Classroom Observation Sub-study, 2017-18:
Evidence from India

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Young Lives

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Prudhvikar Reddy has been Senior Researcher and Survey Coordinator at Young Lives India since the project's inception in 2002. With the help of a dedicated team of fieldworkers he has kept the attrition of households at low levels, a crucial element of a longitudinal cohort study, and has published widely on poverty-related topics. He is also instrumental in the dissemination of Young Lives findings at district and local levels. His research interests include agriculture, poverty rural development, irrigation management, health, credit and the handloom sector.

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Acknowledgements

1. Introduction

1.1. Rationale

There is considerable evidence for declining levels of learning in India in recent years, despite increased enrolment, declining class size and greater teacher availability (ASER 2018; Rolleston and James 2015), but a lot less is known about the cause of this 'learning crisis' (UNESCO 2013). In this context, understanding the impact of what effective teachers do in the classroom, and how teachers and students interact with and relate to each other in ways which lead to learning, is of huge importance.

During 2017-18, Young Lives undertook a classroom observation study in Andhra Pradesh and Telangana, India, with the aim of helping to unlock the 'black box' of the education production function and explore some of the classroom factors associated with differences in student learning outcomes. Building upon estimates of teacher 'value-added' generated from the Young Lives 2016-17 school effectiveness survey, the classroom observation study offers the opportunity to understand more about what is happening in the classroom, and how this is associated with variation in student learning gain. Data collected through this sub-study can be used to address research questions such as:

- To what extent do teacher-student classroom interactions explain differences in student learning attainment in secondary classrooms?

- What in terms of observed interactions in the classroom explains higher and lower effectiveness (value-added)?

- What are the characteristics of classroom environments where students learn more?

- How do teacher-student interactions vary between different types of schools, and between schools in different localities?

The classroom observations were conducted using the CLASS-Secondary (Classroom Assessment Scoring System) tool for classroom observation. The comprehensive teacher-level data generated by use of the CLASS-S methodology provide detailed aggregate information of some of the teaching practices which make a difference to student learning – a considerable benefit of using this method of observation (Bruns et al. 2016). This report details some of the key findings from this study, along with a discussion of some of the implications of these. Grijalv et al. (2018) provide further detail about the sub-study design and implementation, including the validation of the CLASS instrument for use in the Indian context.

1.2. Young Lives classroom observation study

Young Lives is a longitudinal study of childhood poverty conducted in Ethiopia, India (the states of Andhra Pradesh and Telangana), Peru and Vietnam since 2002. Across the four countries, Young Lives collects data from 12,000 children at household level, as well as qualitative longitudinal data from a subset of children. In 2010, Young Lives also introduced a school component to explore Young Lives children's experiences of schooling and education in depth. School surveys were conducted at primary school level in India (2010), Peru (2011), Vietnam (2011-12) and Ethiopia (2012-13), and in 2016-17, a further round of Young Lives school surveys was conducted at upper primary level (in Ethiopia) and secondary level (in India, Peru and Vietnam).

The 2017-18 classroom observation study in Andhra Pradesh and Telangana built upon the school effectiveness survey conducted in India in 2016-17 (see Moore et al. 2017 for more details). Classroom observations were conducted with 45 maths and English teachers in 23 schools in Andhra Pradesh and Telangana, with the aim of augmenting key findings from the large-scale school effectiveness survey, creating a unique dataset linking teacher classroom practices to student learning outcomes. Grijalva et al. (2018) provide further details of the design of the study.

1.3.   Classroom observation using CLASS

There are many different methods available for undertaking classroom observation, built on different theoretical frameworks and with different aims and objectives. For the 2017-18 study in India, Young Lives made use of the CLASS-S (Classroom Assessment Scoring System-Secondary) observation tool, developed by Robert Pianta at University of Virginia (Hamre et al. 2007). This method of observation positions teacher-student interactions in the classroom as the primary engine through which children learn (Pianta and Hamre 2009), and was therefore well suited to the aims of this study.

The CLASS tool was developed in the USA, and has been used for a range of purposes, including teacher professional development, educational research and as a quality rating benchmark (Leyva et al. 2015). Although originally developed for use with teachers and students in the USA, the CLASS tool has been used to measure effective learning interactions between teachers and the students in a number of other sociocultural contexts, and with evidence of consistent and rigorous results.[1] Of particular interest are findings from several studies that higher scores on the CLASS tool are positively associated with student academic performance and positive academic attitudes (Hamre et al. 2013).

