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What Teachers Believe

Mental Models about Accountability, Absenteeism, and Student Learning

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Abstract

The time teachers spend teaching is low in several developing countries. However, improving teacher effort has proven difficult. Why is it so difficult to increase teacher effort? One possibility is that teachers are resistant to increasing effort because they do not believe their effort is suboptimal. Such beliefs may be based on their mental models on absenteeism, accountability, and student learning. This paper explores this idea using data from 16,000 teachers across eight developing countries, spanning five regions. It finds that, on average, teachers support test-based accountability and believe that they are in fact held accountable for student learning. In several countries, many teachers tend to normalize two types of suboptimal behaviors. These are (i) certain types of absenteeism, and (ii) paying extra attention to well-performing and well-resourced students. Finally, the paper shows that ideas of accountability and absenteeism are strongly framed by context in two direct ways. The first is whether teachers favor exclusively reward-based forms of accountability. The second is the degree to which they support absenteeism linked to community tasks. These results provide actionable insights on how changing teacher behavior sustainably might require reshaping underlying mental models.

What Teachers Believe: Mental Models about Accountability, Absenteeism, and Student Learning

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1. Introduction

"In interacting with the environment … people form internal, mental models of themselves and of the things with which they are interacting. These models provide predictive and explanatory power for understanding the interaction."

Norman (1983, 7)

Two sets of research findings on teachers are particularly striking, especially in relation to each other. First, teacher effort is sub-optimal in many developing countries (World Bank 2017). Teachers are often absent from school, when in school they are often not teaching, and when teaching they are often not teaching well (Bruns and Luque 2014, Chaudhury et al. 2006, Bold et al. 2017). Second, it is difficult to increase teacher presence through incentives alone. Several studies find little or no effect of various incentive interventions on teacher presence[1] (Banerjee and Duflo 2006, Glewwe et al. 2010, Kremer et al. 2013, World Bank 2017). Even higher salaries for teachers might not improve attendance (De Ree et al. 2015). Further, teacher absenteeism rates have changed very little over time in several contexts.[2]

Why is this? Why do teachers rarely respond to performance-incentives through increased effort, despite large margins for improvements? One possibility is that teachers do not increase effort because they do not believe they can increase effort. In other words, teachers might feel that they are exerting as much effort as they can or as they should because of their mental models. Mental models reflect an understanding or an outlook of the world that is shared by members of a community. Behavioral economics and social psychology demonstrate that individual decision-making is often influenced by these mental models (World Bank 2014). This paper applies these ideas to teacher beliefs about their own effort. Specifically, we examine teacher mental models on three correlates of effort—absenteeism, accountability, and ownership of student learning —using survey data from 16,000 teachers across eight developing countries,[3] spanning five regions.[4]

Why is it important to consider teachers' mental models? Mental models shape the way people perceive themselves and their environment (Norman 1983). They are the internal representations that individuals create to interpret their environment (Denzau and North 1994). By extension, mental models represent a shared understanding of a common context by a group, e.g., teachers. These determine what individuals believe is desirable, possible, or even "thinkable" (World Bank 2014). Because mental models are used for filtering and interpreting information, they influence

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[1] Two studies from India show that teacher attendance improves in the presence of a strong extrinsic monitoring shock. In the first, financial incentives tied to attendance are combined with stringent monitoring through daily photos of the teacher with her students reduced teacher absence rates by 21 percentage points (Duflo, Hanna and Ryan 2012). In the second, increasing the probability of a school having been inspected in the past three months from 0 to 1 is correlated with a 7-percentage point reduction in teacher absence (Muralidharan et al. 2017).

[2] Two studies in India 9 years apart find teacher absence rates changed from 26.3% to 23.7% (Kremer et al 2005, Muralidharan et al 2014). Absenteeism rates for Tanzania (Zanzibar) and Uganda across different rounds of the Service Delivery Indicator survey show very little change.

[3] Afghanistan, Argentina, Indonesia, Myanmar, Pakistan, Senegal, Tajikistan, and Tanzania (Zanzibar).

[4] Sub-Saharan Africa, South Asia, East Asia, Central Asia, and Latin America.

decision-making. This makes them potentially powerful for understanding or influencing teacher behavior. They could influence how teachers make day to day decisions about effort—whether to come to class, whether to teach to all students, whether to attend teacher training sessions.

For instance, do teachers consciously/knowingly adopt a strategy of low-effort as a strategic response to low accountability environments or to a system that they consider undervalues them? Or do teachers believe they are working as hard as they can for their students in a dysfunctional system? These are all examples of possible mental models. The distinction between them—conscious shirking vs. belief in one's hard work—has important implications for how solutions to the problems of teacher effort should be designed. This paper provides preliminary insights on these dimensions from a range of developing country contexts.

Our choice of themes—absenteeism, accountability, and ownership of student learning—is based on ideas that tend to recur and are emphasized in research on teacher effort from developing countries. Each is used as a foundation for a 'mental model':

a) <u>Teacher **absenteeism** is high</u>: Teacher absenteeism rates in developing countries—measured through unannounced visits to schools—are high (see Figure 1). In seven countries in Sub-Saharan Africa,[5] about one in five teachers was absent on a typical school day (Bold et al. 2017). In India, about one in four teachers was absent on a typical day, reaching as high as one in two in the poorest performing state (Kremer et al. 2005, Muralidharan et al. 2017). This high absenteeism contributes to about two-thirds of total instructional time not being used in several countries (Abadzi 2009). It also means significant fiscal wastage as salaries are being paid despite unauthorized teacher absence. Teacher absenteeism is estimated to have an associated fiscal cost of US$1.5 billion a year in India alone (Muralidharan et al. 2017). Our first mental model examines teacher absenteeism.

b) <u>Teacher **accountability** for learning is low</u>: How do teachers get away with high rates of absence? One insight is: they operate in low accountability systems (World Bank 2003, Bruns, Filmer, and Patrinos 2011). Developing country education systems do not reward teachers for teaching well (or teaching at all), nor do they penalize them for not teaching. Most importantly, there is no explicit link between teacher management and student learning. Teacher management is characterized by very high job security, seniority linked salary increases, and placement/deployment decisions that are prone to patronage and political capture (Weisberg et al. 2009). Even in the absence of political interference, teacher promotion is based on the number of years of pre-service training, formal certificates, and years of service—not on student learning (Bruns, Filmer, and Patrinos 2011). Do teachers believe that there is low accountability for student learning in their systems? This is the second mental model we explore.

c) <u>Teacher **ownership** of student learning may vary based on student ability</u>: Data suggest huge disparities in student skill-levels within the same classroom. There are large gaps between student preparation and grade-level standards that grow by grade and considerable

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[5] Kenya, Mozambique, Nigeria, Senegal, Tanzania (Zanzibar), Togo, and Uganda.

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heterogeneity in student preparation in the same grade (Muralidharan et al. 2017, Muralidharan and Zieleniak 2013). This suggests that teachers have to make difficult choices about how they divide their time between students. Our third mental model relates to how teachers view the way they divide their attention across students in the classroom.

Our findings can be summarized in three points. First, we find that teachers support test-based accountability and believe they are already subject to it. Second, teachers normalize two types of behaviors that might be considered 'sub-optimal'. These are: (i) non-trivial support for certain types of absenteeism; and (ii) paying extra attention to well-performing and well-resourced students (dividing effort among students in a way that reinforces rather than compensates for baseline ability). Third, we show that ideas of 'accountability' and 'absenteeism' are quite strongly framed by context. This is most clearly seen in: (i) whether teachers favor exclusively reward-based forms of accountability (non-zero-sum accountability) or not; and (ii) the degree to which they support absenteeism linked to community-tasks.

By illuminating teachers' mental models about their own effort, this paper contributes to research on teacher behavior in developing countries. This might help in the search for more effective solutions to the problem of low teacher effort. Teachers will respond to incentive or accountability policies or interventions based on what they believe about their own effort. Until their mental models are understood and factored into solution design, externally imposed ideas of 'incentives' and 'accountability' might not work.

The paper is structured as follows: Section 2 provides an overview of the data and approach used in the paper; Section 3 discusses the three teacher mental models investigated in this paper (absenteeism, accountability, and ownership of student learning); Section 4 presents important caveats; and Section 5 concludes.

2. Data and Approach

Data for this study comes from a short, multi-country survey targeted at public school teachers teaching basic education grades (primary and lower secondary). Survey questions were designed and structured to illuminate mental models while minimizing social desirability bias in responses. All 25 questions in the survey are structured around a five-point Likert scale that ranges from *strongly agree* to *strongly disagree*.

Survey countries include: Senegal and Tanzania (Zanzibar) from Sub-Saharan Africa; Afghanistan and Pakistan from South Asia; Argentina (Salta Province) from Latin America; Indonesia and Myanmar from East Asia and Pacific; and Tajikistan from Central Asia. Data on select questions were also collected from Nepal. For comparison, both private and public-school teachers were also interviewed in Senegal and private school teachers were interviewed in Uganda.

A total of 16,028 teachers were interviewed with sample sizes ranging from 193 (Zanzibar) to 9,647 (Pakistan) teachers across countries (see Table 1). In addition, around 379 teachers from Nepal were interviewed on select questions. In all countries except Nepal, the survey was delivered as part of ongoing World Bank led/supported data collection efforts. This explains the difference in observed

sample sizes and underlying sampling strategies. Results are presented entirely as descriptive analysis (share of teachers who agree or strongly agree with specific statements) of survey findings. Degree of consensus around a statement is coded as follows: if 0-25 percent agree, this is coded as low consensus. 26-50 percent is coded as low-mid, 51-75 percent is coded as mid-high, and 76-100 percent is coded as high consensus, respectively.

