

EDUCATION ANALYTICS SERVICE: TEACHER DEVELOPMENT MULTI-YEAR STUDIES

Using classroom observations to investigate
and understand teaching quality:
Initial lessons learned

Hilary Hollingsworth and Debbie Wong



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The Australian Council for Educational Research Ltd

19 Prospect Hill Road

Camberwell VIC 3124

Phone: (03) 9277 5555

ABN 19 004 398 145

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Executive Summary

This paper presents some initial lessons learned about the use of classroom observation data as a key form of evidence regarding improved teaching quality in a multi-year teacher development study series. This study series, commissioned by the Australian Government's Department of Foreign Affairs and Trade (DFAT), involves the investigation of teacher development initiatives that are primarily designed to support the implementation of new primary curriculum in Lao People's Democratic Republic (Laos), Timor-Leste and Vanuatu. The overall aim of the study series is to understand the extent to which the Australian investment has improved teaching quality and student learning.

This paper discusses the processes used to design, implement, analyse and report classroom observation data in the Laos study, and key lessons learned about these that could be applied to other contexts and programs. These key lessons are:

- **Design:** Designing a customised observation tool intricately linked the instrument to the research questions being investigated and enhanced contextual relevance. A fit-for-purpose design ensured the tool could realistically be implemented by field researchers with no classroom-based experience.
- **Implementation:** Opportunities to refine the classroom observation tool during training, piloting and actual field implementation maximised contextual relevance, accuracy and consistency of observation data.
- **Analysis and reporting:** Involvement of field researchers in data analysis processes enabled the collection of rich observation data beyond written records, and promoted researcher capacity building. Visual displays of the data allowed the study team to develop deep knowledge of the data and link different data components, and also facilitated communication of results.

While the processes undertaken in the design, implementation, analysis and reporting of the classroom observation data required additional resources and time for both the evaluation and field teams, it provided a deeper understanding of teaching practice linked to the new curriculum. As investigations continue in the next stage of research, it is anticipated that further insights regarding classroom observation methodology will emerge. In addition, future stages of the study series in Vanuatu and Timor-Leste will incorporate classroom observations, building on the protocols used in Laos and providing further opportunities to learn about the ways that classroom observations can contribute to investigating and understanding teaching quality.

Introduction

The inextricable link between teaching quality and student learning outcomes is widely acknowledged. As such, the improvement of teaching practice has become the focus of many education systems' policies and programs. However, a question of great interest to policymakers and practitioners alike is: how do we know whether such initiatives actually develop teaching quality, and in turn, improved student learning?

This paper presents some lessons learned about the use of classroom observation data as a key form of evidence regarding improved teaching quality in a multi-year teacher development study series. This study series, was commissioned by DFAT to investigate teacher development initiatives supported by the Australian Government in three countries: Laos, Timor-Leste and Vanuatu. Each country is introducing a new primary education curriculum in stages, hence the teacher development initiatives are primarily designed to support the implementation of the new curriculum as well as support teachers to adopt a range of new pedagogical approaches embedded in the new curriculum. The study series is using a mixed-methods data collection approach to investigate teaching practice and student learning in each location, including the use of in-depth case studies, student learning assessments, and where possible large-scale surveys.

As part of the in-depth case studies, classroom observation data is being collected to provide evidence of changes to teaching practice. Classroom observations enable examination of

targeted teaching practices to supplement the accounts of teaching that are reported by teachers and leaders in survey and interview responses. As reported by Cohen and Goldhaber (2016), any specific observation instrument “measures only a small portion of the broader construct of ‘teacher quality’” (p.380). In the case of the teacher development study series, the construct of teaching quality is distinguished by practices that are responsive to and sustaining of pedagogical approaches promoted in each country's new primary curriculum.

Teaching is complex, and designing and conducting classroom observations that capture some of this complexity is challenging (Bell, Dobbelaer, Klette & Visscher, 2018); perhaps nowhere more so than in developing country contexts. The intent of this paper is to share lessons learned related to the first set of classroom observations conducted in the teacher development study in Laos. Lessons related to the design, implementation, and analysis and reporting of the Laos classroom observation data provide insights anticipated to usefully inform other teacher development programs and contexts.