CLASS identifies three domains of teacher-student interaction as relevant to student learning: emotional support, classroom organisation, and instructional support (Pianta et al. 2012). Eleven dimensions sit within these domains, as shown in Table 1.

Table 1.   *CLASS domains and dimensions*

Domain	Dimension
Emotional support	Positive climate
	Teacher sensitivity
	Regard for student perspectives
Classroom organisation	Behaviour management
	Productivity
	Negative climate
Instructional support	Instructional learning formats
	Content understanding
	Analysis and inquiry
	Quality of feedback
	Instructional dialogue
Student engagement	

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1   In the Americas, CLASS has been used in Canada, Chile, Costa Rica, Colombia, Brazil, Ecuador, Jamaica and Mexico; while in Europe, it has been used in Denmark, Belgium, England, Finland, Germany, Greece, Italy, Netherlands, Norway, Portugal, Poland, Spain and Switzerland. In Asia, it has been used in China, Kyrgyzstan, Lebanon, Saudi Arabia, South Korea, Turkey, United Arab Emirates, and Vietnam. It has also been used in Australia and Tanzania (Teachstone 2018).

2. Findings

2.1.   **CLASS in the Indian context: variation in classroom interactions**

Initial analysis of CLASS score data reveals a considerable amount of variation between teachers in Andhra Pradesh and Telangana. As can be seen in Table 2, scores varied across the three domains and across subjects, with classroom organisation the highest scoring domain for both English and maths, followed by emotional support and instructional support. Classroom organisation also appeared to vary less than the other two domains, with a smaller standard deviation and range.

Table 2.   *Summary of mean CLASS scores*

Subject	Emotional support			Classroom organisation			Instructional support		
	Mean score	**SD**	**Range**	**Mean score**	**SD**	**Range**	**Mean score**	**SD**	**Range**
Maths	4.5	0.84	2.5 – 5.75	5.6	0.61	4.33 - 6.33	4.3	0.88	3 - 5.95
English	4.2	0.92	2.42 – 6.33	5.4	0.71	3.75 – 6.75	3.8	1.11	2.05 - 6.5

However, while there was variation in teacher performance across the sample, Figures 1, 2 and 3 reveal there was a high degree of similarity between districts, school types and urban and rural areas (although it is important to remember that the sample for this study is not representative of these school types, districts or localities). One notable finding is that classroom organisation is the highest-scoring domain across all districts, school types and in both rural and urban areas; while instructional support is most often the lowest scoring.

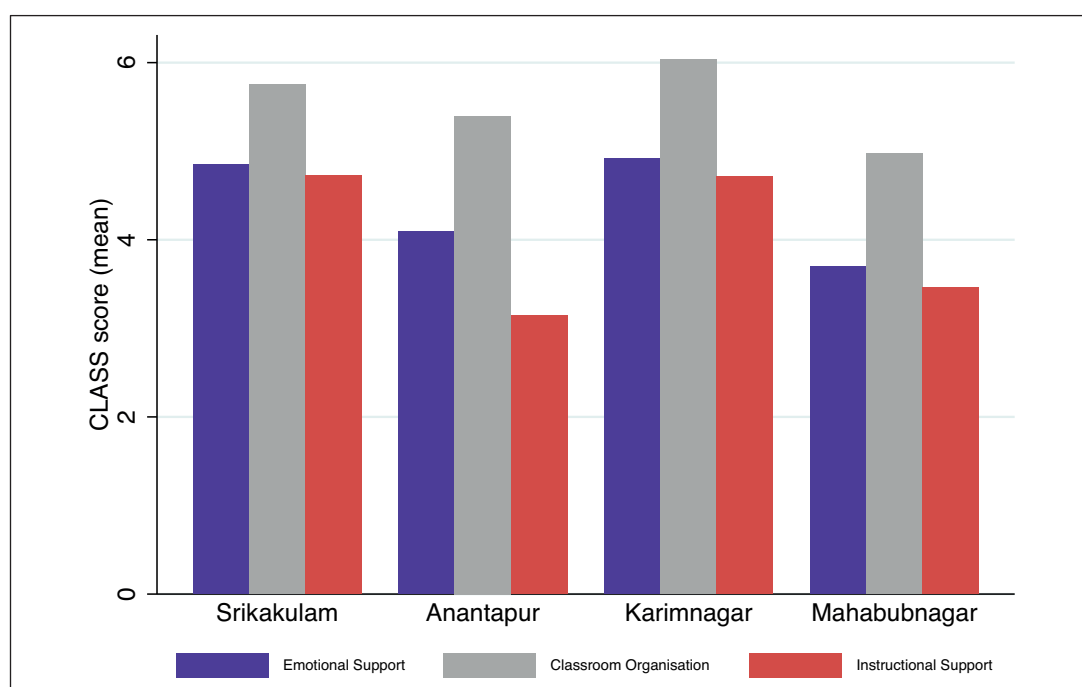**Figure 1.**   *Mean CLASS scores by district*

