such as teaching manuals, directly into the game. We also included "attention check" rounds to assess whether teachers were mindfully completing the task[9].

0 Beginner Numeracy
Cannot do multiplication and division

1 Level of Numeracy
Cannot do multiplication and division

2 Level of Numeracy
Cannot do addition and subtraction

3 Level of Numeracy
Cannot do addition and subtraction

Image Credit: Vaishnavi Nair using Midjourney

Enock can recognize 5, 7, 78, 8 and 2, but not 90 and 43 and can subtract 72-12 but not 54-23

4 Level of Numeracy
Cannot do addition and subtraction

4 Level of Numeracy
Can do multiplication but not division

5 Level of Numeracy
Cannot do addition and subtraction

8 We design lab games on oTree, a Python-based, fully customizable platform for economic experiments.
9 In attention check rounds, teachers saw direct instructions about where to group learners (rather than the learner;s ability). For instance, in place of the information about Enock's ability in the figure above, they say the following text, "Enock is at beginner level numeracy and cannot do multiplication and division."

During the game, we varied the information provided to participants based on the group they were randomly assigned to:

Control Group
Received no feedback on their performance

Treatment 1
Received public recognition and feedback through WhatsApp messages from a zonal MoE official

Treatment 2
Received private, on-demand feedback whenever they wanted by clicking on a dedicated icon

---

Across the three groups, we compared the following outcome variables:

- Number of rounds participants completed
- Levels of self-efficacy
- Number of rounds they got correct
- If they went back to fix the answers they got incorrect, which was meant to gauge their levels of reflection and course correction

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We included several control variables in our analysis to ensure that any differences between groups were driven by the treatments rather than other factors. This approach also allowed us to explore correlations between the control variables and our key outcome measures.

Below are two examples of control variables we included:

Knowledge
Before they started the game, all teachers completed a short Catch Up knowledge test, which assessed their knowledge of Catch Up grouping.

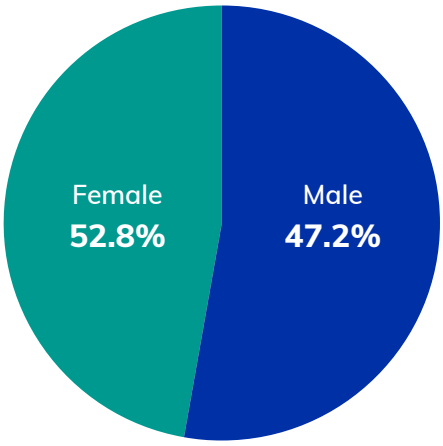
Accessing Manuals
We calculated the number of times teachers clicked on the teaching manual icons during the game.

Our sample included 398 teachers, evenly distributed by gender and across the three provinces.

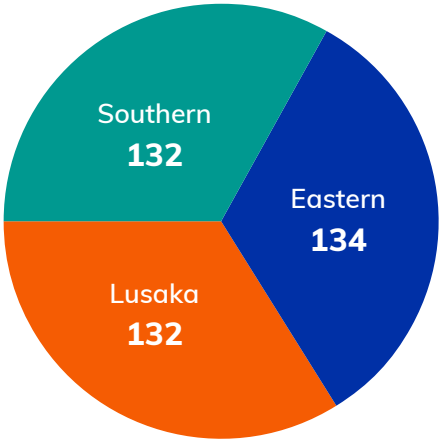
We randomly selected schools across the Eastern, Southern, and Lusaka provinces. Then, we randomly selected one teacher from each school, regardless of the Catch Up level or subject they taught. In total, we recruited 398 teachers for this experiment[10].

For each treatment or control group, we allocated 44 teachers per group within each province. Specifically, in each province, 44 teachers were assigned to the control group, 44 to Treatment 1, and 44 to Treatment 2. This balanced design allowed us to examine treatment effects along gender and provincial dimensions with minimal clustering bias[11].

