Evaluating the design, implementation and impact of Social Sector Development Program trainings for teachers of secondary math and science in Nepal

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Online appendix B. The video assignment

This appendix briefly describes the design and implementation of the Video Assignment (VA), which was required of teachers in a randomly selected half of the schools assigned to the main Social Sector Development Program (SSDP) teacher training treatment. Because the study ultimately lacked power to distinguish impacts between variants of the SSDP training with and without the video assignment, and because the addition of the video assignment constituted a very small change in intervention design, the main report evaluates the effects of the SSDP training, averaging across sub-arms with and without the video assignment. Some of the tables in Online Appendix A show results of impact regressions that allow possible differences in impact for variants of the SSDP training with the VA (the TTVA study arm) and without the VA (the TT study arm).

Motivation. Suspecting that, in the absence of the video assignment, few teachers were held accountable for completing the project work or for adopting new teaching practices, we wished to examine whether the use of video technology could increase teachers' motivation to overcome the psychological or logistical hurdles that might prevent them from implementing new methods in their classrooms. By including the video assignment in the study, we also hoped to learn about the challenges of rolling out a new intervention, and about the potential for using video technology in teacher professional development activities more generally.

Description. Using exploratory qualitative research conducted in the summer of 2017, we refined the details of the video assignment. The supplementary video assignment (VA) activity took place after the education training center (ETC) training and after the end of the self-study project work period. It required the trained teachers to submit videos of themselves (during entire class sessions) implementing in their regular classrooms one of the lesson plans they were expected to create as part of the self-study project work. Teachers were also instructed to submit the associated written lesson plans. The videos were recorded by "focal persons," who were selected from nearby ETCs or District Education Offices (which were part of the federal government education hierarchy). We trained the focal persons during a two-day training in October of 2017, and provided them with Huawei Android phones, extra SD Cards, and tripods. They were paid per diems for school visits. The videos were to be graded according to a specific rubric, which emphasized alignment of teaching with curriculum and lesson plan, student engagement, use of interactive teaching methods, and checking for student understanding.[1] Teachers in schools assigned to the VA intervention were oriented to the VA and the grading rubric on the last day of

[1] The rubric was developed early in the study period, when early SSDP project documents described trainings that would focus more on interactive teaching methods and continuous assessment, rather than on specific 9th and 10th grade math and science concepts and related demonstration methods. As a result, the VA was not tailored in an ideal way to the SSDP curriculum focus, but it nonetheless required teachers to complete and practice with a lesson plan tied to the SSDP curriculum.

the regular SSDP training sessions at the ETCs, using handouts designed by the research team, and were contacted by focal persons to schedule the recording sessions. Teachers were told that the video assignment grade would not influence their grade for the training program, but teachers would receive feedback by phone once the videos had been graded.[2] Teachers were invited to enter their videos into a competition. Unfortunately, the major education sector reforms beginning shortly after roll-out rendered it impossible to complete the implementation of the competition.

Theory of change. The VA treatment aims to strengthen teachers' motivation for completing the project work portion of the SSDP training and for practicing in their own classrooms the new teaching methods introduced by the TT treatment. We suspected that in the absence of the video assignment, few teachers would be held accountable for completing the self-study project work and implementing new teaching methods. The actors most likely to hold teachers accountable are the school's head teachers, but head teachers are paid little for taking on head teacher responsibilities (in addition to their regular teaching loads), many have little training for school leadership or management, and often have busy teaching schedules that prevent them from monitoring the performance of other teachers in their schools (Schaffner, Glewwe and Sharma 2018). It seemed likely that some of the head teachers or school resource persons (who were to sign off on teachers' project work) would provide the required signatures on the self-study project completion forms without verifying teachers' satisfactory completion of the self-study tasks. Knowing that their teaching would be recorded and graded, teachers facing the video assignment might experience greater motivation to create lesson plans and to practice new methods, even though VA performance would not influence their training grade, if – out of a desire to avoid embarrassment, obtain praise, win a competition or share their teaching ideas with others – they wished to perform well while being video recorded. While the VA holds a teacher directly accountable only for implementing one new lesson plan, it might encourage longer-term change if it helps teachers overcome social, psychological or logistical barriers to implementing new methods.

For the VA treatment to strengthen the impact of the TT treatment, the following assumptions must hold. Focal persons must be adequately trained and provided with adequate video equipment. In the absence of the VA, teachers must be inadequately motivated to complete project work and implement new methods in their classrooms. They must also care enough about complying with instructions that they agree to be video recorded. They must understand the video assignment requirements and believe that their use of new teaching methods in the videos will be observed and appreciated by the focal person, ETC personnel, or their peers.

While we believed the VA had some potential to improve TT treatment impacts, we recognized that this one-time video observation had relatively low potential to bring about a long-run impact on student learning. Our broader motivations for including the VA in the study were to assess whether increased observation could motivate teachers (even on just a one-time basis) to undertake new activities that they would not otherwise undertake, and to learn about the feasibility

[2] It was not feasible to condition SSDP training grades on video assignment grades, because federal legislation would have been required to make such a change in the SSDP grading scheme.

of employing video technology in teacher professional development activities (a subject of significant interest to the policymakers with whom we were collaborating).

Implementation. The video assignment was rolled out in all but two of our study districts, though often with a greater lag after the relevant training than initially intended. To economize on per diem costs for VA focal persons, we planned for the focal persons to visit the schools to record class sessions for all relevant math and science teachers only after both math and science trainings had taken place. The funding delays mentioned in the main report sometimes led to long lags between first (usually math) and second (usually science) trainings within districts, and thus long delays between the end of the first training and the completion of the VA for teachers who attended the first training. In some districts a re-organization of the relevant ETCs (under a larger government reform) began shortly after the ETC training sessions were completed, rendering it difficult to complete the VA (because focal persons were transferred or lost interest).

According to telephone interview data, in places where the VA was rolled out most teachers recalled being informed about the VA during their SSDP training session, and most indeed had class sessions recorded by their focal person. Most focal persons made phone calls to schedule visits. Focal persons were also instructed to use these phone calls to remind teachers of the need to prepare and to remind them about the grading rubric. Though the focal persons were not required to provide teachers with immediate feedback on their performance after recording was completed, some did, and telephone interview data suggest that teachers appreciated this feedback, as well as the opportunity to view the video of their teaching. Some teachers who did not receive immediate feedback reported wishing that they had.

After visiting schools to make video assignment recordings, the focal persons submitted their videos to the relevant ETCs, for uploading onto ETC computers. At the research team's request, most ETCs also kept backups on a flash drive or hard drive. (For reasons related to protection of human subjects, the videos were not delivered to the research team. The videos were part of the intervention but were not employed as a source of data for this project.)

Our initial plan was for trainers in individual ETCs to grade the videos, but this had to be revised as the re-organization of the ETCs began. Some ETCs also lacked adequately skilled and willing staff trainers. We thus arranged for the videos to be sent for grading to just four ETCs. Ultimately 87 percent of the videos were graded. The graders attempted to reach teachers by phone to provide verbal feedback and were successful in all but a few cases.[3]

Costs. The video assignment (VA) cost calculations shown in Table B1 are based largely on actual costs incurred. We believe that the approximate cost incurred per teacher participating in the VA during our study greatly overstates the likely cost per teacher if rolled out on a larger scale,

[3] The implementation suffered from a few smaller, more idiosyncratic problems. In one district, the VA orientation was provided to non-VA teachers as well as VA teachers. In two districts, the focal persons didn't collect lesson plans. In one district the focal person made unannounced visits rather than making advance phone calls to schedule visits. In one district the ETC did not make the videos available for grading. In three districts there were small equipment problems, but these were quickly overcome.