The paper is structured in five sections. Firstly, an overview of the Laos study is presented to provide relevant contextual details. Then, the processes used to design, implement, analyse and report classroom observation data are described, as well as lessons learned about these. Finally, key lessons learned in the Laos study which might be applied in other programs and contexts are presented.

Overview of the Laos study

The Laos teacher development study is a multi-year study of DFAT’s investment in teacher development through the Basic Education Quality and Access in Laos program (BEQUAL). The focus of BEQUAL is to support the Lao Ministry of Education and Sports’ (MoES) education reform through implementation of a new primary education curriculum.

Laos is an ethnically, culturally and linguistically diverse country. It has 50 official ethnic groups, with an estimated 84 languages spoken (Carson, 2018). The official language of instruction is Lao, however many children from rural and remote areas do not speak Lao and have very limited exposure to (any) print before starting school. The new primary Lao language curriculum is anticipated to provide much needed support for the teaching and learning of Lao language.

The study is framed within the context of the staged introduction of the new curriculum, and accompanying in-service teacher professional development support.

The overall aim of the study is to investigate the teacher professional development component to answer the question: to what extent does BEQUAL support improve teaching quality and student literacy in Laos? It seeks to answer this question by focusing on change in two key areas:

1. Teaching quality: To what extent and how does teaching quality change following the BEQUAL-supported in-service program?

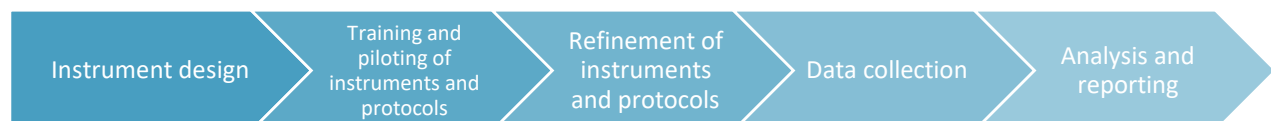
2. Student literacy outcomes: To what extent and how do students’ literacy outcomes change following the new curriculum implementation?

The study adopts a mixed methods approach utilising both quantitative and qualitative methods, and is longitudinal, designed to follow teachers and principals over the course of the study period as the new BEQUAL-supported curriculum is rolled out. Figure 1 displays the approach planned for each phase of the study.

The pre-intervention (baseline) component of the study took place in 2019, prior to any BEQUAL support for implementation of the new primary curriculum for the first group of Grade 1 (G1) targeted teachers. An overview of the data collection tools, sampling approach and the pre-intervention (baseline) data collection is displayed in Table 1.

The classroom observation component of the pre-intervention (baseline) study took place over a six-month period, and involved activities in the three stages displayed in Table 2: design, implementation, and analysis and reporting. A description of each of these stages and a discussion of key lessons learned follows.

Figure 1. Approach planned for each phase of the Laos study



Data collection tools	Sampling approach	2019 pre-intervention (baseline) data collection
Survey of G1 teachers and principals G1 Lao language literacy test	Randomly selected 362 schools across 32 BEQUAL target districts All principals All G1 teachers 50% of students in G1 classes	Surveyed 355 schools 348 principal questionnaires 347 G1 teacher questionnaires 2,269 G1 students tested
School case studies – stakeholder interviews, classroom observations	Purposively selected 12 schools across three BEQUAL target provinces	34 interviews with principals, G1 teachers and pedagogical advisers 30 classroom observations of G1 Lao language lessons

Table 1. Overview of the Laos study pre-intervention (baseline)

Design	Implementation	Analysis & Reporting
<ul style="list-style-type: none"> observation instrument (template, codebook) 	<ul style="list-style-type: none"> observer training field work 	<ul style="list-style-type: none"> analysis workshop preparation of data displays report writing

Table 2. Classroom observation component stages in the Laos pre-intervention (baseline) study

Design of the classroom observations

Design considerations

The purpose of the classroom observations is to gather evidence of teachers' teaching practice and student learning in Lao language lessons, across three data points: pre-intervention (baseline), two years post-intervention and three years post-intervention.

