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Video recordings of classroom observations: Using the Teach tool in Rwandan secondary schools

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This work was carried out with funding from the Mastercard Foundation as part of the Leaders in Teaching initiative. Leaders in Teaching responds to the opportunities that a quality secondary education represents for the African continent. It supports teachers throughout their careers and prepares them to deliver high-quality, relevant education.

The REAL Centre and Laterite are learning partners for the Leaders in Teaching initiative, responsible for generating evidence on improved teacher performance and student learning. The *Teach* tool was adapted with the Leaders in Teaching program in mind.

The researchers who coded video observations on this project were Emma Carter, Maria Tsapali, Gabby Arenge and Gill Francis from the REAL Centre and Fabiola Niwenshuti, Collins Kweyamba and Ezron Mucyo from Laterite.

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About the REAL Centre and Laterite
The REAL Centre at the University of Cambridge pioneers research into overcoming barriers to education, such as poverty, gender, ethnicity, language and disability, and promotes education as an engine for inclusive growth and sustainable development.

Laterite is a data, research and advisory firm dedicated to bringing high-quality research services to the most underserved markets. Based in East Africa, the firm strives to carry out impactful research that helps decision-makers find solutions to complex development problems.

All errors in this report are the responsibility of the authors.

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Introduction

Quality teaching is important for improving student outcomes in both primary and secondary education. In low- and lower-middle-income country contexts, understanding what happens in the classroom has been a *blind spot* to date, making it difficult to assess teaching quality.

The World Bank's *Teach* tool offers a new way to assess teaching practices in the classroom through a comprehensive framework for coding in-person or video-recorded classroom observations. Designed for primary education in low- and lower-middle-income countries, the tool has not been applied within secondary school contexts to date.

As learning partners for the Mastercard Foundation's Leaders in Teaching (LIT) initiative in Rwanda, the Research for Equitable Access and Learning (REAL) Centre at the University of Cambridge and Laterite are responsible for developing evidence on how the initiative is improving teaching quality. Through a variety of interventions, LIT supports teachers throughout their careers and prepares them to deliver high-quality education, with a focus on STEM subjects in secondary education in Rwanda. These interventions are carried-out by implementing partners including the African Institute for Mathematical Sciences (AIMS), UNICEF, VVOB, University of Rwanda-College of Education, Inspire Education and Empower (IEE) Rwanda, and Carnegie Mellon University-Africa.

To track changes in teaching quality throughout the LIT initiative, the REAL Centre and Laterite have adapted the *Teach* tool for the LIT and secondary context in Rwanda. The adapted tool, which has been applied to video recordings of classroom observations, was piloted in Senior 3 mathematics classes in three schools in Rwanda in November 2019. It was later used to observe video recordings of lessons in 103 schools in the country in February 2020. This study is one of the first attempts to use the tool in secondary schools.

Based on this experience, this brief outlines the tool's potential to be used for classroom observations to assess teaching quality in secondary schools in low- and lower-middle-income countries.