Table B1. Costs for video assignment

Activity	Approach to estimation	Total in U.S. dollar equivalents for study roll-out[1]	Cost per school[2]	Cost per teacher in our study[3]	Cost per teacher if 40 (rather than 6) teachers per ETC.
Category 1: Costs incurred once for country					
Development of protocol and rubric, selection of equipment, preparation of focal person training	Two days of external consultant time plus one month of time of CPReC coordinator	1000.0	23.8	11.9	1.8
Category 2: Costs incurred once per ETC region					
Selection of focal person	Included in category 1				
Per diem and lodging for focal person training	Based on actual cost for 28 participants.	6863.9	163.4	81.7	12.3
Trainer time for focal person training	Two days of external consultant time plus other staff costs	1066	25.4	12.7	1.9
Recording equipment	15 set of equipment (video, tripod, memory card)	3957.1	94.2	47.1	7.1
Category 3: Costs incurred once per training session					
Per diems for focal person recording visits	Average cost of $64.30 per school visit * 42 schools visited	2698.7	64.3	32.2	25.7[4]
ETC personnel costs for storing and grading videos, and providing feedback to teachers		1061.8	25.3	12.6	6.3[5]
Totals		16647.5	396.4	198.2	55.1

Notes: [1] The exchange rate used is US$ 1 =NRs. 110. [2] Where relevant, totals are divided across the 42 schools visited. [3] We divide the cost per school by two, because the focal persons typically visited 1 math teacher and 1 science teacher per school. We assume that no additional focal person training or video equipment would be required. [4] Assuming an average of 2.5 teachers can be visited per school. [5] Assuming efficiency gains cut this per-video cost in half.

because the fixed costs of acquiring video recording equipment and training the focal persons would fall on a per-teacher basis as scale increases. The focal person per diem costs per school visit would also probably fall somewhat as scale increases, if the focal persons could arrange to observe more than two teachers per school visit. For the calculations in the final column of Table B1, we estimate what the cost per teacher would be if the number of teachers per focal person had been 40 rather than 6, assuming that no new video equipment purchase or focal person training would be required, and assuming that the focal person would visit 2.5 teachers per school visit. (We did not raise the number of teachers visited per school above 2.5, because many schools have only 1 secondary math teacher and 1 secondary science teacher, and because, even in schools with more than two secondary math and science teachers, it may be difficult to attract all of them to trainings simultaneously, given that the trainings are held during regular school days, implying strong pressure to leave some teachers behind to lead class sessions).

Even under a roll-out that reduces per-teacher costs to the level suggested by the last column of Table B1, the video assignment was more costly on a per-teacher basis than we anticipated. This is especially concerning, because it was intended not as a complete intervention, but as an experiment that might shed light on the potential to use more expensive periodic (rather than one-time) classroom observations to improve motivation for, and increase the adoption of, new teaching practices.

A first reason the costs were higher than expected was that, despite widespread access to phones with video recording capacity among teachers, policymakers argued that the videos should be recorded by ETC or DEO staff in all locations rather than by the teachers themselves (which could be done at least in locations with good cell phone coverage). The use of videos recorded by teachers themselves has been integrated into teacher professional development programs in other countries (Hirschboeck 2018), and indeed several companies even offer online platforms for uploading and sharing videos with mentors or peer groups.

A second factor contributing to high VA costs was the decision, reached together with policymakers, to train two focal persons per district, even though the necessary tasks could have been completed by one focal person per district. One reason for this choice was that rates of promotion and transfer within Nepal's government institutions are high, creating the risk of becoming unable to complete the VA because of the departure of a focal person. Having two focal persons in place per district would mitigate this risk. Second, two sets of Government of Nepal education policy institutions had some stake in our study: the Department of Education, together with the District Education Offices (DEO) under its control, and the National Centre for Educational Development (NCED), together with the ETCs under its control. By choosing one focal person from the local DEO and one from the local ETC in each district, we hoped to avoid some potential disagreements that could have slowed the development of the project.

A third reason costs were higher than expected was the (somewhat surprising) extent to which ETC personnel required compensation for carrying out school visits, grading video assignments, and completing other administrative tasks that one could construe as part of their regular job description. (Our impression was that ETC officials also seemed to want or expect compensation

for providing monitoring data that, in principle, they already collect.) We see this need for compensating government personnel for each new task, no matter how similar or complementary to their regular responsibilities, as a symptom of the general weakness of the institutions through which policymakers in Kathmandu have sought to direct what is happening in the districts. Recent governance reforms that, at least in principle, increase the roles of provincial and local governments in overseeing teacher training may provide an important opening for new administrative relationships involving more direct observation and accountability of trainers, teachers and other education sector personnel.

Reference

Hirschboeck, K, 2018. *Integrating Video Observation into Teacher Professional Development.* Capstone Paper. Tufts University.