The objective of the paper is to offer preliminary proof-of-concept insights on teacher mental models. It neither offers causal insights nor does it explore said mental models in detail. It offers a starting point for more in-depth, context-specific exploration of how teachers view themselves and their work—and how these perspectives mediate their responses to the incentive and accountability structures around them.

3. Teacher Mental Models

3.1 Mental Model 1: Absenteeism

Teachers exhibit support for absenteeism under certain conditions (see Figure 2a). The acceptability of three types of absenteeism are explored: absenteeism when, (i) the assigned curriculum has been completed; (ii) students are left with work to do; and (iii) the teacher is doing something useful for the community. In most countries studied, many teachers consider these types of absenteeism acceptable. Specifically, in seven out of nine countries, more than 25 percent of teachers consider absenteeism acceptable in these conditions. In four countries, this share is more than 67 percent.

In most countries, teachers express similar levels of support for absenteeism *if curriculum is completed* and absenteeism *if students are left with work to do* (Figure 2b). Although, in some cases, the latter is significantly stronger. This group includes Zanzibar, Nepal, Senegal, and Argentina. Overall, teachers in Argentina show the strongest support for these types of absenteeism. Nearly 92 percent of Argentinian teachers feel that it is acceptable for a teacher to be absent, if students are left with work to do during the absence. Tajikistan and Senegal also show mid to high support for absenteeism *if students are left with work to do* (72 and 63 percent, respectively). On the other end of spectrum, there are low levels of support in Afghanistan, Pakistan, and Myanmar (25, 14, and 7.5 percent, respectively).

Support for absenteeism *if the teacher is engaged in community-tasks* is the most context-variant (see Figure 2b). In every country, except Argentina and Indonesia, more teachers support the idea of absenteeism when it is for community tasks than under the other two conditions (*curriculum completed or students left with work to do*).[6] This gap is strongest for Zanzibar, where 69 percent of teachers support absenteeism for community-related tasks but only 18 percent support it if the curriculum has been completed.

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[6] In Nepal, the share of teachers that support absenteeism for community-tasks (28.5 percent) is lower than the share that supports it if students are left with work to do (37.9). However, it is still higher than the share that support it if the teacher has finished the curriculum (11.6).

These data suggest that certain types of absenteeism are not perceived as a major breach of obligation—as shirking or corruption are. Instead, these types of absenteeism are considered 'normal' or 'understandable'. Teacher absenteeism studies show that absenteeism is not concentrated among a few underperforming teachers but is rather widespread (Banerjee and Duflo 2006). The idea of normalized absenteeism is further corroborated when we consider that other actors in the education system might collude with teachers to allow absenteeism rates to persist. In Kenya, an incentive program tied to teacher attendance was implemented, but it failed to be effective because head-teachers colluded with teachers to inflate teacher attendance records (Kremer and Chen 2001). In Bangladesh, between 33-42 percent of head teachers and 46-58 percent of district education officers agreed that teacher absenteeism is acceptable under these three conditions (Sabarwal et al 2018). Research has also illustrated how some communities do not disapprove of the state of education and health services even when, objectively, teachers, doctors, and nurses are frequently absent (Banerjee and Duflo 2006).

Some parallels can be detected from recent research on corruption. 'Corruption' is argued to be socially prescribed, which is why a 'culture of corruption' appears to persist in some countries (Mungiu-Pippidi 2013, Hauk and Saez-Marti 2002). Hauk and Saez-Marti (2002, Pg 21) claim that, "*Public opinion does not universally consider corruption—at least small-scale corruption—to be very negative. Sentences like "I was corrupt but so was everybody else" reveal that a generally corrupt environment can serve as a justification for one's own corrupt behavior.*" This would apply to absenteeism, which can be thought of as small-scale corruption (Patrinos 2013). A culture of teacher absenteeism may be allowed to persist in some countries because actors within the system do not consider it – at the least the version of it with mitigating circumstances - to be very negative.

3.2 Mental Model 2: Accountability

Absenteeism rates are symptomatic of underlying accountability structures (Chaudhury et al. 2006). What do teachers think about the accountability structures they face? We address this in two parts: (i) Do teachers believe they are held responsible for student learning? and (ii) What form of accountability do teachers favor?

3.2.1 Being held responsible for student learning

Do teachers in developing countries believe that they are held accountable for student learning? Yes. Most teachers believe that they are in fact held responsible for student learning (see Figure 3). In 6 out of 8 countries, a majority of teachers (63 percent or more) feel that they are in fact held responsible for their students' learning. The only exceptions are Senegal and Afghanistan, where this share is about 45 percent.

These results present a puzzle. In some countries, data shows that student learning levels are consistently low. Yet, in those same countries teachers feel that they are held accountable for student learning. If teachers are held accountable, then how can student learning remain persistently low?

Take the case of Pakistan and Tanzania, for instance, where multiple years of public schooling often do not lead to the acquisition of key foundational skills like literacy and numeracy (World Bank 2017). In Pakistan, only 65 percent of students in Grade 3 could do single digit subtraction and only

19 percent could divide a 3-digit number by a single digit number. Only 31 percent could use the word 'school' in Urdu (local language) in a sentence, and most were unable to recognize simple words in English (Andrabi et al. 2007). In Tanzania, only 35 percent of Grade 3 students were able to do simple multiplication (Uwezo East Africa 2014). This means that after 3 years of schooling, many students have not even mastered basic literacy and numeracy. Further, only a small share of students who do not have the skill to read a Grade 2 story in Grade 2 will acquire this skill by Grade 5—19 percent in Pakistan and 22 percent in Tanzania (Pritchett and Beatty 2012). At the same time, nearly 77 percent of teachers in Pakistan and 87 percent in Tanzania (Zanzibar) feel that they are held accountable for learning (Figure 3). How can these findings be reconciled?

One possibility is that teachers in these contexts equate a focus on student learning with finishing the prescribed curriculum—something for which they are ostensibly held accountable. There is some anecdotal evidence for this. Banerji (2000) and Beatty and Pritchett (2012) discuss how teachers in these systems feel accountable for completing the prescribed syllabus or curriculum. This type of inconsistency is often observed in the research on mental models. It is possible for mental models to be out of sync with the real world, and that in turn may substantially limit the amount of real-life information decision-makers use (World Bank 2014).

We also find a lot of support for test-based accountability. In every country, a majority of teachers (more than 59 percent) believe that student test scores should be the main factor in assessing teacher performance (see Figure 4). This share is the highest in Tajikistan (96 percent) and lowest in Afghanistan (59 percent). These results align with anecdotal evidence that suggests teachers in developing country education systems believe that their mandate is to prepare the best students for difficult exams (Banerjee and Duflo 2011). However, it runs counter to some ongoing discussion from developed countries which emphasizes teacher opposition to test-based accountability.[7] These findings underline the core idea of this section—accountability is not a universal concept. Mental models about what accountability is and what it entails might vary significantly across contexts.

By contrasting support for test-based accountability and teacher beliefs on whether they are held accountable for student learning, we can construct a measure of a perceived accountability gap. In most countries, teachers perceive the accountability gap to be low (see Figure 5). The one exception is Senegal where 79 percent of teachers support test-based accountability but only 49 percent of teachers feel they are held responsible for student learning.

Percieved Accountability Gap =
Share of teachers that believe teacher performance should be judged on test scores −
Share of teachers that believe they are held accountable for student learning

If the 'learning' expected from education systems is the mastery of key foundational skills by most students—like literacy and numeracy—then this conception of learning needs to be communicated and incentivized at the frontlines. Otherwise there may be a mismatch between what development

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[7] See for instance Abrams et al (2003). Also: https://www.brookings.edu/research/the-future-of-test-based-accountability/

researchers and practitioners consider to be 'learning' and what the teachers perceive their responsibility to be.

3.2.2. Different forms of accountability

There is significant variation in the type of accountability regime that teachers support. We explore two types of regimes: (i) non-zero-sum accountability wherein teachers receive additional bonuses for student performance on tests; and (ii) zero-sum accountability wherein teacher promotions or transfers are linked to student performance on tests.[8]

In countries with positive accountability gaps (Tajikistan, Senegal, Pakistan from Figure 5), nearly all teachers (81 percent and above) favor reward-based non-zero-sum accountability.[9] However, in some contexts (Argentina, Indonesia) there is much more support for zero-sum accountability. In Afghanistan, Myanmar, and Tajikistan there is support for both types of accountability (see Figure 6).

Hence, perceptions about what are appropriate forms of 'accountability' vary significantly across countries. This makes sense. As mentioned above, a discussion of mental models is particularly relevant for 'accountability'. Different systems might create different mental models about what accountability means or implies. According to World Development Report 2015:

"When we think, we generally use concepts that we have not invented ourselves but that reflect the shared understandings of our community. We tend not to question views when they reflect an outlook on the world that is shared by everyone around us ... Mental models, which need not be enforced by direct social pressure, often capture broad ideas about how the world works and one's place in it."

These principles are applicable to the concept of accountability, implying that it could mean different things in different contexts, as suggested by our data (not only in this section but also in Section 3.1 on absenteeism).

3.3 Mental Model 3: Ownership of Student Learning

Most teachers in every context agree that it is difficult to pay equal attention to all students in a large classroom (see Figure 7). So how do teachers divide their attention? We explore mental models around the following questions: (i) when does a student deserve more attention from the teacher; (ii) when can a teacher not be expected to help a student; and (iii) do teachers believe themselves *able* to address the needs of all students.

Overall, we find that teachers favor the idea of providing 'extra' attention to better-performing students. The first indication on this is with respect to student preparation. In every context, more than half the interviewed teachers believe that students deserve more attention if they have the necessary foundations (Figures 8 and 12). Teachers also demonstrate low ownership for the learning of lagging students. In all countries, more than one in four teachers believe that there is little they can

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[8] Promotion may theoretically be non-zero sum because it is possible to promote everyone. However, since this is not a feasible practical possibility, we consider this as zero-sum accountability.