A customised observation tool was developed. It has an explicit focus on key teaching practices promoted in the new Lao language curriculum, including student-centred activity, formative assessment, and inclusiveness. These practices are regarded to be new to many Lao teachers, and require a shift from more traditional pedagogies (such as teacher presentation at the blackboard, rote learning, etc.).

An important consideration in the design of the tool was the need for local field researchers, who may or may not have teaching experience, to be able to make observations – *in situ* – consistently and reliably. This necessarily influenced the structure and format of the tool. Classroom observation research literature also suggests the number of observation foci observers can accurately attend to during lessons. The tool limits the number of items to 11 for the baseline. The imposing of this limit required careful identification of aspects of teaching practice considered key to the new curriculum reform that are observable, and the sharp focusing of observer's attention on these during lesson time.

The observation tool is organised into four main sections:

1. **Background information** – including details of the school, teacher, grade, and lesson time
2. **Pre-lesson tasks** – including details of the lesson number, lesson plan, and notes related to lesson preparation
3. **Lesson observation template** – including items to be directly observed during the lesson organised into three focus areas: student-centred activity, formative assessment, inclusiveness
4. **Post-lesson tasks** – including details of resources for Lao language teaching and learning, classroom set up, classroom environment, and additional notes to inform understanding of the lesson.

The observation tool is accompanied by a codebook that provides precise descriptions of the items that are to be observed during the lesson. The item descriptions include examples of the kinds of actions or activities that might be seen, relevant to each one. Researchers refer to this codebook to make decisions while coding.

Researchers use the *lesson observation template* to record their observations of the items across the duration of the lesson. The template partitions the lesson in 5-minute intervals and observers are instructed to indicate if a particular item is observed at any point in each of these, enabling presence/absence and frequency analyses. Figure 2 displays an extract from one researcher's lesson observation template related to interactions across the lesson, including whole class activity, pair or group activity, and individual activity. Observers also annotate notes to facilitate recall and enrich understanding of particular observations. This has proven to be a manageable system for field researchers to make observations of the items during lessons, as well as record additional needed information pre- and post-lesson.

Observations of two lessons were made for each teacher in the pre-intervention (baseline).

The observation instrument is accompanied by case study interviews administered with the observed classroom teachers, their school principal, and their school's pedagogical advisor.

These interviews provide the opportunity to collect rich and detailed information about the lesson observed, the teacher's practice, and the awareness and understanding of the curriculum reform.

Interaction	Lesson Minutes											
	5	10	15	20	25	30	35	40	45	50	55	60
Whole class activity	✓	✓	✓	✓	✓	✓						
Pair or group activity						✓	✓	✓				
Individual activity			✓					✓	✓	✓	✓	✓

Figure 2. Extract from a completed *lesson observation template*

Key lessons regarding design

Designing a customised tool aligned with the new curriculum

The focus of the teacher development study series is to investigate programs aimed at supporting teachers to improve teaching practice, and this requires a research approach that is focussed on *examining and understanding* teaching practice. The development of a customised observation instrument for the Laos study allowed a deeper analysis of teaching practice that was closely aligned to the new curriculum and related teaching resources.

While existing classroom observation instruments were considered, these were found to consist mostly of long lists of items structured to produce checklist-type counts, signalling whether specified teaching practices, activities, or resources are evident or not evident in a lesson, and only some of these items were considered to be relevant to the Laos curriculum reform context. The instruments reviewed appeared to be oriented towards monitoring teaching practice rather than examining and

understanding it. The use of any of these instruments would have placed limitations on the collection of observational data that would enable deep insights about teaching practice across the different stages of the study.