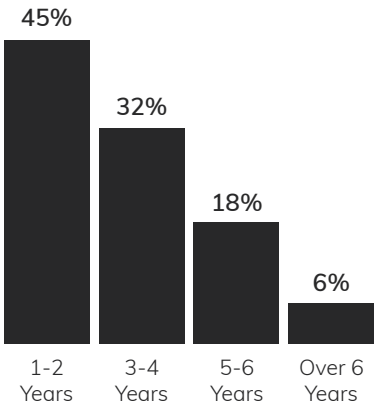
Distribution by participant's gender[12]



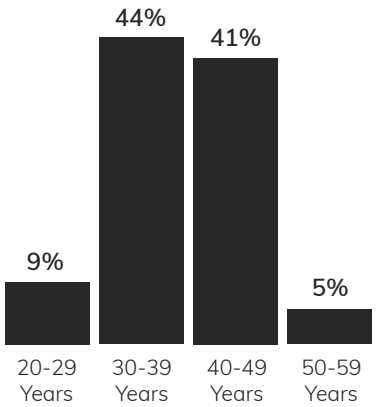
Participant distribution by province



Years of experience in percentage



Age distribution in percentage



10 Our sample was powered at 80% with an effect size of 0.5, making it sufficient to detect moderate to large effects with confidence. This effect size was chosen because, in controlled lab settings, impact is often amplified due to reduced external 'noise,' allowing for clearer observation of treatment effects.

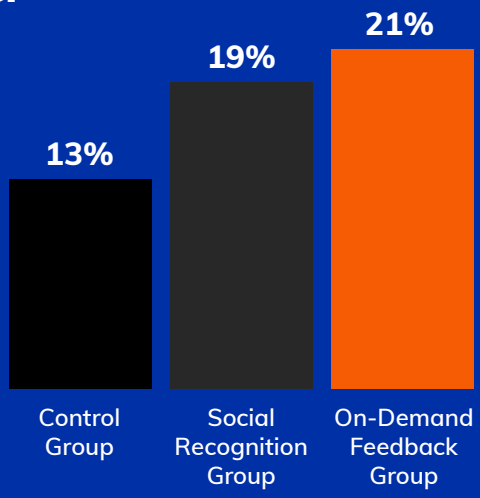
11 Clustering bias occurs when data from similar groups or clusters is treated as independent, leading to unrepresentative or skewed results.

12 Effect Size (d)= 0.6; Alpha Level= 0.05' Total Sample Size (N)= 398, Achieved power= 0.796

Key findings

Receiving on-demand feedback causes teachers to reflect on their actions and replay the game.

Percentages of teachers who corrected their answers by group



Being in the on-demand feedback group caused teachers to replay the game[13]. This suggests that when teachers received detailed feedback on demand, they were more likely to reflect on their performance and replay the game to correct their answers.

In practice, teachers are often stretched thin, especially in resource-constrained settings where schools are under-resourced and understaffed. They must juggle the challenge of grouping many learners alongside a wide range of other teaching responsibilities. As a result, it's understandable that some may focus on simply getting tasks done, with limited time to reflect on how well those tasks are being carried out.

This finding shows that detailed feedback helps teachers think more carefully and intentionally about grouping students. It leads teachers to backtrack and reevaluate learner groups if necessary, potentially leading to more accurate groupings.

13 Social Recognition (p=0.1); On-demand feedback (p=0.07)

Teachers with more knowledge about Catch Up had higher overall game scores.

Teachers' knowledge about Catch Up was positively correlated with attention scores and overall game scores (i.e., the percentage of learners teachers grouped correctly). We found that with every one-unit increase in knowledge score, there was:

A 0.4-point increase in attention score[14]
A 4.4-point increase in overall game score[15]

Catch Up knowledge varied among the teachers in our sample, as did the presence of formal teaching qualifications. Earlier phases of this research also revealed a positive and significant correlation between formal qualifications and Catch Up knowledge. These findings underscore the importance of directing capacity-building efforts toward teachers with less knowledge and experience.

Image Credit: Vaishnavi Nair using Midjourney

The number of times teachers accessed teaching manuals was positively correlated with game scores[16]

The table (left) indicates that, regardless of whether and which type of feedback teachers received, referring to teaching manuals was correlated with higher scores.

As mentioned above, teachers in resource-constrained settings have competing responsibilities and limited time to complete them. Though teaching manuals are available to all teachers (either physically in the school or digitally on WhatsApp), teachers may not always refer to them when completing Catch Up tasks. This is a missed opportunity to improve task quality, given that manuals are already available and all Catch Up teachers have been trained on their use.

