It's Only a Matter of Time

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When trying to sustain and institutionalize education interventions, the education development sector can at times be blamed for designing Porsches that no one can afford. Because adding large pots of additional expenses is not realistic for many governments, we need to start by looking at what education systems are already investing in. In this policy brief, we draw on a recent cost analysis report ([Harris-Van Keuren, 2023](#)) examining eight successful literacy programs working at scale, conducted as part of the Learning at Scale study,[1] to argue that we need to be applying cost and efficiency lenses to the following key questions:

> This brief is the third in a three part series from the Learning at Scale study, drawing on the expertise of thought leaders to highlight broader policy implications stemming from this research.

1. How much teacher time is being invested in literacy instruction?
2. What costs are associated with providing effective training and support to teachers?
3. For what purposes and outcomes is teachers' time invested?
4. How is teacher time being held accountable in the education system?

As concluded in the Learning at Scale cost report, we seem to have the equation backwards. Instead of focusing on what additional resources our interventions bring to an education system, we should focus on what the system currently invests in and work to maximize those investments. Because teachers' salaries are often a government's single-largest budget item (Education Commission, 2019), one could make the argument to ministries of finance and others in government that this investment should be both protected and leveraged.

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[1] The Learning at Scale Study, implemented by RTI International with funding from the Bill and Melinda Gates Foundation and in collaboration with the Center for Global Development, investigates factors contributing to successful improvements in foundational learning outcomes in eight of the most effective large-scale early grade education programs in low- and middle-income countries. See www.learningatscale.net.

Per-teacher training and support costs can be compared to a teacher's salary over the same period of time to assess the relative expense of the teacher professional development (TPD) model and weigh its cost-effectiveness. For example, let's say that the monthly salary of a primary school teacher in Country X is US$500 per month, or US$24,000 over the course of four years. On average, the per-teacher training and support costs paid for by an external intervention over those four years is US$1,078. As a benchmark, we can consider if it is reasonable for the program's teacher training and support to cost about 4%[2] of a teacher's salary over those four years.[3] Indeed, 4% may be far too little to move the needle on teacher pedagogical practices and learner outcomes, especially since some teachers and learners will need greater support than others. Not all teachers and not all learners are equal in their needs.

How much teacher time is being invested in literacy instruction?

Findings from the Learning at Scale study demonstrate the dramatic differences among countries' education systems in terms of the time allocated for literacy instruction. For example, in Kenya, Ghana, and Senegal—all of which dedicate six years to primary school education—the governments allocate a total of 580 hours, 540 hours, and 864 hours, respectively, for literacy instruction. Meanwhile, Tanzania assigns a whopping 1,295 hours of planned instruction over seven years of primary school. That said, these figures should be considered dynamic, as governments may adjust the number of academic days per year, literacy lessons per week, and minutes of instruction per lesson, thereby making the context in which development partners work fluid. These changes can impact the costs incurred by partners as the pedagogical design of a program responds and adapts, which in turn can affect its chances of institutionalization.

What costs are associated with providing effective training and support to teachers?

The Learning at Scale study examined eight literacy programs that have evidence of effectiveness in improving student reading outcomes at scale. The analysis included an examination of two TPD

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[2] A similar benchmark is provided in Walls et al. (2021).

[3] This figure is hypothetical and should not be viewed as any kind of global benchmark. In some countries, teachers' salaries can be extremely low relative to the country's economic development, whereas in other countries, teachers are fairly compensated, especially when benefits are included in the analysis.

cost categories: teacher training and ongoing teacher support. Teacher training costs include those incurred for all personnel and activities related to teacher training, such as master training, training of trainers, and associated materials, in addition to the teacher training per diems, food, and other expenses. These costs represent both orientation and refresher sessions. Ongoing teacher support costs include the cost of coach training, support structures, and transportation reimbursement.

In the programs studied, the per-teacher training cost over the course of program implementation ranged from about US$9 to US$1,666. It is unclear which of these programs worked in contexts where the teacher training per diem rates were set by the government. Government-established per diem rates can quickly drive up the cost of teacher training.

Meanwhile, the cost to support each teacher was much lower than the cost of training. These per-teacher support costs were between US$3 and US$354. For one program, the cost to support teachers was only 1% of the total per-teacher training and support costs. For two programs, the percentage allocated to per-teacher support was over 60%. While each program offered some level of teacher support, the structure of that support varied widely. Some programs provided external coaching and classroom observations, some offered structured teacher learning circles, and others trained head teachers to provide in-school support. The frequency and duration of these support structures were different across the programs.

More rigorous evaluations are needed to determine what portion of improved instructional practice is attributable to training (and its specific ingredients) as compared to other ongoing supports. The wide range of costs described above underline the importance of country- and context-specific research when applying cost-effectiveness and systems-efficiency lenses to this kind of research. Some recent studies that address this include Kraft et al. (2016) and Byrne et al. (2022). However, it is difficult to achieve a process-oriented experimental design that isolates different inputs enough to draw causal linkages between TPD and teacher practice in the middle of program implementation, particularly if such research is not pre-baked into a program's design. Training evaluations often default to a participants' comment form or pre- and post-tests that are over-simplified and focused more on content knowledge (recall) than pedagogical application (practice). Coach observations, like teacher observations, are—for good reason—

focused on providing feedback and support to coaches and do not generate the kind of data needed to determine whether high-quality, effective support is being provided to teachers. This kind of research is even more critical when we consider the amount of teachers' time—during holiday breaks, weekends, and after school—that we are using for TPD efforts that may, in some cases, be ineffective.

Research shows that the timing of teacher training is critical to the potential of the content being implemented in the classroom. The challenge is not so much that teachers might not implement the new content because they don't feel like it. Instead, they simply might not remember the content. Indeed, as revealed in experimental studies conducted by German psychologist Hermann Ebbingahus in the late 19th century, 75% of new information is forgotten if not applied within six days of learning (Glaveski, 2019). This means that education development programs and governments might be providing training at the wrong time—and losing valuable money in the process. For example, if trainings take place over the summer or school holidays, teachers may go back into their classrooms recalling only a small percentage of what was covered in their training. But if new content is introduced periodically over an extended period of time, there is a significantly higher level of retention—upwards of 80% after 60 days (Glaveski, 2019). For the education development sector, this leans into frequent teacher support in the classrooms.

The recently published *In-Service Teacher Training Survey Instrument* (Popova et al., 2018) comprises a set of 70 indicators for measuring TPD activities across contexts. When this tool was applied to 33 programs, a number of "ingredients" were linked to higher increases in student learning scores: linking participation to career incentives, having a specific subject focus, providing opportunities to practice during training, and providing initial face-to-face training.

Currently, we still do not fully understand what aspects of successful interventions contribute to student learning. One tenet that our sector does primarily agree on is that teachers matter (National Institute of Child Health and Human Development, 2000). We also know that "training can be a powerful medium when there is proof that the root cause of the learning need is an undeveloped skill or a knowledge deficit" (Carucci, 2018). However, even top-notch TPD efforts will have a limited effect on the quality of teaching and student learning if the delivery of the prescribed pedagogy is not the root cause of the problem. For example, TPD will have no effect

on the quality of learning if teachers or students are absent (Benavot & Gad, 2004; Dubeck et al., 2012), if students do not understand the language of the instruction or of the content (RTI International, 2015b; Altinyelken et al., 2014), if students are hungry or sick, or if students fear being harmed in or on their way to school (Kibriya et al., 2017). Before investing in TPD, we must assess the extent to which insufficient professional development is an underlying cause of poor student performance.

For what purposes and outcomes is teachers' time invested?

Our sector has worked hard over the past two decades to establish language-specific benchmarks for reading fluency. Through the Global Proficiency Framework (USAID Education Links, 2019), we have internationally applicable minimum proficiency levels expected of students in grades one to nine in reading and mathematics. However, we do not have simple, clearly defined outcome variables for measuring instructional proficiency.