This is an important consideration, given that the focus of the Laos study, and the other studies in the teacher development series, is on teaching quality. By preparing a customised observation instrument it has been possible to target particular practices associated with the new Lao language curriculum, and link observation foci to interview questions, which elicited greater detail from teachers about their practice.

Ensuring a fit-for-purpose structure

When designing the observation tool for the Laos study, it was important to ensure that the tool could realistically be implemented by trained researchers, who may or may not have teaching experience, in the challenging Laos school context.

Review of available curriculum materials and consultation with in-country partners ensured key aspects of teaching practice from the curriculum reform were included, and the use of the 5-minute time interval partitioning of the lesson described earlier, together with the detailed documentation of the observation codebook, enabled observers to focus sharply on these areas.

The collection of 'extra' information regarded critical to understanding the teachers' practice was captured by providing specific tasks for

observers to complete prior to and following observed lessons, including the annotation of additional notes to inform understanding of the lesson (see earlier description of the observation tool - Section 2, Pre-lesson tasks and Section 4, Post-lesson tasks). .

This structure for the observation tool ensured that the implementation of the classroom observations was 'manageable for the local field researchers, and that rich and detailed observation data was collected.

Implementation of the classroom observations

The classroom observation implementation process consisted of two main activities: observer training and field work.

Training

The training of observers was conducted as part of a 4-day workshop for local lead researchers undertaking case study data collection. The observer training sessions involved the local researchers learning the intricate details of the observation coding system and developing understanding of expected protocols associated with arranging and conducting classroom observations.

Workshop sessions were focussed on:

- principles of classroom observation
- coding classroom observations, including details of the coding template and codebook
- practising coding using classroom video examples
- piloting the observation tool in schools
- refining the tool and protocols.

A case study manual provides all of the information that the local researchers need to arrange and conduct observations. Sections of this manual specific to implementing the classroom observations include: gaining teacher and principal consent, setting up the classroom observations (including setting up a space to sit with a table and record observations, being introduced to the class), conducting the observations (including minimising disruption, clarifying the observation time, completing the observation template, protocols regarding talking with teachers and students), and procedures to complete following each observation (including finalising notes on the observation template, scanning and submitting electronic records).

Field work

During field work, the local researchers worked in pairs of one lead and one supporting researcher. Each pair spent an estimated two days in each school to complete stakeholder interviews and two observations of Lao language lessons for each Grade 1 teacher. Given lead researchers had participated in the full training workshop, they were responsible for completing the majority of the observation tool. Supporting researchers were responsible for recording details related to use of resources and the classroom set-up. At the end of each day, the researchers would finalise their notes together.

As to be expected, queries emerged during the field work. Advice was sought from the study evaluation team and some refinements made to the observation approach. Each pair of researchers was also visited by a member of the study evaluation team during the field work period, providing the opportunity for monitoring and the timely provision of feedback on observation approaches and the quality of the notes.

Key lessons regarding implementation

Maximising relevance and accuracy

The opportunity to develop and refine the observation instrument and implementation process with in-country research partners, made it possible to produce and use an instrument that is both intricately linked to the research questions being investigated, and ensured the study design has strong contextual relevance.

During the observer training there were opportunities for local lead researchers to contribute to the refinement of the classroom

observation tool as they engaged in activities to understand and apply it.

As the researchers reviewed the observation template and codebook, and as they practised coding of lesson videos in the training sessions and live lessons in the school pilots, they identified points of confusion with a few of the code descriptions. They discussed these together with the study evaluation team, making suggestions for rewording some codes, and they also proposed ideas about how they might annotate notes in the lesson template to facilitate recall of information about their coding choices.

In a similar way, when the local researchers were in the field collecting the pre-intervention (baseline) data, they were able to submit any questions about the observation tool that emerged, and the study evaluation team provided responses to these and shared them with all of the researchers.

The researchers' nuanced local knowledge and experience, and their strong commitment to getting the observation tool functioning well, enabled the revised version of the observation tool to better reflect the Laos classroom context, and ensured a more accurate and consistent capture of observation data. The openness to refining codes – both during the observer training and the field work – proved to be an important feature of the implementation process.

