Title: The Impacts of KIPP Schools on Student Outcomes

Authors: Phil Gleason, Christina Tuttle, Brian Gill, Ira Nichols-Barrer, and Alex Resch
Mathematica Policy Research
**Background / Context:**

*Description of prior research and its intellectual context.*

Since its inception in the mid-1990s, KIPP has grown from two core middle schools to a nationwide network of 110 charter schools in 20 states and the District of Columbia as of the 2011–2012 school year. KIPP now serves over 32,000 students at the elementary, middle, and high school levels and plans to open approximately 50 new schools over the next three years. The KIPP approach to education, which aims to prepare students for success in college and beyond, includes training leaders, providing high quality teachers, giving students more time in the classroom, setting high expectations, providing a college-preparatory curriculum, and offering a culture of support. KIPP’s expanded classroom time includes 9 hour school days, Saturday classes, and a summer session.

Though the average effects of charter schools overall are mixed, the consistently positive effects of KIPP charter schools suggest that their model may be worth replicating. Recent studies of KIPP schools in the San Francisco Bay Area and Lynn, Massachusetts—using propensity score matching and a lottery-based design, respectively—found large and statistically significant impacts in both math and reading, with effect sizes ranging from 0.12 to 0.68 standard deviation units in reading and from 0.19 to 0.88 standard deviation units in math for one year of KIPP instruction (Woodworth et al. 2008; Angrist et al. 2010). A 2010 Mathematica study of 22 KIPP middle schools estimated impacts after three years (Tuttle et al. 2010). By Year 3, half of the KIPP schools in the sample produced math impacts of 0.48 standard deviations or more (representing an estimated 1.2 years of additional instruction), and half of the KIPP schools in the sample produced three-year reading effects of 0.28 standard deviations or more (representing an estimated 0.9 year of additional instruction).

However, no study of a broad range of KIPP schools has used an experimental design to estimate impacts. In addition, all prior impact studies have focused on the effects of KIPP attendance on students’ performance on state achievement tests. None have examined impacts on other student outcomes, such as student and parent attitudes or measures of student behavior.

**Purpose:**

In this paper, we present estimates of the impacts of KIPP schools, including non-experimental impacts on student achievement for more than 40 KIPP schools and experimental estimates for 13 schools covering a broad range of outcomes, including a test of higher-order thinking skills, state assessments, student behavior and academic engagement, and parent involvement and satisfaction. Using measures of KIPP school characteristics such as the length of the school year and principal experience, we will also explore variation in the KIPP achievement impacts to see whether there are particular characteristics associated with more or less positive impacts.
Setting:

Our analysis is conducted in a set of 44 KIPP schools across more than a dozen states, and includes data on a control group of students attending other schools in nearby districts.

Population:

For the non-experimental analysis, we examine a population of students who entered one of the participating KIPP schools in 5th or 6th grade in a year between 2001-2002 and 2010-2011, along with a comparison group of students who attended the same feeder elementary schools as the students who entered KIPP. The sample at each KIPP school does not include all cohorts covered by the above school years, but only those years in which the KIPP school was open and we were able to obtain administrative data covering at least one baseline (pre-KIPP) year and one follow-up year.

For the experimental analysis, we examine a population of students who applied to enter and participated in the admissions lottery of one of the 13 KIPP schools in this part of the study prior to the 2008-2009 or 2009-2010 school year.

Intervention:

The intervention in this study is attendance at a KIPP middle school participating in the study. KIPP schools are charter schools that are part of a network that follows “the five pillars.” These pillars include (1) high expectations, (2) choice and commitment, (3) more time, (4) power to lead, and (5) focus on results. There are currently 125 KIPP schools in 20 states and the District of Columbia that serve 39,000 students.

Research Design:

The study uses a two-part design. We use a non-experimental design based on propensity score matching to estimate the impacts of 44 KIPP middle schools on students’ performance on state achievement tests during the four years after KIPP entry. The treatment group in this design includes students who enter participating KIPP schools in 5th or 6th grade during the study year. These students remain in the treatment group for four years (or until the end of the period covered by the data) regardless of whether or not they remain at KIPP. The comparison group is selected using a propensity score model with nearest neighbor matching. The starting point for this comparison group is all students who attend the same elementary school (in 4th or 5th grade) as one of the students who enters KIPP and is in the treatment group. The propensity score model is then used to select a comparison group that matches the treatment group based on a set of baseline characteristics, including demographic and socioeconomic characteristics and the students’ test scores in the two years prior to when the treatment group enters KIPP. This treatment group and matched comparison group then form the sample used to estimate impacts on state test scores in four follow-up years. Impacts are estimated using a regression
model that includes treatment group status, the follow-up year, the current grade, and students’ baseline characteristics.

The experimental design is conducted in KIPP schools that used admissions lotteries to determine which applicants were to be offered admission to the school. Students who applied to the school, participated in the lottery, and provided consent form the sample for the experimental analysis. Impacts are estimated by comparing outcomes among the treatment group, randomly admitted to the school via the admissions lottery, and the control group, who participated in the lottery but were not offered admission. To increase the precision of these estimates, we use a regression model that controls for students’ baseline characteristics.

As part of the study, we also collected information on the participating KIPP schools, including conducting a survey of principals. We use this information on the characteristics of KIPP schools to examine the factors that may be related to impacts. In particular, we examine characteristics of the students admitted to the school (such as baseline achievement measures), characteristics of school staff (such as experience levels among the school’s teachers and principal), and aspects of school operation (such as the number of hours during the school year that students are in school).

**Data Collection and Analysis:**

To address our research question, we collected longitudinally linked student-level data from districts or states in which participating KIPP schools are located. For the non-experimental analysis, the data cover the 2001-2002 through 2010-2011 school years. For the experimental analysis, the data cover the 2006-2007 through 2011-2012 school years.

For the experimental analysis, we also collected data from several other sources. We administered a test of students’ higher order thinking skills with the experimental sample during the second or third follow-up year. We also conducted surveys of students in the sample along with their parents at the end of the second follow-up year. Finally, to measure KIPP school characteristics, we conducted a survey of the principals of all KIPP schools.

As described above, for both the experimental and non-experimental designs (once the treatment and control/comparison groups were selected), we conducted the analysis using regression models in which key outcomes were regressed on a treatment status indicator and baseline characteristics potentially related to the outcome. To assess the validity of the non-experimental design, we generate impact estimates using both experimental and non-experimental methods for a subset of KIPP schools participating in both components of the study.

**Results:**

The full results of the analysis are not yet available, but are due to be released in late 2012. However, an earlier study using a similar non-experimental methodology produced impact
estimates for a smaller set of KIPP middle school (22 schools) for a smaller number of cohorts (Tuttle et al. 2010). In that study, attending a KIPP school produced large positive impacts on student achievement, particular in math. On average across the schools, KIPP impacts after three years were 0.42 effect size units in math and 0.24 effect size units in reading.

Conclusions:

Previous research has suggested that KIPP has positive impacts on student achievement. However, aside from a study covering a single KIPP school, none of this prior work employed an experimental design. And no prior study has examined impacts on outcomes other than state test scores. This study will address both of these holes in the research, shedding further light on the overall effects of a prominent network of charter schools that uses expanded learning time as an important feature of its school model.

References:

