

Estimating the Impact of Placing Top University Graduates in Vulnerable Schools in Chile



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ABSTRACT

Enseña Chile (ECh) is one model in the direction of helping close the achievement gap between low-income and high-income students in Chile. This is the first adaptation of the Teach for America (TFA) model in Latin America, placing human capital of the highest quality—selected after a highly competitive process—in the most vulnerable urban and rural schools. This paper provides the first evidence on the impact of the implementation, and is the first evaluation of Teach For America model to shed light on how it affects non-cognitive skills. It also contributes to what can be expected from further implementation in other LAC countries, and ultimately on how to improve the teaching force in the region. While it is still premature to speculate the full effect of ECh corps members on student academic achievement and cognitive and non-cognitive abilities, preliminary results from the follow-up wave seem to suggest that ECh-treated schools have made greater gains in Spanish and Mathematics test scores, as well as in non-cognitive abilities such as self-esteem, self-efficacy, intellectual and meta-cognitive abilities. One could expect these effects to help improve the overall comprehension of other subjects in the future. Further, the impact on motivation and studying abilities could also impact the student's schooling outcomes beyond their exposure to the Enseña Chile teachers. The forthcoming analysis will provide a fuller picture of the effect of ECh corps members on student achievement,

1. INTRODUCTION

Chile has participated in several international assessments of student learning: two rounds of PISA (OECD's Programme for International Student Assessment), one round of TIMSS (Trends in Mathematics and Science Study), and two rounds of LLECE (the Latin American Laboratory for the Evaluation of Educational Quality). The results from these assessments are quite disappointing for a country famous for its education reforms and its economic stability. Even though Chilean students experienced the largest increase in reading scores between the 2000 and 2006 PISA rounds, Chile continues to be ranked low compared to developed countries: 39th in eight-grade mathematics and 37th in eight-grade science out of 45 countries in 2003 TIMSS, 40th in science, 38th in reading, and 47th in mathematics out of 57 countries that participated in 2006 PISA. Compared to Latin American countries, Chile ranks second after Cuba in the SERCE exam. Still, results show poor academic achievement in absolute terms. For example, 65% of 3rd grade students achieved the second level (out of four) or below in mathematics, while for 6th grade this percentage was close to 50%.

In addition to low performance, Chile shows one of the largest achievement gaps between high and low income students. Chile one of the PISA-participating countries with the highest between-school variation in student performance, and most of this between-school variance is explained by the students' socioeconomic background (PISA, 2007). The same result was found in TIMSS 2003, where Chile had among the largest differences in mathematics student achievement between students from high-resource and low-resource households.

The relevance of socioeconomic factors in Chilean student achievement is also corroborated using national data such as SIMCE (National System for the Measurement of Educational Quality) and PSU (University Selection Test). In a recent analysis of test results from 2000-2006 SIMCE and from 2004-2007 PSU done by Manzi et al. (2008),¹ results suggests that (i) the between-school variance is large, and ranges from 25% to 47%; (ii) the school effects increase in relevance as students move

¹ To measure socioeconomic status, the authors constructed an individual socioeconomic index for each database. This index consists of the father's educational level, the mother's educational level, and the family's self-reported income.

up in the school system; (iii) a very large share of the between-school variance is explained by socioeconomic factors; and (iv) once socioeconomic status is controlled for, the type of school does not explain much of the between-school variance suggesting a highly segregated educational system along socioeconomic lines.

Although many of the socioeconomic factors are beyond the reach of educational policies, there is consensus in the literature that a good teacher is the single most important within-school factor that can help close the achievement gap. Seminal research using data from Tennessee, found that if two comparable eight-year old students were placed with different teachers, one a low-performer and the other a high-performer, their outcomes would diverge by more than 50 percentile points within three years. In this study, teacher quality comes out a more efficient measure to increase student attainment than reducing class size from 23 to 15 students, an alternative that improves the performance of an average student by eight percentile points (Sanders and Rivers, 1996). Using panel data to estimate the variation in fixed teacher effects, while controlling for student fixed characteristics and classroom specific variables on student test scores, Rockoff (2004) finds a strong and statistically significant difference among teachers: a one standard deviation increase in teacher quality raises reading and math test scores by approximately 0.20 and 0.24 standard deviations respectively on national standardized scales. In addition he finds a statistical significant positive effect of teaching experience on reading test scores, controlling for fixed teacher quality.

The importance of a good teacher has also been tracked over several schooling levels. Though earlier it was believed that teacher quality was only important for the earlier years of schooling, more recent research such as Carrell and West (2008), and Hoffman and Oreopoulos (2006) has established the importance of teacher effectiveness in secondary and university levels, not only for average GPA (grade point average), but also for dropout and progression rates².

A good teacher can also help close the attainment gap caused by other determinants, such as family background. The latter estimates of teacher performance suggest that having three years of good teachers (from the 85th percentile) in a row

² Replacing one teacher with another ranked one standard deviation higher in perceived effectiveness increases average grades by 0.5 percentage points, decreases the likelihood of dropping a class by 1.3 percentage points and increases in the number of same-subject courses taken in second and third year by about 4 percent. The overall importance of instructor differences at the university level is smaller than that implied in earlier research at the elementary and secondary school level, but important outliers exist.

would overcome the average achievement deficit between low-income children and children from higher-income families (Hanushek, 2002; Hanushek et al., 2005). In other words, high-quality teachers can make up for deficits observed in the schooling of children from disadvantaged backgrounds. Yet disadvantaged students are very often taught by the least skilled teachers (Boyd et al., 2005, Hanushek et al., 2004). Chile is no exception: municipal schools—which tend to serve predominantly disadvantaged students, have teachers who are more likely to have only a high school diploma, who miss classes more often due to health problems, who report not having time to plan their lessons, and who feel unsure of implementing the curriculum compared to teachers in subsidized and unsubsidized private schools (Bravo, Peirano and Falck, 2006).

This paper provides evidence on the impact of the first year of implementation of the adaptation of Teach for America in Latin America, Enseña Chile (ECh), and will contribute to shed light on how this model adapts to a new context, on what types of cognitive and non-cognitive impacts to expect from further implementation in other countries, and ultimately on how to improve the teaching force in the region. Enseña Chile recruits top university graduates from all majors, and places them—after a short but intensive training session—in vulnerable schools in the country. These professionals work as classroom teachers for two years.

The paper develops as follows. In the next section, we provide a brief description of the program, highlighting its selection process. In section 3, we describe the evaluation design and the sources of data. Section 4 describes the baseline and follow-up data, while the results from the econometric analysis are presented in section 5. Section 6 concludes.

2. THE ENSEÑA CHILE PROGRAM

2.1. Teach for America

Enseña Chile is based on the Teach for America (TFA) model, and is the first Latin American country to incorporate this program. TFA started in 1989 in the United States, with the mission of introducing high-quality human capital to solve the systemic problem of inequities in public education. TFA recruits outstanding college graduates to teach for two years in urban

and rural schools serving students from low-income families. Its main goal is to significantly impact children's academic achievement and aspirations. It also seeks to generate a critical mass of professionals deeply aware of the problems faced by public education, so that they can become agents of change that can then promote and implement solutions from their respective professions and areas of influence. This model has had a major impact in the United States. At the classroom level, TFA is the organization that provides the largest number of teachers to low-income schools. About 18,000 people have participated as TFA teachers, affecting the lives of 3 million students (Teach for America, 2010). In 2008, TFA received 35,000 applications for 4,100 positions; approximately 11% of Ivy League seniors applied to become TFA corps members. In 2009, TFA placed approximately 7,500 professionals in 2,500 schools, benefiting 450,000 students (Ripley, 2010).

Regarding student learning, independent studies have found that TFA corps members are more effective than traditional teachers in some subject areas. Decker, Mayer and Glazerman (2004) randomly assigned students to TFA and non-TFA teachers in 6 regions of the country, a strategy that allowed them to compare students' outcomes in math and reading tests between TFA and non-TFA teachers in the same schools and at the same grades. To facilitate random assignment, the study was restricted to grades from 1 to 5, in which students are typically assigned to self-contained classes. Comparisons were made between all TFA teachers and all non-TFA teachers, as well as between novice TFA and novice non-TFA teachers. Findings suggested that TFA's goal of serving low-income schools was met since their corps members work in the highest-need classrooms in the country. They also suggested that TFA teachers differ from other teachers in the same schools, with TFA teachers having stronger academic backgrounds but less education-specific training than control teachers. In addition, TFA and control teachers had similar modes for delivering instruction but differed in the mathematics and reading philosophies. Results also indicated that TFA teachers generated larger math achievement gains of about one additional month of math instruction, but that TFA teachers did not have an impact on reading achievement.³ Finally, the study found that TFA teachers had no impact on the probability of students being retained, or assigned to summer school.

³ In addition, impacts are similar for different types of teachers (all teachers and novice), for different subgroups of students (across gender, across racial/ethnic groups, across students with different baseline achievement scores, and across students in different grades), and are not sensitive to different assumptions.

Boyd, Grossman, Lankford, Loeb and Wyckoff (2006) used data from students and teachers in grades three through eight in New York City to compare the performance of teachers entering the profession in the city from different pathways, including TFA. In their model, student achievement is a linear function of the student's test score in the prior year, the characteristics of the students, and the characteristics of the other students in the same grade with the same teacher, the teacher's teaching experience, and the teacher's pathway into teaching. In addition, they included school fixed effects to clean their estimates from unobservable differences across schools. They found that TFA teachers performed somewhat worse in English than college recommended teachers⁴ in their first year of teaching, but that they catch-up to some degree in later years. In addition, their results indicated that TFA teachers have higher performance in middle school math than college-recommended and temporary-license teachers, even in their first year of teaching.

Another study using data from New York City was conducted by Kane, Rockoff and Staiger (2006). They used test scores in grades four through eight to estimate certified, uncertified, and alternatively certified teachers' value-added in math and reading, controlling for students prior-year test scores, classroom and school related factors, and teachers' experience. Differently from Boyd et al. (2006), they had an additional year of data and a larger sample, and estimated variation in teacher effectiveness within each certification group. Results suggested that there was a positive effect for TFA teachers on student math achievement compared to certified teachers, but no differences in reading. Findings also indicated that the TFA effect was slightly smaller for elementary school teachers than for middle school teachers and that TFA's high turnover rate could be easily compensated by their higher effectiveness, particularly in math.

Lastly, the study conducted by Xu, Hannaway and Taylor (2009) looked at the relative effectiveness of TFA teachers in secondary schools. Using individual student level data linked to teacher data from the state of North Carolina for the school years 2000-01 through 2005-06 and statistical methods that attempted to account for the nonrandom assignment of students to teachers,⁵ they estimated the effects of having a TFA teacher compared to a traditional teacher on student performance.

⁴ College recommended teachers are those who fulfil certification requirements at a university-based program that is registered with the state of New York.

⁵ The authors used a student-fixed effect model that takes advantage of repeated student performance measures across the eight subjects that are evaluated by end-of-course exams in North Carolina, and identified teacher effects using within-student variation of teacher inputs. Since they do not have initial student performance measures in all specific subjects, their model assumes that initial academic preparation in a specific subject has negligible effects on end-of-course results.

Findings indicated that TFA teachers differ significantly from non-TFA teachers in their demographic characteristics, academic preparation, experience, and in the classes and students they teach—they were placed in the most demanding classrooms in the lowest-performing schools. Their results also suggested that TFA teachers were more effective than traditional teachers, particularly in math and science. Moreover, the impact of having a TFA teacher was twice as large as that of having a teacher with three or more years of experience relative to a new teacher.

To sum up, the studies reviewed here indicate that, overall, TFA teachers have some impact on math achievement and no impact on reading achievement and that these effects tend to be larger in middle and high school. However, these studies have not analyzed the impact of highly motivated and highly qualified young teachers on their students' educational expectations and non-cognitive abilities. In addition, these studies do not provide us with indications on the potential impact of adapting this model to Latin America both in cognitive and non-cognitive abilities. Thus, our paper provides the first evidence on the impact implementation of the adaptation of TFA to Latin America.

2.2. Enseña Chile

Enseña Chile has the objective of building a "*movement to eliminate educational inequity by enlisting our nation's most promising future leaders in the effort*" (Recart, 2009). To reach this goal, ECh recruits outstanding recent college graduates and working professionals from all backgrounds and career interests, to commit to teaching for at least two years in low income urban and rural public schools. ECh also provides training and the necessary ongoing support to ensure the recruits' success as teachers. ECh started activities in 2008 by first publicizing the program in the top 12 Chilean universities, with a particular focus on math and science departments—areas where there are considerable teacher shortages in Chile.

ECh follows a very rigorous selection process that allows identification of college graduates with high competencies to become not only great teachers, but also leaders and entrepreneurs. The seven competencies are: leadership, perseverance, high achievement, respect for low-income communities, critical thinking, organizational skills, and commitment to ECh's vision. All seven competencies are measured in two stages, the first consisting of an evaluation of the candidate's resume and two essays, and the second with an individual interview and a group interview. Alfonso et al. (2010) analyze the selection process

of the TFA model in a Latin American Country (Peru), finding adequate selection in line with the TFA seven desired characteristics.

Applicants that score above a threshold are invited to participate in pre-service training (called *Summer Institute* or *Instituto de Verano*). This intensive training session lasts four weeks and covers topics such as lesson planning, classroom management, leadership, communication, and language differences. In addition, ECh corps members have the opportunity of teaching to students from a low-income community. ECh corps members' training extends beyond those initial four weeks: they receive tutoring and mentorship, and participate in in-service training activities throughout their two-year assignment.

In parallel with the recruitment and admissions stages, ECh selects the schools where its professionals will be placed. In order to become an ECh beneficiary school, it must: (i) have owners and/or principals committed to ECh's mission, (ii) serve a low-income community,⁶ (iii) have SIMCE scores below the national average; (iv) allow periodical evaluations, (v) have teacher shortages in one or more subjects at the primary or secondary levels; and (vi) be within ECh's geographic areas of operation. Once schools that meet these criteria have been selected, ECh places its corps members according to their area of expertise and the schools' teaching needs.

During the first year of operations, over 700 college graduates applied to ECh but only 42 were admitted to the program. This is a combination of the selection process, and the budgetary and strategic decision of starting the program on a small scale. In March 2009, ECh corps members that successfully completed the summer institute were assigned to classrooms in 15 schools (10 municipal and 5 subsidized private) located in Metropolitan Santiago (10 schools), Araucanía (3 schools, 2 rural) and De Los Ríos regions (2 schools, both rural). Table 1 shows the results from the 2008-09 selection process. The corps members currently teaching come from a variety of academic backgrounds, including biology, anthropology, engineering, journalism, and philosophy.

3. EMPIRICAL STRATEGY

⁶ The school must enroll students that belong to socioeconomic groups A and B according to SIMCE's definition.

3.1. Sampling

The objective of this paper is to estimate the impact of ECh corps members, as compared to traditionally certified teachers, on (i) student achievement, using value added measures; (ii) students' intrapersonal abilities; (iii) students' behaviors (motivation, expectations, attendance, etc.); (iv) school organization; and (v) other teachers' behaviors. The assignment of ECh corps members to schools and to classrooms within schools was not done randomly, so we use a quasi-experimental approach using propensity score matching to generate a control sample to estimate the impact of ECh on these varied outcomes.

To determine control and replacement samples, the propensity score is estimated using a probit model where the dependent variable is a dummy indicating the probability of the school applying to be in the ECh program. The independent variables are size, schooling levels offered (primary, humanities-sciences secondary or technical professional secondary), administration (municipal or subsidized private), socioeconomic level, geographic location (urban or rural) and SIMCE average scores in math and language.⁷ This strategy allows for comparisons between treated schools and untreated schools that share similar observables, but were not benefited by the program. As described in greater detail by Dehejia and Wahba (1999), matching based on observable pre-treatment characteristics approximates randomization by balancing the observables between the treatment and control schools.

After estimating the school-level probability model, the probability of applying to ECh is computed for each school, matching control schools using the nearest neighbor technique. That is, for each of the observed values of treatment schools one selects the control that has the closest propensity score in terms of Euclidian distance, making sure that it shares some of the characteristics (region, geographic location, administration, socioeconomic level, and students' gender) of the treated school. After this procedure, two control schools were assigned to each ECh school.

⁷ For this model, the variables for school size, levels, administration and geographic location come from the 2008 Enrollment Statistics of the Ministry of Education of Chile. The variables for socioeconomic level and SIMCE average score come from the SIMCE school database.

The initial unit of analysis is each classroom where there is an ECh corps member teaching. Thus, to select the control classroom we follow these steps: (i) the control classroom must be of the same grade as the treated classroom; (ii) assuming that schools use the same criteria to assign students to sections, the control classroom must be in the same section as the treated classroom—that is, if the treated classroom is 7 “B” then the control classroom is 7 “B”;⁸ and (iii) in the case of high schools, also the control classroom must be in the same concentration (Humanities, Sciences, Arts) as the treatment classroom. It is important to highlight that one classroom can receive more than one treatment if there are two ECh corps members teaching different subjects. Each classroom has a matching control in a non-treated school. In addition, for some ECh treated classrooms, there is a second control group: an untreated classroom within the same ECh school. Provided students’ allocation between classrooms is at random, one expects that the students in these classrooms share the same characteristics as the treated students. The intended evaluation sample is shown in Table 2.

This study relies on primary data (which we will describe in more detail below) that was scheduled to be collected in April-May 2009. However, teacher strikes, the swine (H1N1) flu epidemic, and the presidential election, delayed the data collection process both at baseline and follow-up. Baseline data was collected between June and August 2009, and follow-up data between November and December 2009. Two ECh schools declined participation in the study and were not included in the baseline sample (although one of these schools was later incorporated in the follow-up sample). There was a major attendance problem due to the reasons mentioned above and, on average, between 20% and 30% of students were not in school on the days of the baseline application. Thus, as Table 2 also shows, the final student sample at baseline represents 75% of the intended sample.

Unfortunately, the selection of external controls based on a PSM model estimated at the school level yielded a sample at the student level in which students in treated schools differed in some observables from students in control schools. Thus, we further reduce the sample by estimating a second probit model, this time at the student level, for the probability of benefiting

⁸ If the control school does not have the required classroom, then it has to be replaced by another section in the same level. For example, if the ECh treated classroom is 7“C” and there is no 7“C” in the control school then 7“B” is selected. If 7“B” is not available, 7“A” must be selected. If there are not enough classrooms to meet this requirement, the first control has to be supplemented with classrooms from the second control option.

from ECh or not. We perform propensity score matching with the criteria of common support, allowing us to increase the likelihood of approximating the scores based on the modeled observed characteristics (Table 3).

The balancing tests based on observed characteristics of treatment and control groups use three alternative specifications in which the dependent variable is a dummy that equals 1 if the student is part of the control sample. The variables included in the right hand side are: demographic characteristics (age, gender), educational background characteristics (test score results, and results from the cognitive and non-cognitive ability tests), and household and school characteristics (household: assets, employment and educational levels of parents, income; school: availability of different types of services, infrastructure). We then compute the blocks used to match the characteristics so the scores have the same distribution based on the observable controls, independently of the comparison group they belong to. In figure 2 we show the histogram of the propensity score for the selected model, for the groups balanced on common support. These scores are computed using 4 blocks, and results indicate that 1,016 students in the control group and 852 students in the treatment group are in the area of common support. This subsample is used to estimate preliminary impacts of the program as follows.

3.2. Data

This study uses different sources of data—designed and collected specifically for this quasi-experimental evaluation—that allow for estimating the impact of ECh on student achievement controlling for student backgrounds and other determinants of educational quality.

Student achievement is measured in Mathematics and Spanish applying standardized tests to students in grades 7, 8 and 9. These tests, called *Pruebas SEPA*, are aligned with the national curriculum and allow for the computation of value added—that is, they provide information regarding student achievement in each school year as well as the student’s progress throughout the school year.⁹ At baseline, the SEPA tests measure content knowledge from the grade immediately before the

⁹ SEPA is an external and standardized student assessment system developed by the Center for Measurement of the Catholic University of Chile (MIDE-UC).

current grade. At follow-up, the tests measure content knowledge that should have been taught and learned in the evaluated grade.

Students' cognitive and non-cognitive skills are measured with two self-applied instruments, one for intellectual abilities and another for intrapersonal abilities. The instrument for intellectual abilities consists of 12 analogy items (4 verbal and 8 figural) that have to be answered in 15 minutes. The instrument for intrapersonal abilities measures the student's development level in four dimensions: self-esteem (10 items), academic self-efficacy (14 items), social abilities (20 items), and metacognitive abilities (18 items). Each item is an affirmation, and the student must indicate the frequency (from 1 to 4) at which this affirmation applies in relation to how he/she feels and normally behaves. The intellectual and intrapersonal abilities tests are applied only to students in grades 9 to 12 (1st to 4th grade in secondary school level).

Lastly, the students' socioeconomic background is measured through questionnaires to students and parents.¹⁰ These questionnaires also collect information on expectations and motivation, study habits, school attendance, and academic background. Questionnaires are also applied to teachers. Teacher questionnaires include two types of questions: those related to his/her background, opinion about the school and the school leadership, and job satisfaction, and those related to the classrooms and subject he/she teaches. Therefore, each teacher has to answer these latter questions n times, according to the n classrooms/subjects within the sample that he/she teaches.

3.3. Model

To estimate the impact of having an ECh teacher on student achievement, we estimate the following basic equation with student-level data:

$$(1) \quad Y_{it} = \alpha Y_{it-1} + \beta X_i + \gamma \bar{X}_i^j + \delta ECh_i + \tau T_i + \varepsilon_{it}$$

¹⁰ Questionnaires for parents were distributed to students, to be given in turn to their parents/guardians.

Where Y_{it} is student i 's Math or Spanish test score at moment t (follow-up), Y_{it-1} is student i 's Math or Spanish test score at baseline, X_i are the student characteristics, \bar{X}_i^j are the mean characteristics of the students in student i 's classroom, ECh_i indicates whether the student had an Enseña Chile teacher during the academic year, and T_i are other teacher characteristics.

Among the student characteristics X_i we include gender, age, maternal education, whether the father is employed, household variables such as income, an indicator for number of absences in month previous to the test, and educational expectations at baseline. The class-level variables \bar{X}_i^j include class size, and the class's average maternal education, paternal employment level, household income, and Spanish or math test score at baseline. Some of the teacher characteristics T_i included are the teacher's gender, experience, and educational level. Finally, the dummy ECh equals 1 if the student is in a classroom that has an Enseña Chile teacher teaching any subject (that is, not necessarily teaching math or Spanish) and equals 0 otherwise.

This basic model is first estimated for the entire sample, including internal and external controls. We then add a school fixed effect, which allows us to estimate the model only for the schools that are treated by the ECh program. In this case, we are estimating the effectiveness of an ECh teacher compared only to traditional teachers in the same school. We also run both the basic and school fixed effects models for the students of novice teachers, defined here as those who have no more than 4 years of teaching experience, and for each grade in which we have standardized tests (7th, 8th and 9th). Lastly, both in the basic specification and in the school fixed effects model we include in the vector of student characteristics the results from the intellectual ability test at baseline.