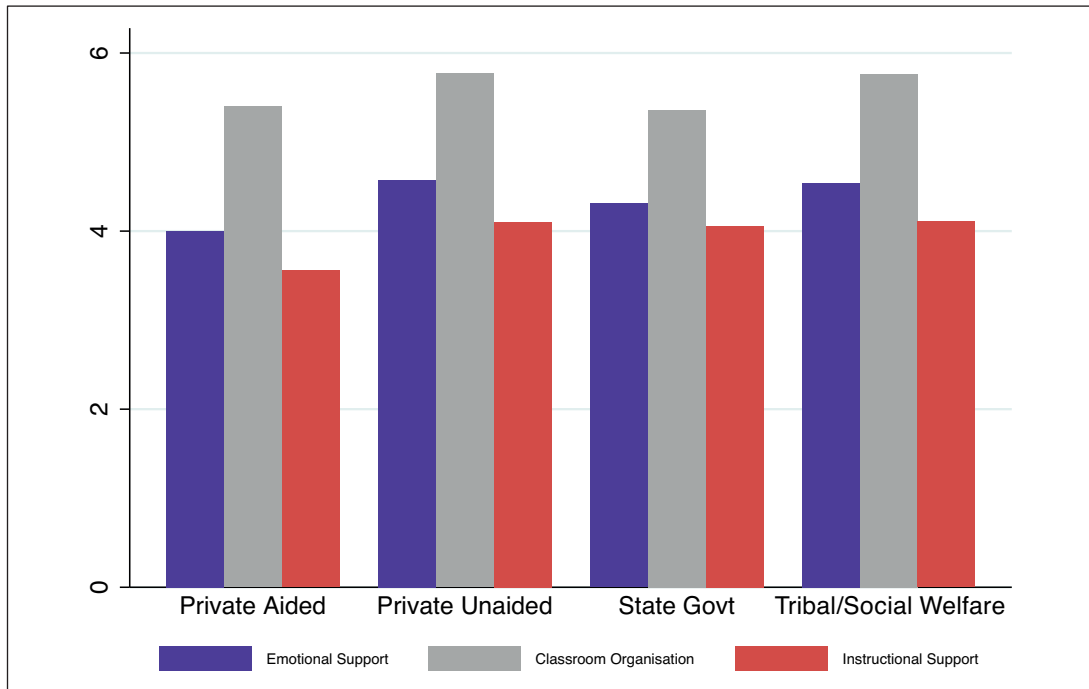**Figure 2.** *Mean CLASS scores by school type*

Figure 3. *Mean CLASS scores by locality*

To aid interpretation of the CLASS scores given to teachers in this study, we calculated an index to analyse all 11 CLASS dimensions as a whole for each teacher. This index allows us to categorise teachers as having a low CLASS score (lower than 3), a medium CLASS score (3 – 4.55) or a 'high' CLASS score (above 4.55) (see Table 3). As no teachers in this study achieved a score of 6-7, we have classified those achieving 4.55 or above as being 'close to a high CLASS score'. These categories will be referred to in the subsequent section.

Table 3.   *Teacher CLASS score classifications*

	Maths		English	
	Number of teachers	**Range of scores**	**Number of teachers**	**Range of scores**
Close to high CLASS score	6	5.25 - 5.75	2	5.92 – 6.33
Medium CLASS score	16	3.33 – 5.08	13	3.17 – 5.17
Low CLASS score	1	2.5-2.5	7	2.42 – 4.17

2.2. Who is taught by higher-scoring teachers? Student characteristics

By linking data on teacher CLASS scores to student background data from the Young Lives 2016-17 school survey, we find evidence of patterns in the characteristics of students taught by teachers in each CLASS score category. As Table 4 shows, teachers with a lower CLASS score appear to teach more disadvantaged children: those who are poorer children, with less-educated mothers, and who have two illiterate parents. Meanwhile, teachers with higher CLASS scores are more likely to teach more advantaged children, such as those from wealthier backgrounds and with more educated and literate parents. There are no clear gender patterns revealed in this data.