	Average number of times teachers assessed teaching manuals	Average score
Control group	**8.4**	**42.5**
On-demand feedback group	**7.7**	**41.8**
Social recognition group	**6.3**	**39.3**

14 Knowledge score ($p < 0.001$)
15 Knowledge score ($p < 0.001$)
16 Accessing manuals ($p < 0.001$)

Recommendations

The Catch Up program should incorporate more ways to give teachers feedback.

Our findings highlight the potential of feedback to improve Catch Up delivery among teachers. To ensure feedback is both cost-effective and scalable, we recommend using resources already available to teachers.

For example, the existing teacher-mentor relationship offers a ready avenue for delivering on-demand feedback, as it is already built into the Catch Up system. To support this, in-school mentors would need the tools to collect and interpret feedback based on teacher requests and training to deliver that feedback thoughtfully and constructively. Mentor training can provide both of these requirements.

Digital tools such as WhatsApp and chatbots offer additional ways to deliver feedback to teachers. In Zambia, existing WhatsApp groups already engage teachers through activities like Mastery Challenges[17], which could be formalized to track performance and provide targeted feedback. Chatbots provide another option by enabling teachers to ask questions and receive immediate, personalized support as challenges arise.

17 Mastery Challenges are activities designed to reinforce Catch Up pedagogy. TaRL experts created these challenges to align with the Zambian context. Teachers receive recognition on WhatsApp groups when they successfully complete a challenge.

Teachers need the right amount of knowledge to deliver quality Catch Up lessons.

We found that knowledge is positively and significantly correlated with attention and performance. These insights suggest that ensuring teachers have a strong understanding of Catch Up may help improve how they deliver the program.

Differentiated instruction can play a key role in improving teacher knowledge by tailoring training to meet varying skill and knowledge levels. Teachers could be assessed and grouped accordingly, just as they do with learners, to receive targeted support. Technical experts can develop training packages for both initial and ongoing support, delivered through mentors, classroom sessions, or digital formats such as USB drives or downloadable content.

"Nudges" can be built into the existing Catch Up system to encourage teachers to use manuals.

Our findings suggest that using teaching manuals can help improve Catch Up delivery. However, teachers, especially those in low-resource settings, often face competing priorities and limited time, which can make it difficult to consistently use these resources. To address this challenge, tools informed by behavioral science can encourage greater uptake. For example, public commitment devices, where teachers pledge to meet specific quality standards, may increase the frequency and consistency with which they use teaching manuals.

Image Credit: Vaishnavi Nair using Midjourney

Implications

Stakeholders should explore centralizing key functions while ensuring teachers are at the center of program changes.

Implementing these recommendations requires us to look at Catch Up through a longer-term, systems-level lens and critically examine how the program is implemented.

Catch Up is decentralized by design and can look markedly different across provinces. While this allows the MoE to tailor the program to local needs, it also results in unequal access to support and teaching tools. For example, teachers' access to feedback depends heavily on individual mentor relationships or informal tools like WhatsApp groups, which are not standardized or formally integrated into the program. Access to formal training also varies, leaving some teachers better supported than others.

We recommend that the MoE explore a balanced approach, maintaining localization while centralizing key functions so that all teachers receive consistent support. For example, the MoE could require all teachers to receive feedback from a school-level mentor. However, decisions about what the feedback includes, how it is delivered, and how mentors are trained can be made locally so the approach fits the specific needs and context of each area.

Achieving this balance will require input and commitment from key stakeholders — including the government, TaRL Africa, VVOB, school leaders, and teachers — to ensure the program aligns with on-the-ground realities, meets teachers' needs, and remains practical to implement. Sustained and flexible funding will also be essential to support these efforts and enable the program to adapt over time.

We recognize that implementing these changes will be challenging and require substantial time and resources. However, since the success of the program hinges on teachers, a more standardized system is needed to equip all teachers with the tools, skills, and motivation to deliver effective Catch Up lessons.

Just as TaRL is committed to ensuring no student is left behind in acquiring FLN, the same commitment must extend to teachers. Every teacher should be empowered and supported to lead Catch Up lessons confidently and effectively.

For this reason, teachers must be at the center of any changes or adaptations to the Catch Up program; their ability to succeed directly shapes students' ability to learn.

Image Credit: Vaishnavi Nair using Midjourney

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The findings and conclusions contained within are those of the authors and do not necessarily reflect the positions or policies of the Gates Foundation.