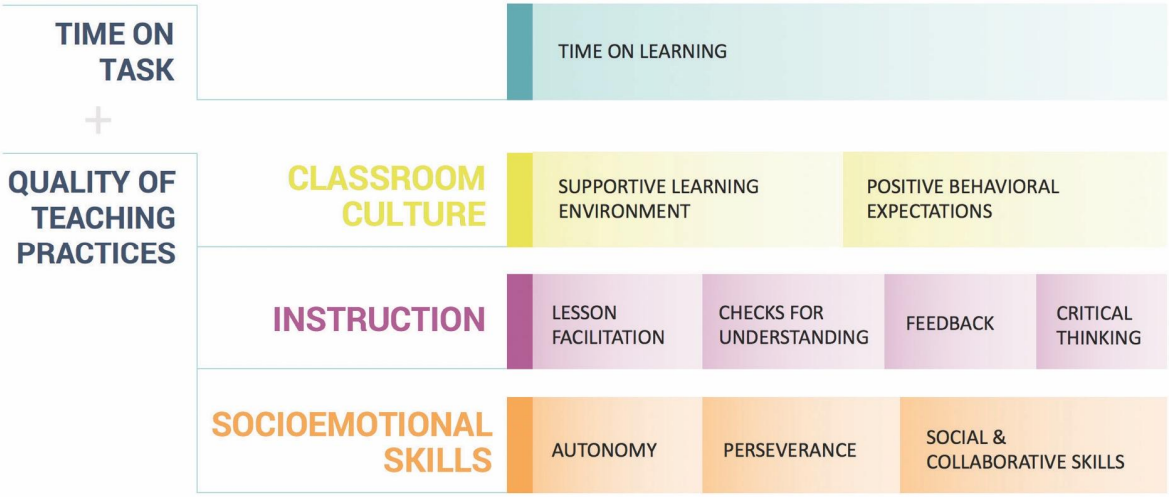
Key findings

- Adapting *Teach* to the local context is feasible, and helps capture context-relevant aspects of teaching that play an important role in assessing teaching quality.
- Applied by trained researchers, the adapted tool provides reliable insights on teaching quality specific to the Rwandan context.
- The time needed to train researchers to use and code the tool, particularly when working with an adapted version for the first time, is significant. This time does however pay dividends at the analysis stage.
- Researchers face trade-offs in using video for coding observations. Using video improves precision and allows for cross-checks, but coding is constrained by what the video lens picks up. For example, student-student dialogue and teacher feedback can be difficult to hear in video recordings. Researchers should carefully define which behaviours they are most interested in capturing when adapting the instrument and deciding whether video is the most suitable medium.
- It's important to protect student and teacher privacy, and ensure videos are only used for the intended purpose.
- High-quality video equipment (e.g., cameras and microphones) is needed to adequately capture what happens in the classroom, which may have cost implications.
- Building feedback loops so that the findings from the tool are shared with teachers, implementing partners of interventions, and policy-makers in a practical and constructive way could improve teaching and learning outcomes. This includes relating the tool to government education frameworks.

Why *Teach*?

Teach (World Bank, 2018) is a classroom observation tool developed by the World Bank. The tool assesses what happens in the classroom by considering both time spent on learning and the quality of teaching practices. Developed for primary education in low- and lower-middle-income country contexts, *Teach* can be used to observe and code classroom practices either in-person or using video recordings. The tool is based on a framework with four main areas, outlined below.

Figure 1: The Teach framework



Source: The World Bank.

Teach provides detailed examples of teaching practices that exemplify each behaviour, and a framework for rating, coding and assessing the behaviours observed.

We chose to work with *Teach* to study classroom observations in a secondary context in Rwanda because the tool:

- Was developed specifically for low- and lower-middle-income countries.
- Has a modular framework that enables a comprehensive assessment of teaching quality that can be adjusted to different cultural and educational contexts.
- Includes a component dedicated to measuring the impact of teaching practices on students' socioemotional skills.
- Has a unique combination of both low inference (e.g., frequency counts) and high-inference (e.g., ratings based on observation of types of activities) measures of teaching quality. This combination enables a nuanced analysis of classroom activities that goes beyond only paying attention to the amount of time spent on specific activities or frequency of certain activities that many classroom observations focus on.
- Is supported by evidence that teachers who display effective practices, as measured by *Teach*, are associated with students who achieve higher learning outcomes (Molina et al. 2020).

Using the *Teach* video coding tool

Adapting the tool to the context

The *Teach* tool was originally designed to be used in a primary education context in low- and lower-middle-income countries across subject areas including mathematics, science and language lessons. For this study, we used the tool to assess the effectiveness of a large-scale program to improve teaching quality in secondary education in Rwanda (Leaders in Teaching). We therefore made adjustments to the tool in collaboration with the World Bank so it better reflected the cultural, educational and programmatic context in the country. The adaptations focused on nuancing specific examples of teacher behaviour so that they made sense in the context of secondary STEM education in Rwanda. These adaptations were informed by focus group discussions we held with teachers in Rwanda to identify their priorities for assessing teaching quality. Examples of adaptations made to the tool are outlined in Table 1.

Table 1: Adaptations made to the *Teach* tool

Cultural adaptations	Educational adaptations	Program adaptations
• Including specific culturally relevant behaviours, e.g., making a gesture of a flower to show positive feedback to students, a common practice in Rwanda. This was used as an example of positive language.	• Nuancing behaviours to reflect a secondary context, e.g., changing all references of students using pencils in the classroom to pens, as students no longer use pencils in the secondary context.	• Focusing examples on STEM subjects at the secondary level, e.g., examples refer to more advanced work in mathematics subjects such as statistics and probability, rather than basic addition and subtraction.

What we learned

- Adapting *Teach* to the local context is feasible, and helps capture context-relevant aspects of teaching that play an important role in assessing teaching quality.