One possible measure of the quality of instruction is the proportion of class time that students spend actively reading or practicing a new skill (individually, in groups, and as a whole class). Other measures include the degree to which lessons are student centered—including student talk time, student choice, opportunities to ask and answer questions, and opportunities for students to discuss with one another (RTI International, 2015a). Teachers' use of formative assessments, in particular their ability to adapt instruction based on students' learning levels, is another indicator of instruction quality (Ralaingita et al., 2021; Kremer et al., 2013).

Still, it is difficult to collect rigorous data on instructional outcome variables. Because the design of lessons differs across programs and countries, it is often necessary to customize and align instructional measures to the steps in lesson plans. This is often done in coaching and monitoring tools used by school leaders and middle-tier system actors to provide post-training support teachers. While the data generated during coaching and monitoring can be useful for providing feedback and support to teachers, they are not (nor should they be) collected with the rigor, objectivity, and reliability needed to answer questions about cost-effectiveness and efficiency. Additionally, as Julia Ladics and her coauthors note in a recent RISE publication on measuring classroom practice (Ladics et al., 2018), teachers and principals themselves have shown to be

very inaccurate judges of what good-quality instruction looks like, despite their experience or own ability to provide good-quality teaching.

Efforts have been made to collect more uniform and objective data across contexts, focused on high-impact outcomes. The World Bank's (2022) *Teach* classroom observation tool has proven inter-rater reliability (Luna-Bazaldua et al., 2021) and is designed to be adapted and applied in classrooms around the world. While this tool is unable to capture more qualitative details, we are eager to see how data generated from the recently revised tool can be linked to different programs' TPD inputs.

One final issue is that outcome measures captured during classroom observations need to directly align to the focus of training and coaching efforts. These efforts are often stretched thin, presenting teachers with far too much information to absorb in the time allocated, much less to confidently detect changes in teachers' practice and link these changes to TPD elements.

How is teacher time being held accountable in the education system?

(And how are those who hold teachers accountable being held accountable themselves?)

A 2016 study published by Muralidharan et al. argues that when looking at evidence on teacher absence and, relatedly, effective student-teacher ratios, it becomes clear that increasing the frequency of monitoring is a far more cost-effective way to improve student-teacher ratios than simply hiring more teachers. Applying this finding to protecting the investment of teachers' time, we must ask, *How much time is squandered due to absent or ineffective monitoring and management by the government?*

When middle-tier education officials do not conduct monitoring visits to a reasonable level of quality (avoiding possible harm to teachers) or do so far less often than prescribed by the education system, the result is two points of time wasted: time lost by the official not doing the teacher monitoring, and lost teacher time because teachers are not being held accountable to show up or teach. Again, context is immensely important when assessing the effectiveness of accountability systems, as these systems face myriad challenges, including high transportation

costs, hard-to-reach schools, competing demands (including demands on time by various nongovernmental organizations), and job descriptions and policies that do not document the role of in-person monitoring, to name a few.

Conclusion

Applying a cost-effectiveness and efficiency lens to how teacher time is used will push nongovernmental organizations and governments to more often test and iterate TPD approaches and will give them more useful evidence to first maximize existing investments in teacher time, and, when necessary, to advocate for increased funding.

Specifically, this lens needs to be applied to the following tasks:

- Communicate findings from an increasing number of studies that investigate "time on task", effective instructional time and student-to-teacher ratios (after adjusting for teacher absenteeism).

- Support Ministries of Education in internal comparisons that examine differences in management and fidelity of monitoring at the subnational level, as well as the implications for accountability mechanisms regarding teachers' time.

- Invest in more rigorous and process-oriented research on TPD to gain a more nuanced understanding of the component parts, their relative costs, and how each "ingredient" is linked to teachers' time in the classroom. This may require a slower, more deliberate rollout of interventions in order to detect the transfer of knowledge from trainers to teachers. The sector will need to align these studies to agreed-upon outcome measures, while maintaining context-responsive research designs that take into account economies, labor markets, school calendars, and subnational barriers to teaching and learning.

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