Analysis and reporting of the classroom observations

The analysis and reporting process

The analysis of the case study and classroom observation data was designed to enable active involvement of local lead researchers. This process recognises the extensive and rich knowledge local researchers have based on their case study and classroom observation experience.

Firstly, the local lead researchers participated in a 2.5 day data analysis workshop to map interview and observation data against identified high-level themes. These high-level themes aligned with key research questions of the study. In this workshop, the local researchers identified core sub-themes, and additional themes, and presented on these. Through facilitated discussion, these sub-themes were then refined.

In addition, the lead researchers shared their overall impressions of a 'typical lesson' in their case study schools. This task provided particularly interesting high-level insights regarding the classroom lessons observed by the researchers (for example, the typical lessons documented had very similar overall structures, lesson components and activities, signalling a level of consistency in teaching practice across different regions of Laos).

The second phase of work involved the Laos study evaluation team conducting more detailed analysis of the interview transcripts. This involved collating evidence from interview data against the sub-themes identified in the data analysis workshop to look both within schools and across schools (and regions) for similarities and differences, and tabulating responses.

The study evaluation team then analysed the classroom observations. This involved reviewing the contextual information recorded by researchers, creating observation maps by theme

(interactions, pedagogy, gender, inclusivity), undertaking quantitative analysis of theme activities observed across the duration of lessons (recorded in the lesson observation templates), and reviewing the researchers' records of the classroom environment.

A primary objective for the pre-intervention (baseline) study was to create visual displays of the data in an attempt to communicate the rich detail generated through interviews and classroom observations. These visual displays included, for example tables with symbols representing presence and absence of an observed or reported event, and tables with colour mapping representing themes evident across locations.

Key lessons regarding analysis and reporting

Involving local researchers in the analysis process

The intricate involvement of the local researchers in the data analysis process proved to be effective in ensuring high-quality data and capacity building of local researchers.

During the workshop, the researchers were able to supplement their written records of lessons observed with detailed verbal descriptions. At several times during the workshop, comments that were made by the researchers prompted further reflection and discussion about what was observed, and this created an opportunity to gather more detailed contextual data than would have been possible if written records alone were analysed by the study evaluation team.

Another significant benefit of engaging local researchers in the analysis workshop was the opportunity it generated for researcher capacity

building. The local lead researchers reported that they highly valued the experience of participating in the analysis workshop because they learned a lot about analysing qualitative data. They noted that their involvement in previous studies had been limited to being the collectors of data only, and they greatly appreciated the opportunity to share the knowledge and experience they gained in the field, and learn different ways to organise and analyse the data they collected. They reported that they felt highly valued and respected as researchers, and they found this very motivating.

This experience also created a strong interest in continuing to be involved in the post-intervention study the following year. It is anticipated that the researchers' familiarity with the study, and their ongoing commitment to it, will benefit the study going forward.

Designing creative data displays to facilitate analysis and communication

Following the analysis workshop, the study evaluation team created a set of visual displays as they further examined and analysed the classroom observations and other case study data. The approach the evaluation team used was developmental in orientation; they 'played' with different display possibilities, seeking to find ways to focus attention on key data themes associated with the study research questions. They then retained displays that facilitated the communication of data insights, and discarded those that did not.

The final data displays included different kinds of tables (including some showing 'counts' of events/activities observed or reported, and some displaying key descriptive accounts), as well as lesson 'maps' displaying instances of events and activities across the time intervals of each lesson observed. Examples of two of the visual displays created are shown in Figures 3 and 4.

The visual displays served two functions. First, they facilitated the 'viewing' of the large amount of data that had been collected using the classroom observation tool. Through preparing each display, the study evaluation team were able to efficiently get-to-know the data, and to link different data components – for example, lesson observations and accompanying teacher interviews. Through producing the displays the team developed deep knowledge of the data, and this, in turn, enabled them to efficiently 'navigate the data' as they sought to understand it.