Training researchers to use the tool

Using the tool to code observations comes with a learning curve. Seven researchers from the REAL Centre and Laterite completed four days of training on the original video version of the *Teach* tool in the primary context, using materials from the World Bank and with guidance and support from World Bank colleagues. The training materials included video observations of classroom practices in other countries to practice coding the behaviours as well as a detailed manual that helped inform coding. After familiarising themselves with the adapted version of the instrument, researchers used video recordings of classroom sessions in Rwanda captured during the pilot to practice using the modified tool.

The final step was testing. Each researcher independently coded the same 10 (2 x 15-minute) segments of video-recorded classroom observations and compared the results

to assess if they were adopting a consistent approach to the coding process and if the instrument itself was sufficiently clear for this purpose.

The researchers found that the intensive training process increased the reliability and understanding of the instrument, with both teams delivering consistent results. However, the training process was time-consuming. This is because, in order to be coded reliably, the high-inference questions require a detailed understanding of the practice being observed. For instance, teacher clarity, captured through the indictor 'The teacher's explanation of content is clear' could be interpreted in many ways including clear vocal articulation and content accuracy. In the context of *Teach*, however, teacher clarity explicitly 'does not assess the accuracy of content, but how the content is delivered' (World Bank, 2018, p. 38). In our case, it took significantly longer to complete the training than it did to code the observations due to this complexity. This suggests there is an up-front time commitment that pays dividends at the analysis stage.

In other words, while the training of *Teach* is intensive, particularly in respect to its high-inference indictors, the instrument does enable a nuanced picture of teaching quality to emerge. It should be further noted that this training was especially rigorous because it was the first time the adapted tool was used.

What we learned

- Applied by trained researchers, the adapted tool provides reliable insights on teaching quality specific to the Rwandan context.
- The time needed to train researchers to use and code the tool, particularly when working with an adapted version for the first time, is significant. This time does however pay dividends at the analysis stage.

The benefits and challenges of using video

The *Teach* tool provides a framework for coding classroom observations that can be used in two ways: via in-person observation and coding, or using video recordings to code observations after lessons have taken place. Our study focused on using the *Teach* tool to code and assess video recordings of classroom observations. Video recordings brought benefits and challenges:

- **Coding video recordings removes the burden of capturing everything on the spot**. This allows enumerators to focus on recording important contextual information that is not captured on video but could affect coding, such as the classroom layout or if the teacher went on a break during the lesson. Video recordings mean that researchers have more time to code observations carefully and ensure that important aspects of teaching practice are not missed.
- **The coding process is reliable if researchers are appropriately trained to use the tool.** With multiple coders scoring the same classroom segments to establish reliability – something that is not feasible for in-person classroom observations – we saw that trained researchers coded consistent results. This suggests that with training, applying the tool to video recordings is a viable way to measure teaching quality, enabling comparison of different schools and even countries.

- **Certain aspects of classroom activity are difficult to capture on video.** Sound quality was variable, and background noise such as heavy rain sometimes made it difficult to hear the teacher. Feedback given to students during group work, an important part of the competence-based curriculum for teachers and students in Rwanda, was difficult to code because the recording equipment did not pick up what the teacher was saying to students as they worked in small groups. Additionally, it was often difficult to see content and visual information on the board. This affected the coding of some behaviours relating to the area 'Instruction' (see Figure 1).
- **Capturing issues of equity on video is problematic**. It was difficult to assess issues of equity in classroom teaching practices, because the position of the camera sometimes made it difficult to identify whether students were girls or boys, or if they had a disability. It is possible that this could be addressed if enumerators can sketch out the layout of the whole class in terms of where students are seated, and who is outside of the camera's scope.
- **Teachers and students need strong assurance of data privacy and security.** Teachers who give consent to participate should be confident that the recordings will be kept secure and used only for the stated purpose. Students and their parents/caregivers should also be clearly informed of this and provide their consent. Teachers, students and/or parents/caregivers should also be given the opportunity to opt-out of the observation before or on the day of the observation.

These findings suggest that researchers face trade-offs in using video for coding observations. While video captures whole class aspects of classroom teaching well, it cannot capture every possible aspect of what happens in the classroom. It is important to have a clear understanding of which behaviours or activities are most important to capture via the tool depending on the focus of the research, and factor these into the research design as well as adaptation of the instrument. In some cases – for example, if group work is the main focus of the observation – an in-person approach might be more appropriate than a video recording. Table 2 outlines the key changes we propose could be made to improve the tool.

