

## CASE STUDY 3: EXTRA TEACHER PROGRAM

How to Randomize?

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This case study is based on the paper “Peer Effects and the Impact of Tracking: Evidence from a Randomized Evaluation in Kenya,” by Esther Duflo (MIT), Pascaline Dupas (UCLA), and Michael Kremer (Harvard)

J-PAL thanks the authors for allowing us to use their paper.

## KEY VOCABULARY

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**Level of randomization:** the level of observation (e.g., individual, household, school, village) at which treatment and comparison groups are randomly assigned.

## INTRODUCTION

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Confronted with overcrowded schools and a shortage of teachers, in 2005 the NGO International Child Support Africa (ICS) offered to help the school system of Western Kenya by introducing contract teachers in 120 primary schools. Under its two-year program, ICS provided funds to these schools to hire one extra teacher per school. In contrast to the civil servants hired by the Ministry of Education, contract teachers are hired locally by school committees. ICS expected this program to improve student learning by, among other things, decreasing class size and using teachers who are more directly accountable to the communities they serve. However, contract teachers tend to have less training and receive a lower monthly salary than their civil servant counterparts. Thus there was concern about whether these teachers were sufficiently motivated, given their compensation, or qualified, given their credentials.

What experimental designs could test the impact of this intervention on educational achievement? Which of these changes in the school landscape is primarily responsible for improved student performance?

## OVERCROWDED SCHOOLS

Like many other developing countries, Kenya has recently made rapid progress toward the Millennium Development Goal of universal primary education. Largely due to the elimination of school fees in 2003, primary school enrollment rose nearly 30 percent, from 5.9 million to 7.6 million between 2002 and 2005.

Without accompanying government funding, however, this progress has created its own set of new challenges in Kenya:

**1. Large class sizes:** Due to budget constraints, the rise in primary school enrollment has not been matched by proportional increases in the number of teachers. (Teacher salaries already account for the largest component of educational spending.) The result has been very large class sizes, particularly in lower grades. In a sample of schools in Western Kenya, for example, the average first grade class in 2005 had 83 students. This is concerning because it is believed that small classes are most important for the youngest students, who are still acclimating to the school environment. The Kenyan National Union of Teachers estimates that the country needs an additional 60,000 primary school teachers in addition to the existing 175,000 in order to reach all primary students and decrease class sizes.

**2. Teacher absenteeism:** Further exacerbating the problem of high pupil-teacher ratios, teacher absenteeism remains high, reaching nearly 20 percent in some areas of Kenya.

There are typically no substitutes for absent teachers, so students simply mill around, go home, or join another class, often in a different grade. Small schools, which are prevalent in rural areas of developing countries, may be closed entirely as a result of teacher absence. Families have to consider whether school will even be open when deciding whether or not to send their children to school. An obvious result is low student attendance—even on days when the school is open.

**3. Heterogeneous classes:** Classes in Kenya are also very heterogeneous, with students varying widely in terms of school preparedness and support from home.

Grouping students into classes sorted by ability (known as tracking, or streaming) is controversial among academics and policymakers. On one hand, if teachers find it easier to teach a homogeneous group of students,

tracking could improve school effectiveness and test scores. Many argue, on the other hand, that if students learn in part from their peers, tracking could disadvantage low-achieving students while benefiting high-achieving students, thereby exacerbating inequality.

**4. Scarce school materials:** Because of the high costs of educational inputs and the rising number of students, educational resources other than the teacher are stretched, and in some cases up to four students must share one textbook. Additionally, an already overburdened infrastructure deteriorates faster when forced to serve more children.

**5. Low completion rates:** As a result of these factors, completion rates are very low in Kenya, with only 45.1 percent of boys and 43.3 percent of girls completing the first grade.

All in all, these issues pose a new challenge to the community: how to ensure minimum quality of education given Kenya's budget constraints.

## WHAT ARE CONTRACT TEACHERS?

Governments in several developing countries have responded to similar challenges by staffing unfilled teaching positions with locally hired contract teachers who are not civil service employees. There are four main characteristics of contract teachers: they are (1) appointed on annual renewable contracts, with no guarantee of renewed employment (unlike regular civil service teachers); (2) often less qualified than regular teachers and much less likely to have a formal teacher training certificate or degree; (3) paid lower salaries than those of regular teachers (typically less than a fifth of the salaries paid to regular teachers); and (4) more likely to be from the local area where the school is located.

## ARE CONTRACT TEACHERS EFFECTIVE?

The increasing use of contract teachers has been one of the most significant policy innovations in providing primary education in developing countries, but it has also been highly controversial. Supporters say that using contract teachers is an efficient way of expanding education access and quality to a large number of first-generation learners. Knowing that the school committee's decision of whether or not to rehire them the following year may hinge on performance, contract

teachers are motivated to try harder than their tenured government counterparts. Contract teachers are also often more similar to their students geographically, culturally, and socioeconomically.

Opponents argue that using underqualified and untrained teachers may staff classrooms, but will not produce learning outcomes. Furthermore, the use of contract teachers de-professionalizes teaching, reduces the prestige of the entire profession, and reduces motivation of all teachers. Even if it helps in the short term, it may hurt efforts to recruit highly qualified teachers in the future.

While the use of contract teachers has generated much controversy, there is very little rigorous evidence regarding the effectiveness of contract teachers in improving student learning outcomes.

## THE EXTRA TEACHER PROGRAM RANDOMIZED EVALUATION

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In January 2005, ICS Africa initiated a two-year program to examine the effect of contract teachers on education in Kenya. Under the program, ICS gave funds to 120 local school committees to hire one extra contract teacher to teach an additional first grade class. The purpose of this intervention was to address three challenges: class size, teacher accountability, and heterogeneity of ability. The evaluation was designed to measure the impact of class-size reductions, the relative effectiveness of contract teachers, and how tracking by ability would impact both low- and high-achieving students.

## ADDRESSING MULTIPLE RESEARCH QUESTIONS THROUGH EXPERIMENTAL DESIGN

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Different randomization strategies may be used to answer different questions. What strategies could be used to evaluate the following questions? How would you design the study? Who would be in the treatment and control groups, and how would they be randomly assigned to these groups?

### Discussion Topic 1

*Testing the effectiveness of contract teachers*

1. What is the relative effectiveness of contract teachers versus regular government teachers?

### Discussion Topic 2

*Looking at more general approaches to improving education*

1. What is the effect of grouping students by ability on student performance?
2. What is the effect of smaller class sizes on student performance?

### Discussion Topic 3

*Addressing all questions with a single evaluation*

1. Could a single evaluation explore all of these issues at once?
2. What randomization strategy could do so?