A second function that the displays served related to communicating the classroom observation findings. Some of the displays created clearly 'told the story' of the data and these were included in the study pre-intervention (baseline) report.

Teaching and learning activity types	Case study teacher														
	A#	B1	B2	C	D	E	F1	F2	G	H#	I#	J1	J2	K	L
Practising pronunciation (speaking, listening)	●	●	●			●○	○	○	○	○			●○		○
Reading text (teacher-led or individual student at board)	○	●	●		●○	●○ ●	●○	○	○	●○	●○	○	●○	○●	○
Writing (copying, dictation)	○●	○●	●	○	●○	●○	●○		●○ ●	●○	●○	●○	●○	○●	○

● = teacher reported ○ = observed in at least one lesson ● = principal reported # = G1 teacher is principal

Figure 3. Teaching and learning activities reported by case study respondents and observed in Lao language lessons

Teacher	Lesson Minutes												
	05	10	15	20	25	30	35	40	45	50	55	60	
B2	■			■	■		■	■	■	■		■	
G		■		■	■	■	■	■	■	■			

■ Instance in two lessons ■ Instance in one lesson

Figure 4. Examples of classroom observation maps from two teachers with the highest number of instances of ‘explicitly checking for student understanding’

Considerations for other programs and contexts

Applying lessons learned across the teacher development study series

The classroom observation tool prepared for the Laos study is to be used for classroom observations in the other countries in the current teacher development series, Timor-Leste and Vanuatu. These countries are also engaged in supporting teachers to adopt new primary curricula, and one of their teacher development foci is the introduction of new pedagogies with a focus also on student-centred learning.

The Laos observation tool will be adapted and customised for each country's context to respond to specific aspects of their curriculum reform (for example, particular terms and descriptions related to new pedagogies), and to take account of cultural nuances.

The study evaluation teams in Timor-Leste and Vanuatu are already drawing on key lessons learned in the Laos study related to designing their observation tool. They have drafted new tools for their contexts and are planning training programs for observers that include similar approaches where local researchers will be able to contribute their knowledge and experience to ensure codes are contextually relevant and can be applied with accuracy. In addition, as they begin to plan their own field work approaches and data analysis and reporting processes, they are taking account of lessons learned in the Laos study.

Possibilities for new contexts and programs

It is anticipated that the key lessons related to classroom observation reported in this paper will also usefully inform aspects of the design, implementation, and analysis and reporting of

observations in other contexts and in other teacher development programs.

One area that would be particularly interesting to explore is the intricate involvement of local researchers in the analysis process. In the Laos study, for example, the local lead researchers were particularly committed and engaged, and they very obviously both 'put in' great effort during the analysis workshop, and 'got back' much benefit from the experience. As mentioned earlier, this experience created a strong interest in researchers to participate in further stages of the study.

What are the important features of the analysis workshop that made this possible? What kinds of analytical tasks might enable researchers to contribute rich detailed data? How important is it for researchers to feel that their knowledge and experience is both valued and utilised? Studies in other contexts and other programs that involve local researchers in similar analysis workshops could explore some of these questions and enrich understandings of the efficacy of this approach.

Another area that could be explored in different contexts and programs is the design of creative visual data displays. The study evaluation team explored some possibilities for displaying data in the Laos pre-intervention (baseline) study that they found very useful.

What other kinds of displays might support the analysis of classroom observation data and enable researchers to examine insights? Researchers in other contexts and programs open to exploring and 'playing' with data displays could develop and share further possibilities.

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About the authors

Hilary Hollingsworth is a Principal Research Fellow in the Educational Monitoring and Research Division at the Australian Council for Educational Research. Hilary is the Principal Technical Advisor for the DFAT teacher development study series, and co-leads the Laos Study component together with Debbie Wong.

Debbie Wong is a Senior Research Fellow in the Educational Monitoring and Research Division at the Australian Council for Educational Research. Debbie is the Project Manager for the DFAT teacher development study series, and co-leads the Laos Study component together with Hilary Hollingsworth.