Table 4.   *Student characteristics by teacher CLASS ranking*

Subject	Teacher CLASS score ranking	% of students taught by teachers with this CLASS score ranking					
		Children in the poorest tercile	**Children in least poor tercile**	**Children whose mothers have no education**	**Neither parent can read**	**Both parents can read**	**Male**
Maths	Close to high CLASS score	35	30	40	20	65	47
	Medium CLASS score	39	30	48	24	54	52
	Low CLASS score	49	11	81	65	22	54
English	Close to high CLASS score	29	37	39	16	66	46
	Medium CLASS score	42	25	45	26	55	63
	Low CLASS score	45	23	52	32	51	39

This finding is in line with other analysis using Young Lives data in India (Rolleston and Moore 2018; Moore et al. 2017), which suggests that children are likely to be 'sorted' into less-effective schools on the basis of their background and unequal access to the same educational opportunities.

2.3. CLASS and teacher effectiveness: exploring the relationship with value-added

Data from the Young Lives 2016-17 school survey can also be used to provide an estimate of teacher 'value-added' – that is, how much each teacher has contributed towards student learning. By controlling for differences between schools such as the prior attainment of students, value-added measures are designed to compare 'like-for-like' students, with any remaining differences in outcomes attributable to the school or teacher (Perry 2016). The inclusion of student background variables in the value-added model produces a 'contextual' value-added estimate, reflecting not just differences between schools in terms of intake but also the impact of these differences on student learning during the school year. In this report,
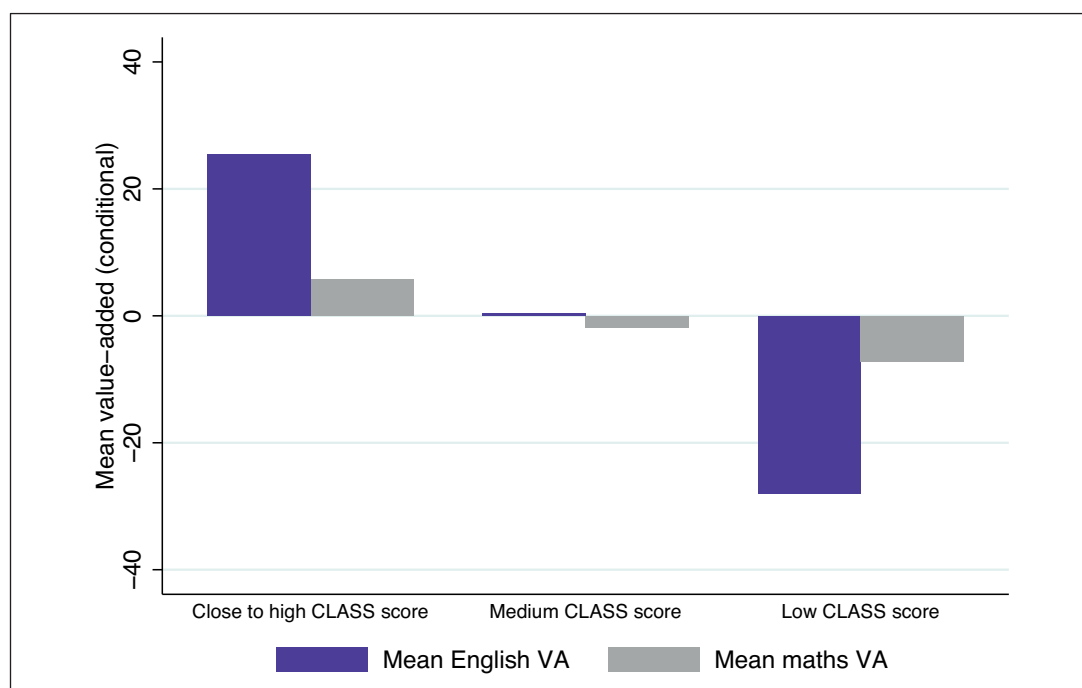
we make use of contextual value-added estimates obtained through a two-level multilevel model (see Rolleston and Moore (2018) for more details of value-added analysis using Young Lives India data). Positive value-added estimates show that a teacher has added 'above average' value, that is they are 'more effective'; while negative value-added estimates reveal that they are 'less effective' than average.

Table 5 shows the mean value-added estimates for teachers in each of the CLASS score categories described above. It reveals a positive relationship between CLASS score and value-added, with teachers in the 'close to high CLASS score' category having a higher mean value-added estimate than those with lower CLASS scores. This pattern is apparent for both English and maths teachers, although the correlation is considerably stronger for English (see Figure 4). However, it is important to note that the number of teachers in each category is small due to the small sample size for the sub-study, so these findings can only be taken as indicative.

Table 5.   *Mean teacher value-added scores by CLASS category*

	Mean maths value-added estimate	Mean English value-added estimate
Close to high CLASS score	5.78	25.37
Medium CLASS score	-1.84	0.44
Low CLASS score	-7.17	-28.03
Total	-0.12	-5.93

Figure 4.   *Mean value-added by teacher CLASS ranking*

As shown in Figure 5, English teachers with below average value-added have a lower mean CLASS score for all three CLASS domains than those with above average value-added. The patterns is less clear for maths teachers (Figure 6), suggesting that CLASS is less predictive of teacher effectiveness for these teachers. Figures 5 and 6 also reveal that teachers in both subjects achieved higher and more consistent scores in classroom organisation than any of the other domains.

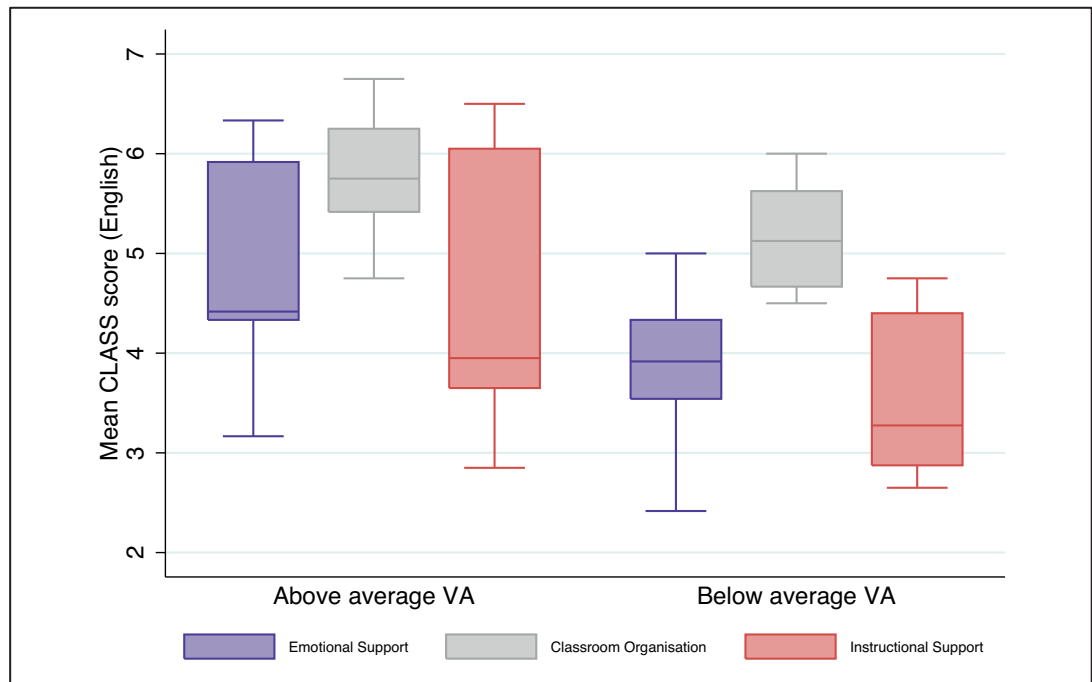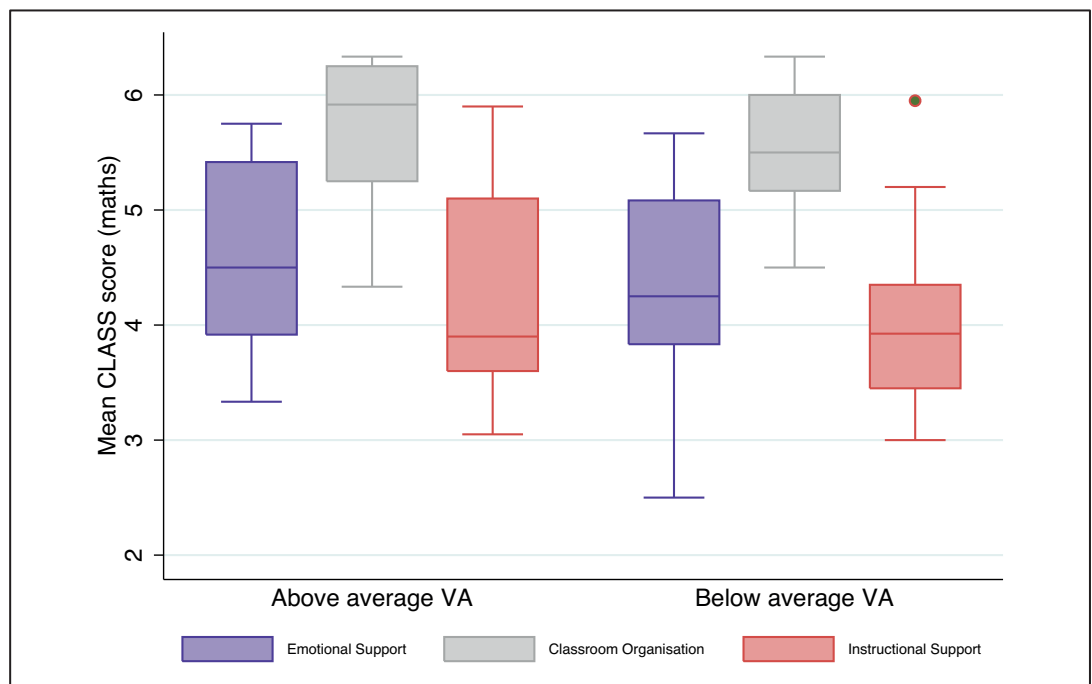**Figure 5.** *Mean teacher CLASS score by value-added categories (English)*