[9] This is not to say that in countries with 0 or negative accountability gap there is low support for reward-based accountability. Support for bonuses is still high in Zanzibar, Uganda, & Myanmar; and very low in Argentina and Indonesia.

do to help a student if the student comes unprepared from previous grades (Figure 9). In all countries but Tajikistan, at least one in four teachers believe there is little they can do to help if students come to school unprepared to do school work (see Figure 12).

Teachers do favor the idea of providing 'extra' attention to lagging students, but this is more context-variant. In all but one country (Argentina), the share of teachers who feel that well-performing students deserve additional attention is higher than the share of teachers who feel that lagging students deserve additional attention (see Figure 11).

This suggests that teachers' mental models might favor a reinforcing strategy with respect to a student's baseline ability. Those that come prepared from previous grades get additional attention and those that do not are seen as being outside the teachers' perceived locus of control. This in turn suggests low support for the idea of 'remediation'. The exceptions are Argentina, Indonesia, and Myanmar where there is high support for remediation (between 78 and 88 percent). In all other countries, the share of teachers supporting remediation is 55 percent or below (lowest in Tajikistan at 32 percent).

The reinforcing strategy is also in play in terms of perceived student motivation. In all but one country more than 75 percent teachers believe that students deserve more of their attention if they are motivated to learn (the only exception is Pakistan, where this share is 59 percent; see Figure 10). Also, more than 75 percent of teachers believe that students deserve more attention if the student attends school regularly.

Most teachers also believe that well-resourced students deserve more of their attention (Figures 13, 14). In all but one country, more than 60 percent of teachers agree that students deserve more attention if they have the necessary materials. The only exception is Argentina where this share is 53 percent (Figure 12). A significant share of teachers—between 24-62 percent —believe that there is little they can do to help a student learn if their parents have too many personal or financial problems (Figure 13).

Many teachers also believe that students with more invested parents are more deserving of attention. In all but one country, most teachers believe that students deserve more of their attention if their parents are involved in their education (the only exception is Argentina where the share is 46 percent, Figure 14). Between 25-62 percent believe there is little they can do to help a student learn if parents do not seek feedback. In fact, in all but one country (Indonesia), between 24-50 percent of teachers feel there is little they can do to help a student learn if parents do not have the necessary education (Figure 14). This is further corroboration of mental models that favor reinforcing rather than compensating for baseline student abilities.[10]

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[10] We also ask teachers about their beliefs in their own abilities. However, since these questions are very prone to social desirability bias and Dunning-Kruger type effects (see Sabarwal et al 2018a), these results are not shown here.

The idea that teachers might disproportionately favor better performing and better endowed students is not surprising. This can be linked to two streams of research: (i) curriculum mismatch with student ability; and (ii) stereotype threats. It may be argued that as a part of an efficient strategy, teachers are screening students to identify those that may yield the greatest returns. These teachers dedicate their efforts and time to the students they believe would be most predisposed to learning.

As mentioned in Section 3.2.2, in many contexts, the pace of classroom instruction is determined by the need to cover (often overambitious) curricula rather than student learning (Beatty and Pritchett 2012). This means that teachers often take the least risky route of concentrating on those students who can cope with the curriculum. These typically better-prepared and better-resourced students are easier and faster to teach. These are the students who are taught because of the system-imposed pressures of completing the curriculum—even though they might be aware that a significant share of students are behind the pace of the classroom and cannot follow (Banerji 2000). In fact, in order to ensure that the prescribed curriculum is finished, a teacher might have no choice but to ignore students who are falling behind.

Further, a growing body of literature also demonstrates how teachers tend to favor students of high socioeconomic status over students from disadvantaged backgrounds (for example, in England (Auwarter and Aruguete 2008), in Chile (del Río and Balladares 2010), and in the US (Gershenson, Holt, and Papageorge 2016)). An analysis of 10th-graders in the US, for example, shows teachers respond to family income when building expectations of student outcomes, and these expectations in turn impact educational attainment (Gershenson, Holt, and Papageorge 2016). The effects of teacher expectations on student outcomes may even start as early as kindergarten (Speybroeck et al. 2012).

Such stereotyping presents a typical example of a mental model (World Bank 2014). By shaping their opinion of a certain socioeconomic class, teachers contribute to a cycle whereby both the teacher and the students themselves underestimate the ability of a poor student (Guyon and Huillery 2014). Teachers might directly or indirectly convey their biased expectations of student ability by modifying how they teach, evaluate, and advise stigmatized students, or those students may modify their own expectations and behavior to conform with teacher bias (Ferguson 2003; Jussim and Harber 2005; Lareau 2011; Lareau and Weininger 2008).

4. Caveats

There are two key limitations to this work. We discuss each in turn:

Sampling: In this work the emphasis was on external validity. To this end, over 16,000 teachers across eight countries and five regions were interviewed. However, to achieve this breadth of coverage, the team had to leverage ongoing data collection. As such, the size of the sample and the precise sampling strategy do not match across all countries. Despite this, the total sample size for each country ranges between 200 teachers in Zanzibar and more than 9,600 teachers in Pakistan. The number of schools visited in each country ranges from 94 in Zanzibar to more than 3,000 in Pakistan (details in Table 1). As such, sample sizes by country are defensible though not nationally representative.

Social Desirability and Survey Design bias: One concern is that survey questions are prone to 'social-desirability biases' and might be sensitive to overall questionnaire design. Evidence suggests that this type of response bias is common wherein survey respondents answer questions in a manner that will be viewed favorably by others (Fisher 1993; Zerbe and Paulhus 1987). To some extent, this is unavoidable in any exercise that tries to directly elicit respondent beliefs. In these cases, the common practice is to interpret responses as lower bounds when a positive response is socially undesirable and as upper bounds when a positive response is socially desirable.

To provide an estimate of the extent of potential biases, data collection in Zanzibar included a survey experiment within which one group of teachers were asked direct questions about personal beliefs while the other was asked the same question indirectly (beliefs of teachers in general). Results are summarized in Annex 1. In line with theory, there is statistically significant social desirability bias in 14 out of 25 questions (56 percent of questions). However, the extent of the bias ranges between 4 and 25 percentage points, always aligned with the expected direction of social desirability. This suggests that the survey provides potential lower-bounds of non-pro-social mental models.

As mentioned in the introduction, this paper is designed to offer preliminary proof-of-concept validation for the importance of studying mental models to better understand/influence teacher effort. It does not offer any causal insights and does not explore identified mental models in any detail.

A standard caveat in studies based on teacher surveys is that they cover only those teachers who were present on the day of the survey. To the extent that absent teachers are likely to be systematically different in terms of their beliefs, the results are biased in terms of its representativeness of the 'average' teacher. This study only captures results for the 'average teacher who was present at the time of the survey'.

5. Conclusions

Low teacher effort is a central issue in education service delivery for many low- and middle-income countries. However, it has been somewhat unresponsive to policy and programmatic interventions. One possible reason why teachers do not increase effort might be because they do not think they can or they should. If they find their current levels of effort to be socially optimal and contextually justified, then they are less likely to increase effort in response to changes in accountability and incentive structures.

This idea has not received much attention in empirical work so far. In this paper, we try to address this gap showing how the concept of 'mental models' may be relevant to this discussion. Using data from 16,000 teachers across 8 low- and middle-income countries, we show how teachers approach issues of absenteeism, accountability, and ownership. We uncover three key insights. First, teachers feel that absence is acceptable under certain situations. Second, teachers feel they are already assessed based on student learning. Third, better-performing and better-resourced students are seen as more deserving of teacher attention. This suggests mental models wherein teacher absenteeism in partially normalized, accountability concepts are heavily context-variant, and sense of ownership for learning among poor students is low.

Why do these insights matter? They signal teachers' underlying perspectives and beliefs—which might be an important but missing ingredient of solution-design around teacher effort. For instance, if teachers continue to believe that there is little they can do to help poor students, then policy-mandated extra-classes for poor students who lag might not be very effective. Also, teachers must understand/appreciate the implications of alternative effort deployment strategies and pedagogical practices to meaningfully change behavior in a sustainable way. The issue goes deeper than information asymmetries or social biases—it might be a question of how 'learning' and 'accountability' are defined in the systems and contexts in which these teachers operate.

So, what can be done? While designing approaches to improve teacher effort, it is important to elicit teachers' mental models around effort. Then use these insights to design approaches that help counteract pernicious mental models. These solution approaches can be delivered on their own or in conjunction with other interventions. Here much can be learned and adapted from the burgeoning literature on behavioral economics, especially in relation to effective information provision and the science of persuasion (Mazar, Amir, and Ariely 2008 and Pruckner and Sausgruber 2013).

For instance, one promising area of inquiry is around persuasive communication. DellaVigna and Gentzkow (2010) define a persuasive communication to be a message provided by one agent (a sender) with at least a potential interest in changing the behavior of another agent (a receiver). Their review of the impacts of persuasion on consumers, voters, donors, and investors suggests that persuasive communication can be effective and shows how it can be designed. Mental models affect where we direct our attention and effort. Using them as a lever for tackling hard to change behaviors—like absenteeism, accountability, and ownership—may make a significant difference.

