



Solving Absenteeism, Raising Test Scores

SEPTEMBER 2008

POLICY BRIEFCASE NO. 6



On an average day in rural Udaipur, India, 44 percent of teachers are absent from school. While Udaipur's problem was especially severe, teacher absence is all too typical of schools in poor countries. This has raised important policy questions about how best to reduce absenteeism, what role incentives can play in addressing the problem, and how best to structure such programs. This briefcase summarizes the implications from the evaluation of one highly successful program.

A program run by Seva Mandir (and evaluated by Duflo, Hanna and Ryan) points the way towards a solution. It demonstrates how objective monitoring linked to incentives improved teacher attendance and raised test scores. In the study, single-teacher schools run by Seva Mandir were randomly assigned to a monitoring and incentive program using cameras with a date and time stamp. Teachers were instructed to have their picture taken each day with students and were paid only when the cameras recorded them present.

Objective monitoring linked to clear, credible incentives motivated attendance.

Teachers responded to modestly sized incentives. Teacher absence dropped to 21 percent in the camera program from 42 percent in a control group. Per student, an additional day of teacher presence cost only 11 cents.

Material incentives did not destroy teachers' intrinsic motivation.

Some theories warn that if teachers are paid for showing up they might only show up—and not teach. Yet, when teachers were present, teachers in the camera program were as likely as teachers in the control group to be teaching.

Higher teacher attendance means higher test scores for students.

Students in camera schools were 40 percent more likely to graduate into government schools.

Incentive programs mediated by supervisors can fail because managers do not implement the incentives.

In contrast, other studies have shown that when supervisors have discretion, such as the ability to excuse or overlook absences, incentives often go unenforced (Kremer and Chen, 2001). By directly linking pay to clear rules and impersonal monitoring, the camera program solved this problem.

For more details on this study see Duflo, Hanna and Ryan (2008) available at www.povertyactionlab.org

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Box 1 – Teacher Absence: A Widespread Problem for the Poor

Chaudhury, et al. (2006) record the results of almost 70,000 surprise visits to a representative sample of primary schools and clinics across nine poor countries and three continents. Teachers were absent 19 percent of the time on average, and health care workers 35 percent of the time. In general, the poorer the country the higher the absence rates. On an average day, 27 percent of teachers are not at work in Uganda. This compares with an average 5 percent of teachers absent in New York state.

In poor countries, few teachers face any threat of being fired for excessive absences. Only one head teacher in 3,000 Indian government schools surveyed reported a teacher being fired for poor attendance.

In rural Udaipur in India, Seva Mandir, an Indian NGO, runs informal schools to help students not reached by ordinary government schools. Each school has only one teacher who instructs about 20 students in basic Hindi and math. Similar to other schools around the world, teacher absenteeism was high: the teacher absence rate was 44 percent.

Because these were NGO schools and teachers, it was an ideal setting to test how teachers responded to incentives: would the incentives be effective, or would teachers find a way around the system? Unlike government schools, Seva Mandir had enough freedom and control over its own schools to experiment with a straightforward method for motivating teachers.

Each teacher in the program was given a camera with a tamper-proof date and time stamp and was instructed to take a picture with students at the beginning and end of each school day. Teachers were paid for the number of days that they attended as recorded by the cameras, giving them a clear incentive to attend school.

To test the effectiveness of the program, Seva Mandir randomly assigned half of the teachers to the camera program, while the rest were supervised and paid the normal way as a control group. Unannounced, random checks measured the true attendance of each group.

Using Cameras to Control Absence

The camera program did not require a large change in school regulations or institutions. Instead, it provided a way to enforce existing rules.

INCENTIVES

- Ordinarily, teachers were paid a salary of Rs. 1,000 (about \$22) per month, for 21 days of teaching.
- In the camera schools, each teacher was guaranteed a base pay of Rs. 500. Teachers were rewarded with Rs. 50 for each valid day taught.
- When the incentives were implemented, monthly pay ranged from Rs. 500 to Rs. 1,300.
- Upon receiving the first paycheck under the program, each teacher received a detailed explanation of how it was calculated.

MONITORING PROCEDURE

- Teachers were instructed to have a student take a picture of the teacher and other students at the beginning and end of each school day.
- A teacher was counted as present only if the two pictures were separated by at least five hours and a minimum number of students were present.
- This rule was strictly enforced and gave teachers one hour of grace from a six hour work day.
- Cameras were collected a few days before the end of a pay period so there was minimal delay between action and reward.

CAMERAS

- The time and date buttons on the cameras were covered with heavy tape. Each had a seal that would indicate tampering. Teachers were told they would be fined if the seals were broken; no seals were broken.
- Teachers were told they would be fined for using the camera for any other purpose; one teacher did.
- Camera upkeep (replacing batteries, changing film, etc.) was done at regular monthly teacher meetings.
- If a camera malfunctioned, teachers were instructed to call within 48 hours and were credited for the first day of the broken machine.

Monitoring with Incentives Worked

The camera-mediated incentives improved teacher attendance. Attendance increased from 58 percent in the control group to 79 percent in the group with cameras (figure 1). Overall, this translates into 34 more days of instruction per student per year.