Table 2: Summary of proposed improvements to the tool

Issue	Proposed improvement
Issues relating to the use of video	
Difficult to assess issues of equity in classroom teaching practices	• Enumerators to sketch the classroom after first 15-minute segment of video recording in relation to the position of boys and girls (in mixed-gender classes). This sketch should also clearly identify boys and girls that are outside the camera's scope.
Difficult to see content and visual information on board[1]	• Consider new ways of capturing video that cover more aspects of the classroom, e.g., bringing in additional lighting; choosing an appropriate angle that enables both board work and group work to be captured. • Define key aspects of classroom activity to be recorded in advance, and plan the recording approach accordingly.
Difficult to capture teacher feedback and dialogue during group work	• Consider the possibility of using an additional microphone/camera to capture student-teacher and student-student interactions during group work.
Issues relating to adapting the tool	
Some context-relevant items not captured by the tool	• Expand the 'Lesson Facilitation' element by incorporating a lesson sequencing behaviour that addresses scaffolding and lesson organisation. For example, scaffolding, whereby learning is broken into chunks to help students independently master a skill, was regularly observed in secondary lessons but not adequately captured by the tool. • Include examples of more culturally relevant behaviours that indicate quality teaching. For example, Rwandan teachers sometimes use code switching between Kinyarwanda and English to help clarify concepts. This example could improve the current teacher clarity indicator and its relevance to secondary classrooms in the Global South.
Certain behaviours may not be relevant in some secondary school subjects	• Consider adapting or removing certain behaviours from the tool that are not relevant in some secondary school subjects. For example, in Rwanda the teaching of socio-emotional skills are explicitly addressed through the curriculum in some subjects (e.g. Religion and Ethics) but not others (e.g STEM subjects). This means that some behaviours related to Teach's socio-emotional skills area may not be as readily picked up in certain subjects in some contexts even though they represent important evidence-based benchmarks of effective teaching practice.
Training materials from *Teach* tool not tailored to the local secondary context	• Make training more context-relevant by adding videos of classrooms within the local context to training materials, including context-specific behavioural examples.

What we learned

- Researchers should carefully define which behaviours they are most interested in capturing when adapting the instrument and deciding whether video is the most suitable medium.
- It's important to protect student and teacher privacy, and ensure videos are only used for the intended purpose.
- High-quality video equipment (e.g., cameras and microphones) is needed to adequately capture what happens in the classroom, which may have cost implications.

Next steps

Analysing the data

The REAL Centre and Laterite will use the data obtained via the video recordings of classroom observations to analyse whether the training programs offered through the LIT program improve teaching quality. The data will also be used to ascertain whether students of teachers who score higher on the video coding tool perform better. Additional rounds of data collection will include the classroom observation tool to enable us to see how classroom practices associated with the program change over time.

Connecting teachers, implementing partners and policy-makers with the evidence

Teach is designed to capture information that is of interest to teachers, implementing partners of interventions and policy-makers interested in improving education outcomes. The tool will therefore be the most useful if:

1. links are made with existing approaches and government frameworks for improving and assessing teaching quality where relevant, and
2. the results can inform policy-makers, implementing partners and teachers about progress towards enhancing the quality of teaching in an appropriate and accessible format.

Feedback to teachers should be generalised and anonymised, without identifying schools or teachers. It should be constructive, and focus on giving teachers practical examples of effective teaching practices. This information can help teachers make micro-adjustments to their teaching techniques that could have a big impact on learning outcomes. For example, highlighting that student mistakes and frustration are a normal part of the learning process can help improve pupils' perseverance, confidence, motivation and achievement.

Ideally, the tool should relate to government education frameworks as well as programming that aims to improve teaching quality so that the evidence can seamlessly inform teacher training and assessment frameworks. This evidence could also be used to assess relationships between teaching practices and student learning, informing

programming and policy decisions in education and contributing to the overarching goal of improving the quality of education.

The REAL Centre and Laterite are working on ways to build these feedback loops with teachers, implementing partners and policy-makers by:

- Exploring ways to provide generalised feedback to teachers who were involved in the data collection pilots.
- Seeking feedback from teachers and LIT implementing partners on the tool itself to help further contextualise and improve the instrument for future applications.
- Relating the tool to government education frameworks, for example, by presenting findings from observations in a manner that links with language used in government frameworks, making comparison straightforward.

What we learned

- Building feedback loops so that the findings from the tool are shared with teachers, implementing partners of interventions, and policy-makers in a practical and constructive way could improve teaching and learning outcomes. This includes relating the tool to government education frameworks.

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Endnotes

[1] The World Bank offers helpful guidelines for using videos that researchers should carefully review before undertaking data collection. See: http://wbgfiles.worldbank.org/documents/hdn/ed/saber/Teach/Source_Videos/Guide_for_Selecting_Recording_Videos.pdf.

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