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Table 1: Sample sizes across countries

Country	Number of teachers surveyed	Number of schools visited
Afghanistan	1,011	200
Argentina *(Salta Province)*	454	100
Indonesia	446	100
Myanmar	2,321	800
Pakistan	9,647	3,000
Senegal	1,360	634
Tajikistan	596	300
Zanzibar	193	94

Note: In Nepal 379 teachers from 201 schools were surveyed on a shortened version of the questionnaire (Figures 2a and 2b)

Figure 1: Teachers' time spent teaching is low

Percentage of time officially allocated to schooling, when a teacher is present at school, and actually spent on teaching and learning
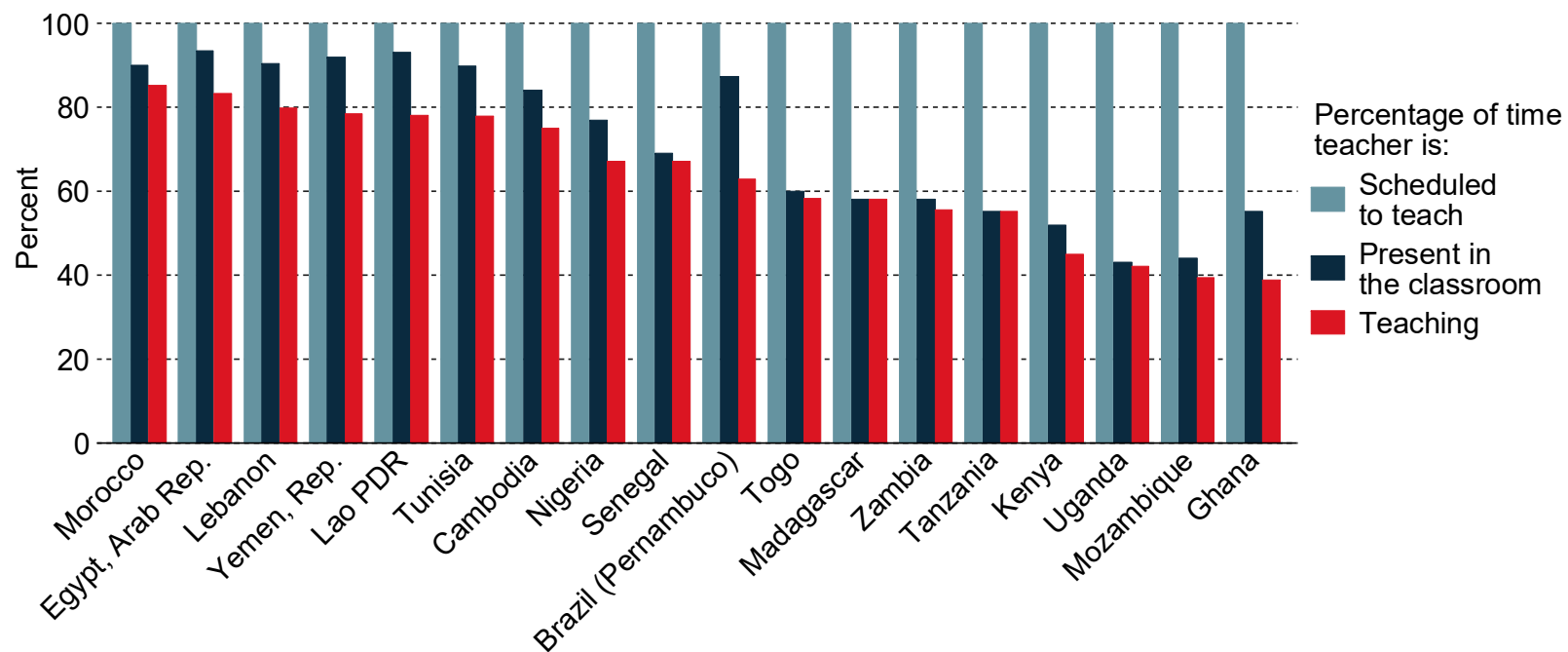
Source: World Bank 2017

Figure 2a: Normalization of Absenteeism

Share of teachers who believe absence is acceptable if assigned curriculum is completed, students are left with work, or teacher is doing something useful for the community
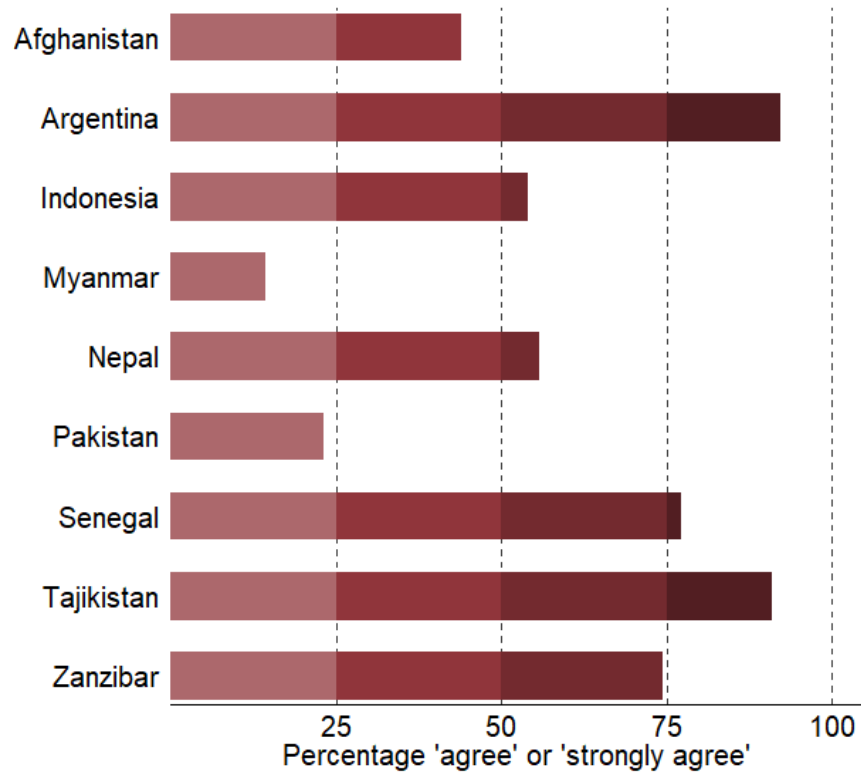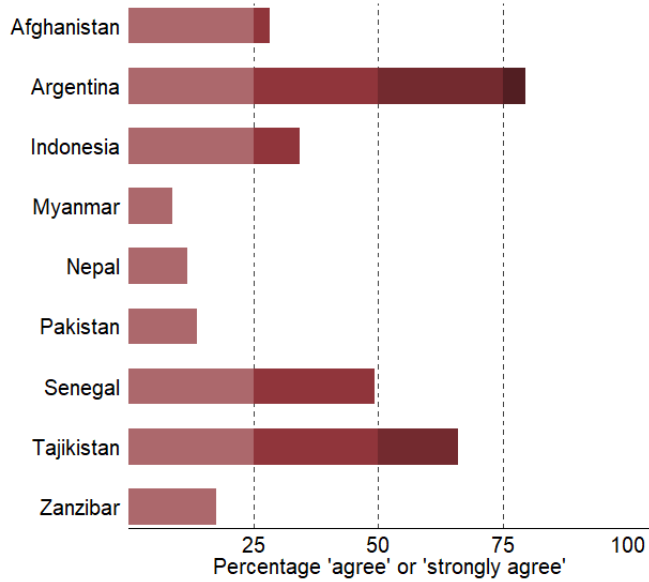
Figure 2b: Normalization of Absenteeism: when curriculum is complete or students are left with work

Share of teachers who believe absence is acceptable if the teacher…

i. Completed assigned curriculum

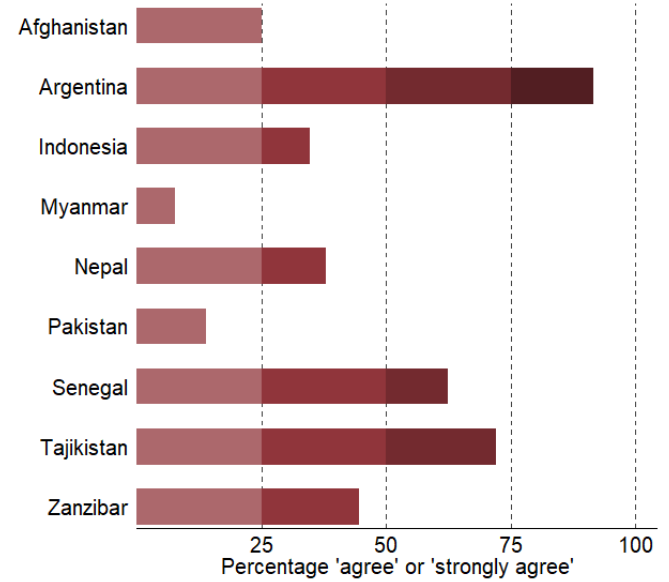ii. Leaves students with work to do in absence

Figure 2b: Normalization of Absenteeism: when teacher is engaged in community work

Share of teachers who believe absence is acceptable if the teacher…

iii.   Is doing something useful for the community

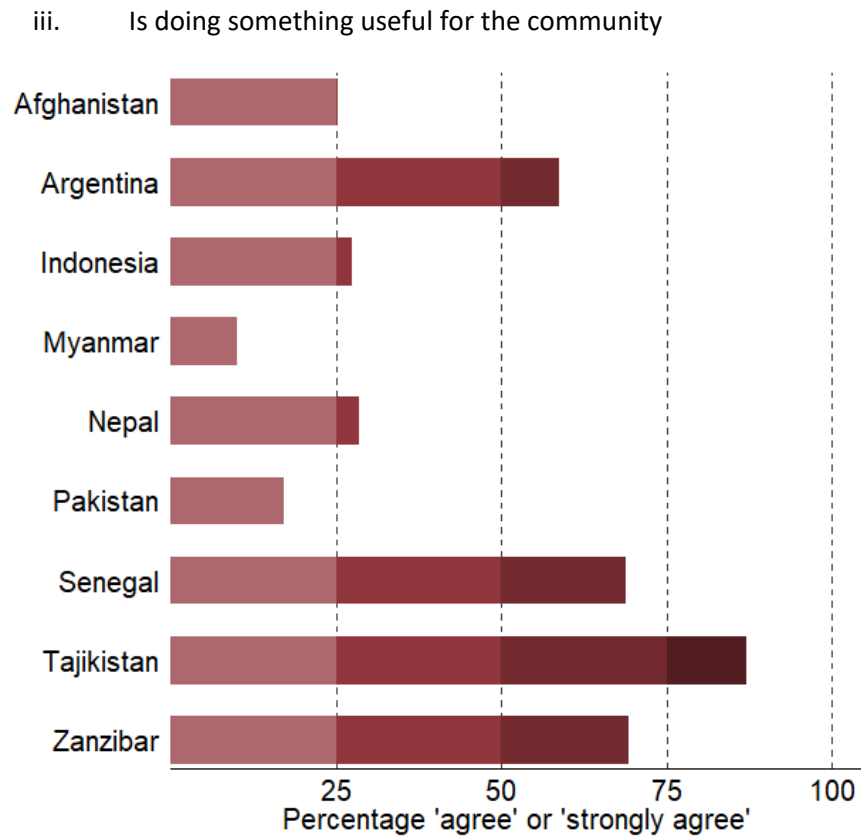Percentage 'agree' or 'strongly agree'

Figure 3: Teacher held responsible for student learning

Share of teachers who believe they are held responsible for student learning, even though learning is beyond their control
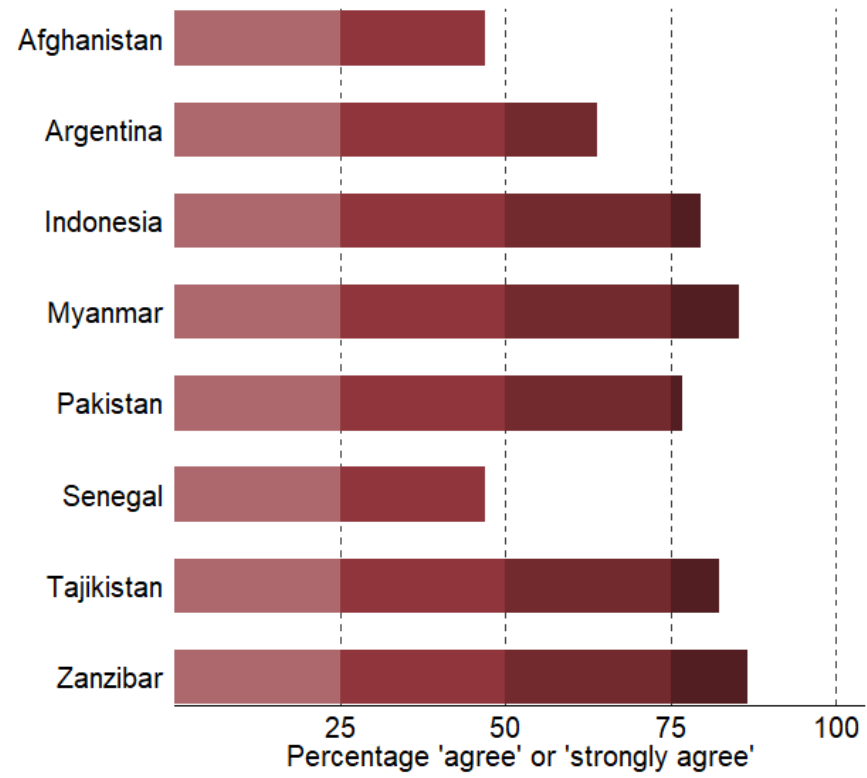
Figure 4: Support for test-based accountability

Share of teachers who believe test scores should be the main factor to assess their performance
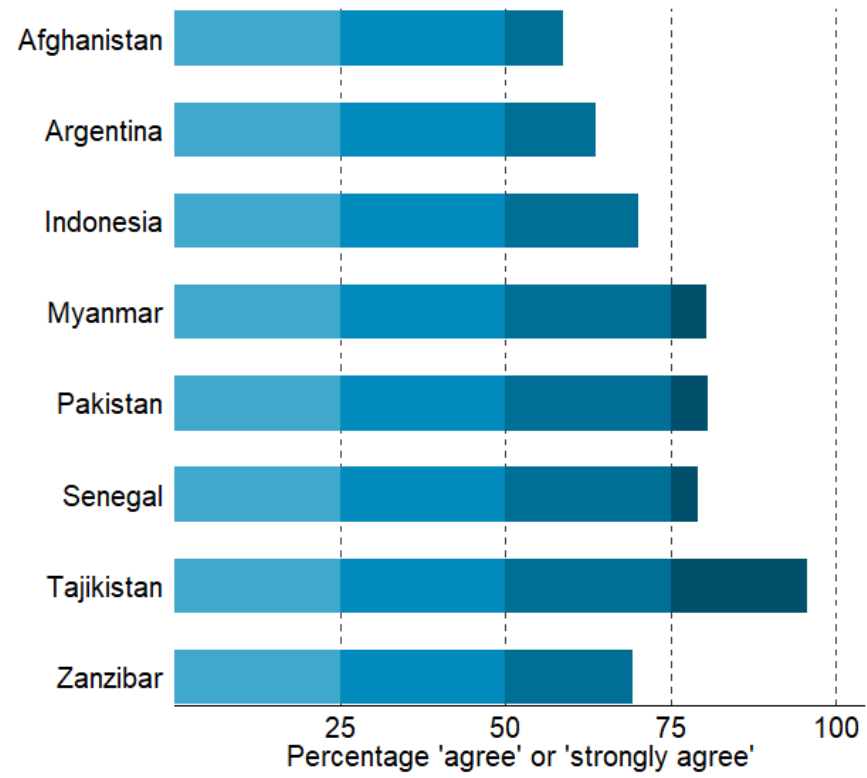
Figure 5: Perceived accountability gap

Share of teachers who believe they should be held responsible for students' learning compared to those who believe that test scores should the main factor to assess their performance
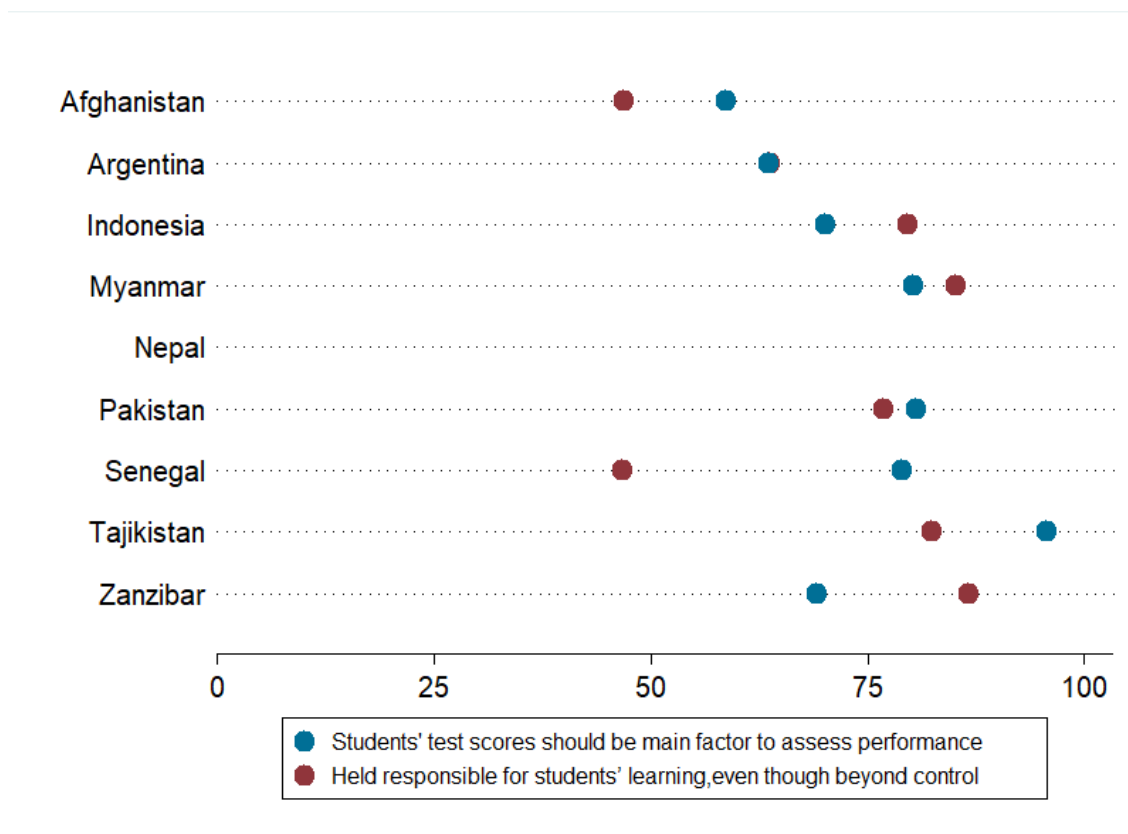
Figure 6: Support for zero- or non-zero-sum accountability

Share of teachers agree that…

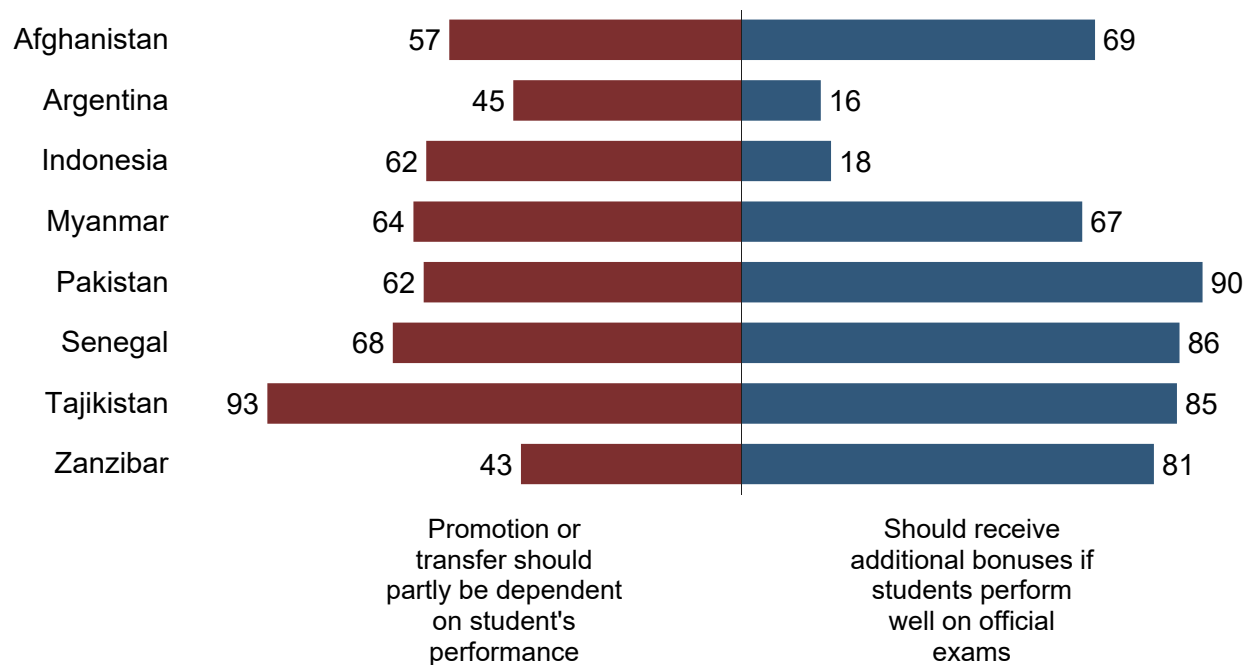| Country	Promotion or transfer should partly be dependent on student's performance	Should receive additional bonuses if students perform well on official exams
Afghanistan	57	69
Argentina	45	16
Indonesia	62	18
Myanmar	64	67
Pakistan	62	90
Senegal	68	86
Tajikistan	93	85
Zanzibar	43	81

Figure 7: Teachers believe it is difficult to pay equal attention to all students

Share of teachers who agree that it is difficult to pay equal attention to all students in a large classroom
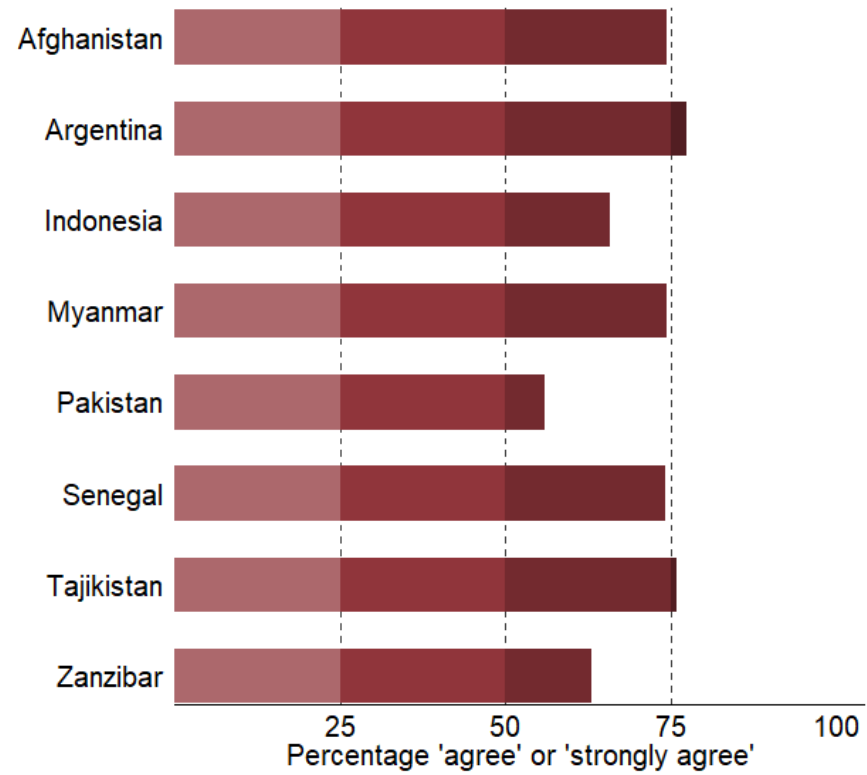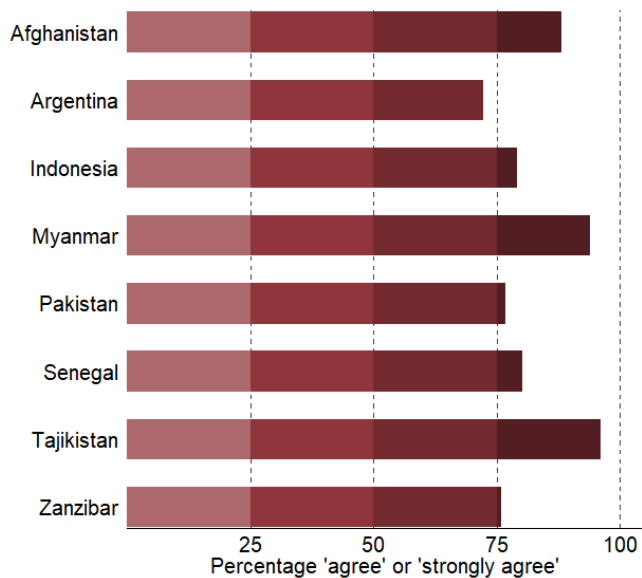
Figure 8: How teachers divide their attention across students

Share of teachers who agree that…

i. Student deserves more attention if he/she attends school regularly

Percentage 'agree' or 'strongly agree'

ii. Students deserves more attention if he/she has the necessary foundations

Percentage 'agree' or 'strongly agree'

Share of teachers who agree that…

iii.   Student deserves more attention if he/she comes to school with materials
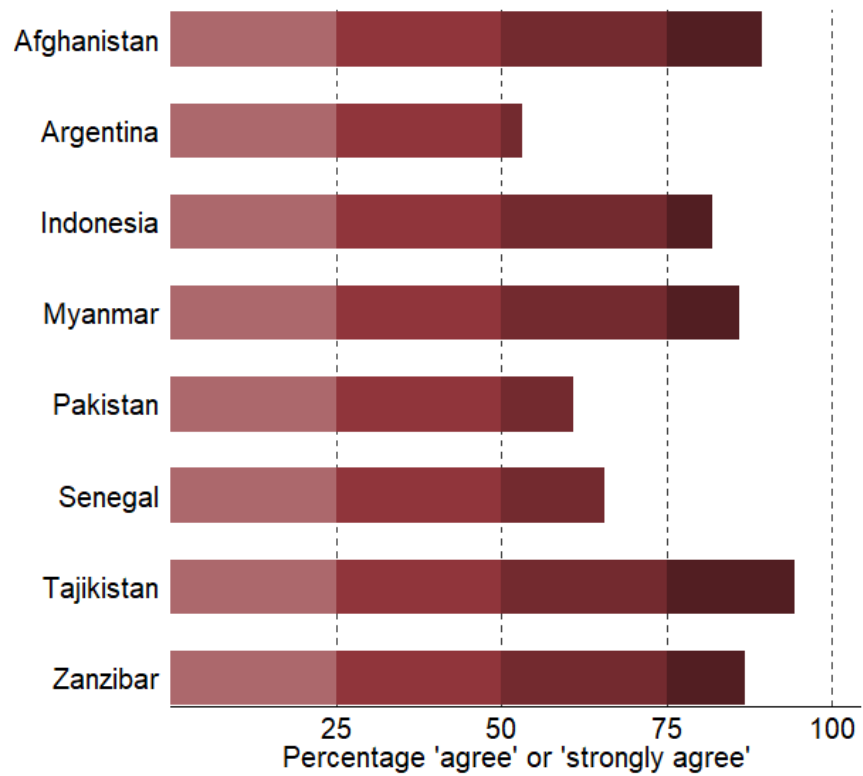
Figure 9: Teacher's belief on helping students that come unprepared from previous grades

Share of teachers who agree that there is very little they can do to help a student's learning if the student comes unprepared from previous grades
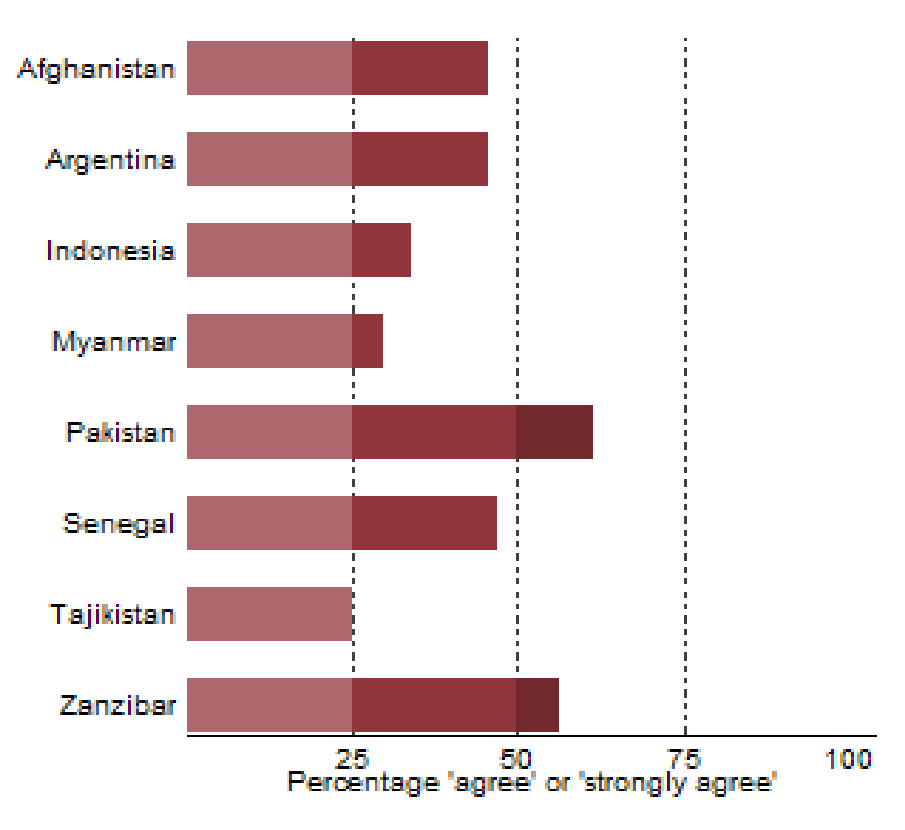
Figure 10: Ownership of student learning based on perceived ability

Share of teachers agree that...