Figure 6. *Mean teacher CLASS score by value-added categories (maths)*

3. Discussion

This report presents some of the initial key findings of this classroom observation sub-study. These suggest that there is a positive correlation between CLASS scores and teacher value-added, particularly for English teachers. This is a finding of considerable interest, suggesting that CLASS can be predictive of teacher effectiveness in the Indian context. There is a great deal more to be learnt from this data, and future Young Lives work will explore this relationship in greater depth.

Furthermore, evidence from this study suggests that more disadvantaged students are taught by teachers with lower CLASS scores, while more advantaged children are taught by higher-scoring teachers. This finding aligns with other Young Lives research on educational equity, which suggests that disadvantaged children are 'sorted' into less effective schools. The classroom observation data adds new evidence that some children in India are subject to a 'double disadvantage' in terms of home background and schooling quality; something which raises real concerns about the potential for equality of educational opportunities in this context.

The study indicates that there were high levels of organisational support in the observed classrooms, along with moderate levels of emotional support and low levels of instructional support. This is true across all school management types and in all locations. With the classroom organisation domain relating to classroom management, discipline, and maximisation of 'teaching time', it seems likely that this finding is strongly related to the 'teacher-directed' style of teaching which is commonly seen in Indian classrooms. Video clips produced as part of this study support this, providing evidence of teacher-led lessons with little chance for students to demonstrate autonomy.[2] Alongside this, the CLASS results suggest that in most observed classrooms, students do not receive enough scaffolding and feedback to encourage them to solve problems independently in the classroom. Despite good discipline and time management, it appears that classroom instructional activities are therefore failing to enhance critical thinking skills and provide a meaningful learning experience; something which is a real cause for concern.

As the first use of CLASS-S in India, this study provides an opportunity to consider how the CLASS domains can be interpreted in contexts very different to those in which it has typically been used. The initial results presented here provide evidence of the appropriateness of the tool, suggesting that there is a relationship between CLASS scores and teacher effectiveness in India which merits further exploration. Ongoing work by Young Lives will explore this in more detail to seek to understand more about how teacher-student interactions are impacting on how much students learn.

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2   For details of the video clips, see the Young Lives YouTube channel at
     https://www.youtube.com/playlist?list=PLSfJoEGwxmnYWBTjN0lvwGywI6zELiAo6

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