Attendance increased for teachers with both relatively high and low attendance records. In the camera group, 36 percent of the teachers were present at least 90 percent of school days; in the control group, only one teacher was. Extreme

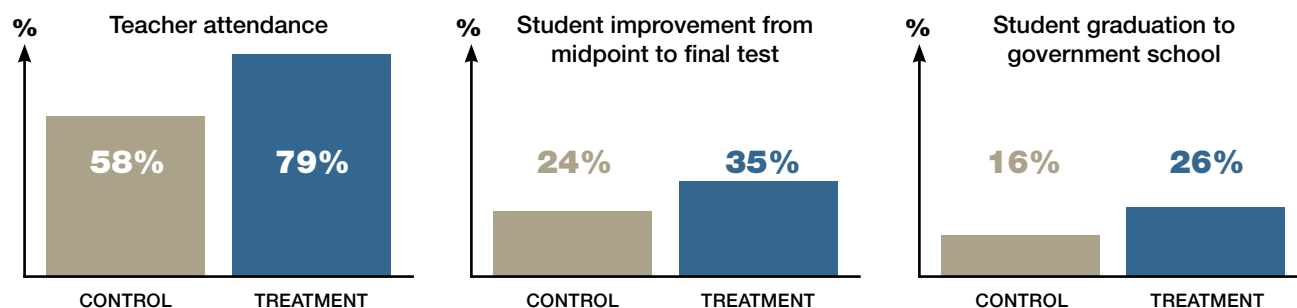


FIGURE 1

delinquency—teachers who were absent more than half the time—was eliminated in the program schools.

Attendance data collected during the unannounced random checks corresponded with attendance data from the cameras. This verified that teachers were not simply coming to school for the photos, but rather were attending the entire school day.

Teachers liked the program because it gave them some control over their own income. Some initially resisted its inflexibility—invalid pictures meant no pay even if a teacher was present. But teachers grew to better understand the program and technical problems became rare.

Monitoring is still working. Because the cameras were so successful, Seva Mandir has continued to use them long after the experiment has ended. From October 2006 to September 2007, attendance was 15 percentage points higher in classrooms with cameras, compared to those without cameras; attendance was still as high as before in the school with cameras, but it had somewhat improved in the other schools.

Students Learned More

When teachers came to school more, students learned more. Despite fears that well-enforced monetary incentives would reduce teachers' intrinsic motivation, teachers did not reduce their effort.

While at school, a teacher in the camera group was as likely to be teaching students as a teacher in the control group.

Students in the camera schools learned more. They had higher test scores by 0.17 standard deviations and were 62 percent more likely to be admitted to regular government schools. Seven percent more girls were able to take a test that required being able to write.

This study also speaks to the debate on informal schools. Many say such schools are ineffective because teachers tend to be less skilled than government teachers. However, this program shows that under the right conditions informal schools can improve education for the rural poor.

Box 2 – The Importance of Impersonal Monitoring

The camera program succeeded where other efforts to monitor teachers and provide incentives for attendance have failed. Typically there are procedures for disciplining teachers with poor attendance, but these are rarely used, which means they provide little incentive to attend.

In Kenya, the Early Childhood Education Project offered substantial material incentives to teachers with good attendance as reported by their supervisor. Yet, Kremer and Chen (2001) found no effect of this program on absences. There was substantial cheating: in every school, the headmaster reported sufficient attendance for the teacher to receive the prize.

This example demonstrates the key feature of the camera program: impersonal, external monitoring coupled with a clear, credible, and automatic threat of punishment and promise of reward. The report of the camera was final; the corresponding paycheck was immediate and non-negotiable.



Cost-effectiveness

The camera program was not designed to be a scalable intervention, but rather to test the impact of motivating teacher attendance, particularly for student learning. Because the incentive pay proved equal on average to the salary teachers would otherwise be paid, the only cost of the program was for cameras and monitoring. Surprisingly, the program was so successful that it became a cost-effective way of promoting learning.

The program cost Rs. 5,379 (about \$120) per teacher per year, about 40 percent of a teacher's yearly salary. Of this, about \$25 was for the camera; \$85 was for film, batteries, and photo development; and \$10 was for labor costs to run the program.

Each additional day of teacher presence cost \$2.20. This translates into 11 cents per extra day of school per child. A larger program with more economy of scale or digital cameras might be even less expensive.

Policy Lessons

Rampant absenteeism of teachers and health care workers around the world is not going to be solved by cameras. This study was not designed to test a replicable program, but to understand the effect of monitoring.

Objective monitoring with incentives worked. Given credible incentives to attend school, teachers improved their attendance. Once at school, teachers in camera schools were just as likely as regularly salaried teachers to actually be teaching, so monitoring caused teaching time to go up. Incentives did not undermine teachers' motivation: students learned more, scored higher on tests, and were more likely to graduate.

The camera program's objective monitoring linked directly to incentives caused it to succeed where other programs designed to motivate teacher attendance failed. Neither teachers nor their supervisors could hide performance, excuse absences, or distort incentives. The result gave teachers control of their incomes and gave students a better education.

FOR FURTHER READING:

Chaudhury, Nazmul, et al. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Economic Perspectives*, 2006.

Duflo, Esther, Rema Hanna, and Stephan Ryan. "Monitoring Works: Getting Teachers to Come to School." 2008.

Kremer, Michael, and Daniel Chen. "Interim Report on a Teacher Attendance Incentive Program in Kenya." 2001.



Solving Absenteeism, Raising Test Scores

- Objective monitoring linked to clear, credible incentives motivated teacher attendance.
- Students' test scores rose significantly.
- Material incentives did not destroy teachers' intrinsic motivation.
- Incentive programs mediated by supervisors often fail because managers do not implement the incentives.

This briefcase summarizes the evidence of a program that linked teacher pay to objective measures of teacher attendance through the use of cameras generating date and time stamped pictures.