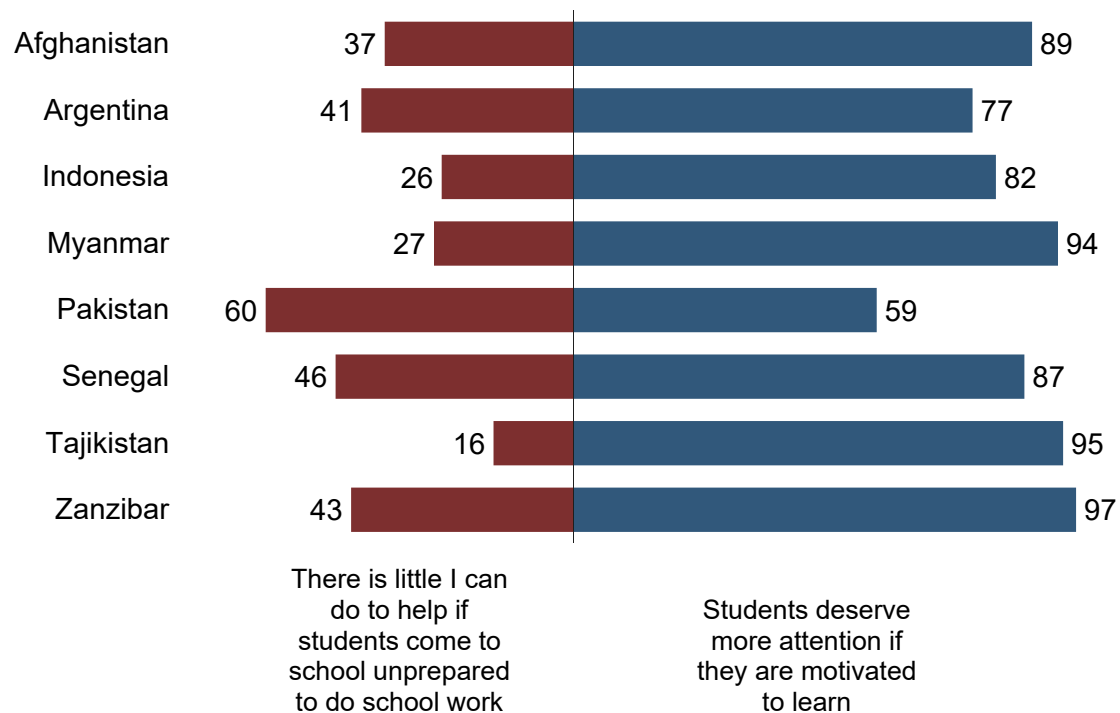|	There is little I can do to help if students come to school unprepared to do school work	Students deserve more attention if they are motivated to learn
Afghanistan	37	89
Argentina	41	77
Indonesia	26	82
Myanmar	27	94
Pakistan	60	59
Senegal	46	87
Tajikistan	16	95
Zanzibar	43	97

Figure 11: Teachers prioritize better-performing students

Share of teachers who believe that students deserve more of attention if…

Country	Lagging behind	Perform well
Afghanistan	47	83
Argentina	83	75
Indonesia	88	94
Myanmar	78	89
Pakistan	38	41
Senegal	49	73
Tajikistan	32	94
Zanzibar	55	70

Students deserve more attention if they are lagging behind in classroom/ homework

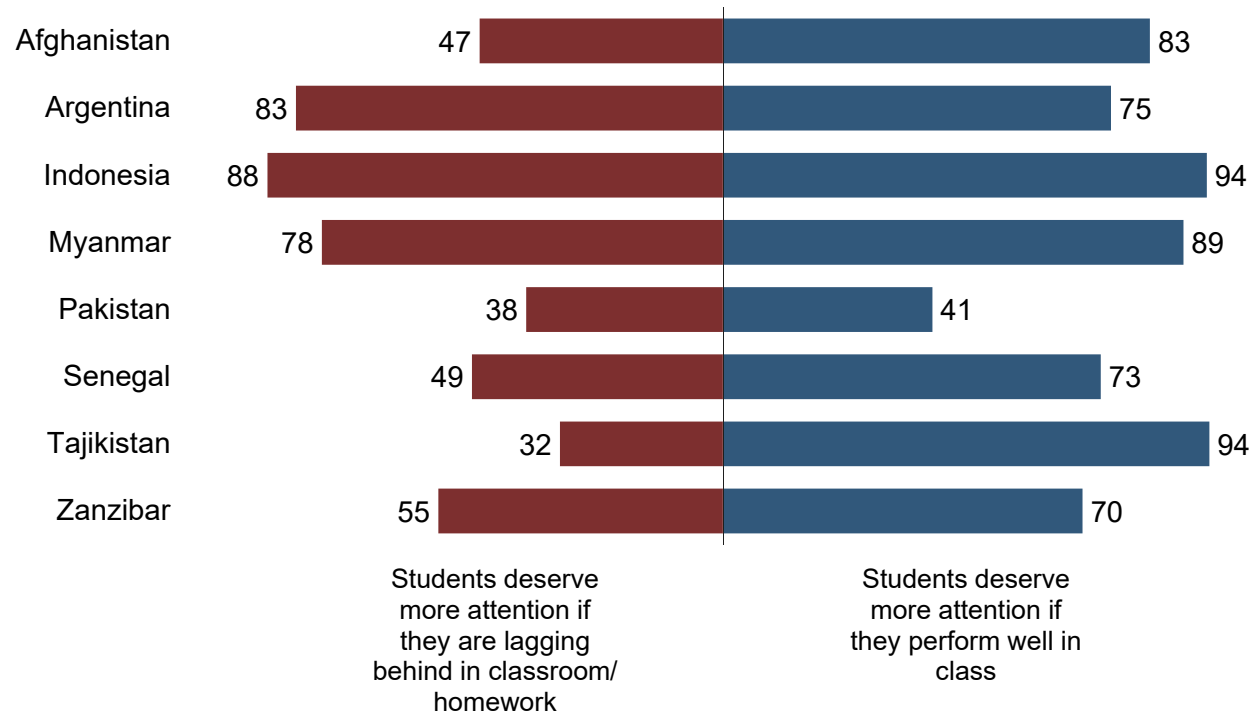Students deserve more attention if they perform well in class

Figure 12: Summary of Mental Models around Ownership

Share of teachers who believe that students deserve more of attention if…

Country	If they attend school regularly	If they have the necessary concepts and foundations from previous classes	Deserving if have material	Deserving if motivated	There is little I can do if students come to school unprepared
Afghanistan					
Argentina					
Indonesia					
Myanmar					
Pakistan					
Senegal					
Tajikistan					
Zanzibar					

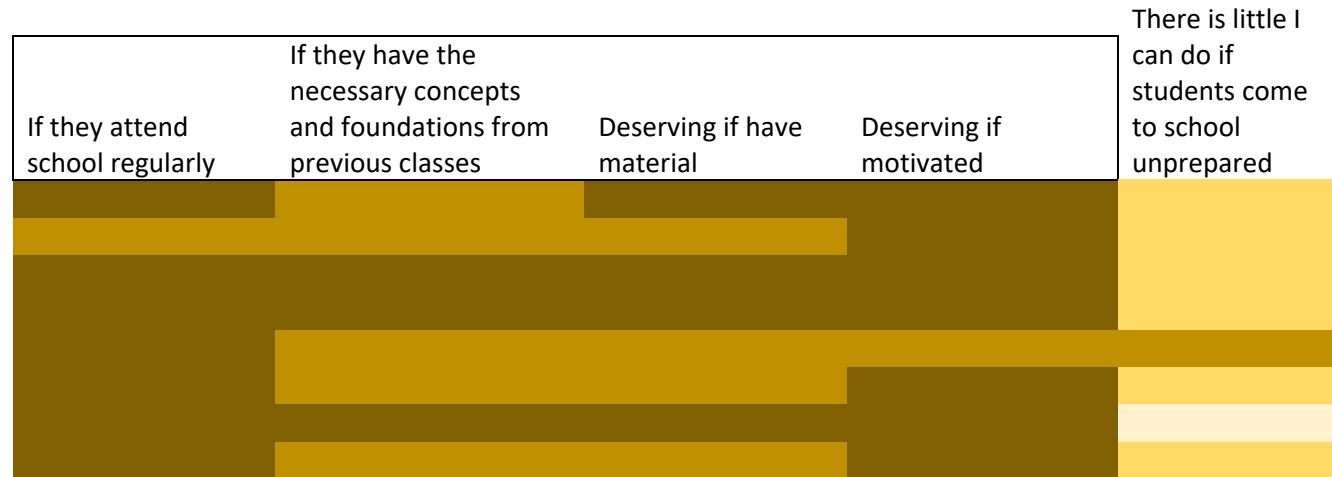|	
0-25%	low
26-50%	low-mid
51-75%	mid-high
76-100%	high

Figure 13: Ownership of student learning by parental financial status

Share of teachers who believe they cannot help students with parents that have too many personal/financial problems
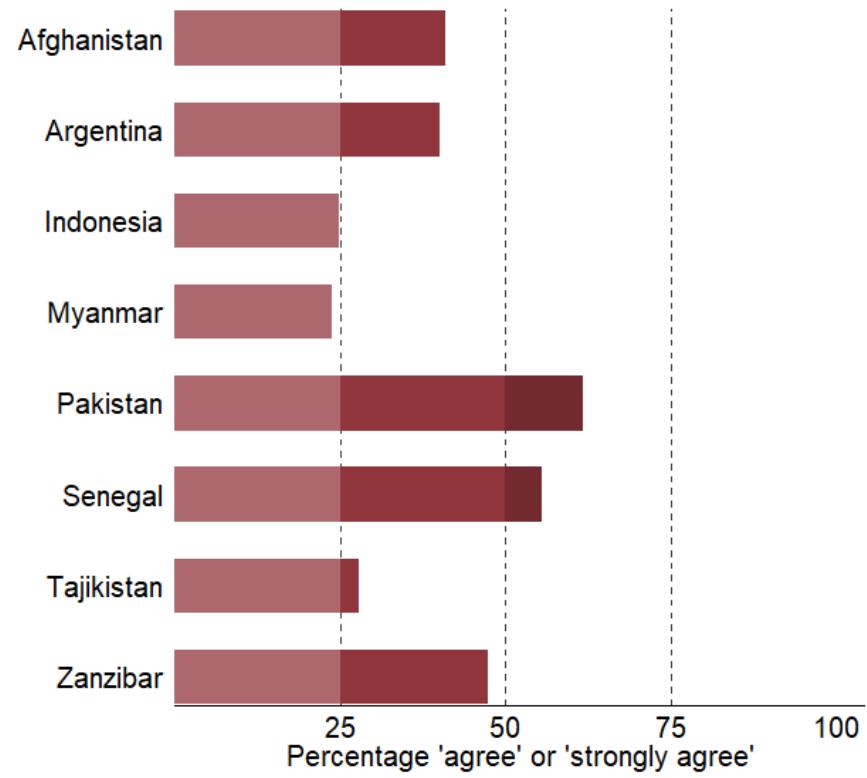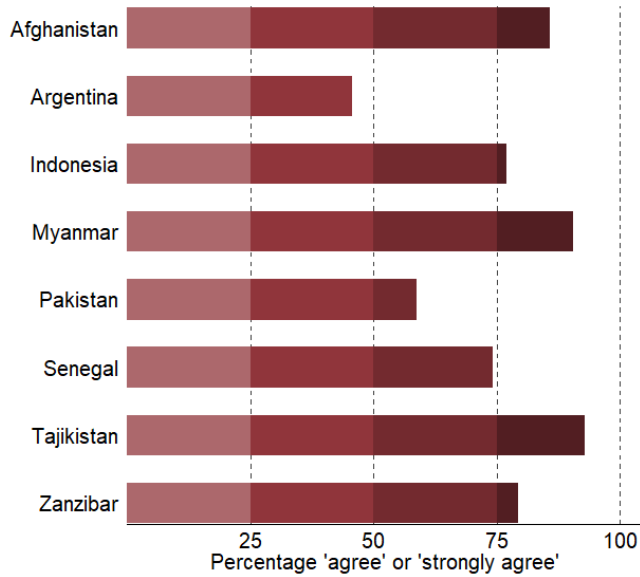
Figure 14: Ownership of student learning by parental involvement

Share of teachers who agree that…

i.   Student deserve more attention if parents involved in education

ii.   Can't help students when parents do not seek feedback
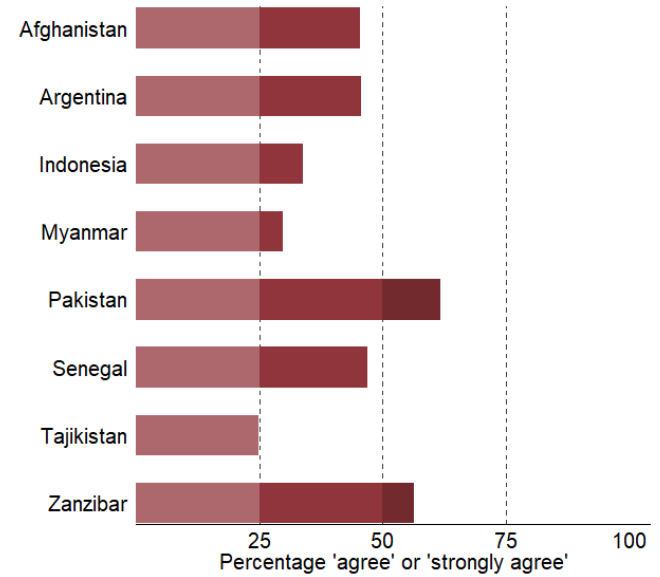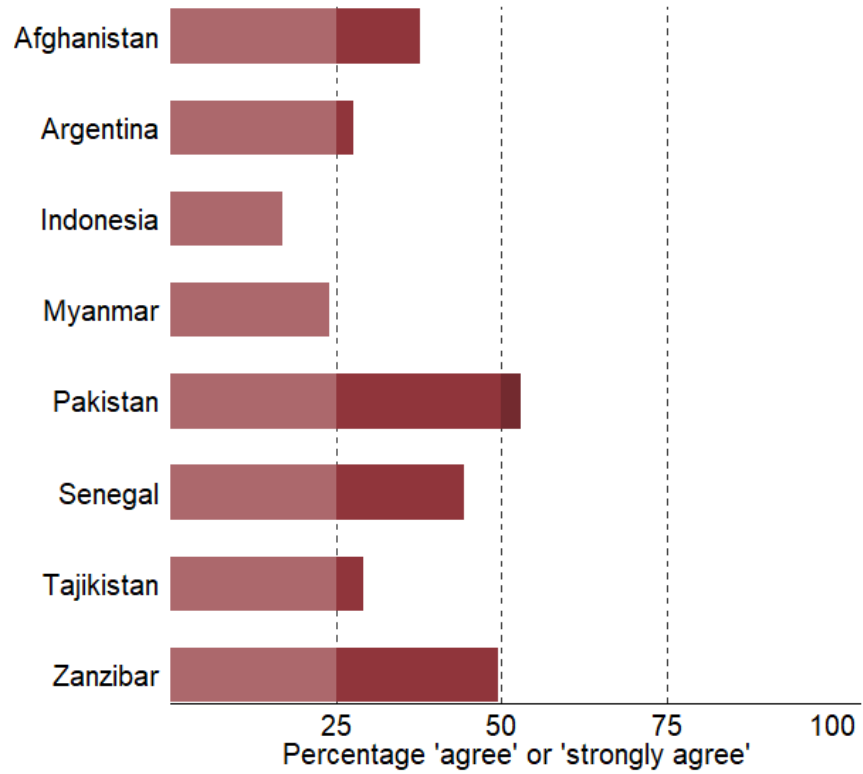
Figure 14: Ownership of student learning by parental education (contd)

Share of teachers who agree that…

iii.   Can't help students whose parents do not have the necessary education

Annex 1: Test of Social Desirability Bias

In Zanzibar, one group of teachers were asked direct questions about personal beliefs while the other was asked the same question indirectly (beliefs of teachers in general). The results for both responses are presented below.

	General	Personal	Difference
Difficult to pay equal attention to all students in large classroom	0.88	0.63	0.25
SE			0.04***
Students deserve attention: Motivated to learn	0.97	0.97	0.00
SE			0.02
Students deserve attention: Attend school regularly	0.85	0.76	0.09
SE			0.04**
Students deserve attention: Come to school with materials	0.90	0.87	0.03
SE			0.03
Students deserve attention: Have necessary foundation	0.80	0.73	0.07
SE			0.04*
Students deserve attention: Parents involved in education	0.86	0.79	0.07
SE			0.04*
Students deserve attention: Parents willing to invest in education	0.69	0.58	0.12
SE			0.05**
Students deserve attention: Lagging behind	0.54	0.55	0.01
SE			0.05
Students deserve attention: Perform well in class	0.80	0.70	0.10
SE			0.05**
Students' test scores should be main factor to assess performance	0.64	0.69	0.05
SE			0.05
Held responsible for students' learning, even though beyond control	0.92	0.87	0.05
SE			0.03
Can help: Student comes unprepared from previous grades	0.70	0.49	0.20
SE			0.05***
Can help: Students come to school unprepared to do school work	0.63	0.48	0.15
SE			0.05***
Can help: Parents do not seek feedback	0.49	0.39	0.10
SE			0.05*
Can help: Parents do not have the necessary education	0.54	0.38	0.17
SE			0.05***

Can help: Parents have too many personal/financial problems	0.43	0.40	0.03
SE			0.05
Should receive additional bonuses if students perform well on official exams	0.86	0.81	0.05
SE			0.04
Able to help even the lowest performing students learn	0.93	0.85	0.08
SE			0.03**
Confident: Motivate students to learn regardless of their financial status	0.94	0.97	0.04
SE			0.02*
Confident: Compensate for students' poor prior preparation	0.75	0.78	0.03
SE			0.04
Confident: Overcome the influences of a student's home environment	0.84	0.79	0.04
SE			0.04
Promotion or transfer should partly be dependent on student's performance	0.32	0.43	0.11
SE			0.05**
Acceptable absence: Complete assigned curriculum	0.15	0.18	0.03
SE			0.04
Acceptable absence: Leave students with work to do in absence	0.43	0.45	0.01
SE			0.05
Acceptable absence: Doing something useful for the community	0.52	0.69	0.17
SE			0.05***