As we have mentioned, we are also interested in the effect of Enseña Chile on cognitive and non-cognitive skills. Thus, we estimate equation (2) with student-level data:

$$(2) \quad A_{it} = \alpha A_{it-1} + \beta X_i + \gamma \bar{X}_i^j + \delta ECh_i + \tau T_i + \varepsilon_{it}$$

Where A_{it} is student i 's result from the intellectual, social, metacognitive, academic self-efficacy, or self-esteem ability tests at moment t (follow-up), A_{it-1} is student i 's result from these tests at baseline, and X_i , \bar{X}_i^j , ECh_{it} , and T_i are as described above. As with the models for achievement in Math or Spanish, we first estimate equation (2) for the entire sample and then we add school fixed effects. We also run the models for novice teachers, and for each grade in which we have cognitive and non-cognitive tests (9th, 10th, 11th, and 12th). Finally, we include on the right hand side the results from the math and Spanish tests at baseline.

4. DESCRIPTIVE RESULTS

4.1. Students

Student Characteristics, Test Scores, Study Habits, Educational Expectations and Opinions about Classroom Environment

Students in the sample come from very poor backgrounds: 21% of their fathers and mothers have completed at most 6 years of schooling, 16% of the fathers report being unemployed, and 24% have monthly household incomes of less than US\$190 (Table 4).

Table 5 shows the baseline test results for treatment and control classrooms. It is important to highlight that there are no statistically significant differences at baseline between treatment and control classrooms in all SEPA tests and the self-esteem and self-efficacy tests. The SEPA results for the sample are considerably below the national average.

Students' study habits, and own assessments about their studies, are presented in Table 6. These show an important degree of confidence in their learning abilities, with 86% of the sample agreeing that they are able to learn just like their peers, 88% agreeing that they can learn a subject, even if it is difficult, if they put effort and study, and 64% agreeing that they do their homework even if they find it difficult. However, 34% agree that they have little comprehension of what is being taught in their classes, 39% agree that they have difficulties concentrating and paying attention in school, 27% agree that their

workbooks are incomplete, 28% does not prepare for their exams with enough time, and 25% does not take notes of what is being taught in class. Therefore, it seems that about one-third of the students in the sample do not have good study habits. In spite of these study habits, 91% of the students in the sample think it is important to get good grades.

The students' baseline educational expectations are shown in Figure 3. Educational expectations at baseline differ between treatment and control groups. A larger share of students in the full control group (in-school and out-of-school) believes they are going to finish a technical or university degree, 71%, compared to 68% of treatment students. Likewise, 62% of control students would like to finish a college degree compared to 56% of treated students.

Lastly, students' perceptions about the classroom environment are presented in Table 7. In general, students' behaviour in class can be considered to make teaching and learning difficult; for example, 63% report *frequent interruptions to quiet students down*, and 48% report the teacher has *difficulties maintaining order in the classroom*.

4.2. Teachers

Table 8 shows the teacher follow-up sample which consists of 399 subject-classroom-teacher observations. Of these, 159 are ECh professionals (about 40% of the sample) and 240 are controls. This subject-classroom-teacher sample corresponds to 21 Enseña Chile teachers and 117 control teachers (66 outside of ECh schools and 51 within ECh schools).

Enseña Chile teachers are mostly females (68.4%, considerably higher than the 51% of female controls) and on average have 27.2 years old. This makes ECh teachers significantly younger than the control teachers, and even are on average three years younger than novice control teachers¹¹. ECh teachers graduated from college at a younger average age than controls (25.3 years compared to 27.6years), and novice controls (28.2). This could be indicating that ECh teachers either started their college studies earlier, or that they completed them faster (Table 9).

¹¹ Novice teachers are those who have 4 years of teaching experience or less. This group, to a point, represents the teachers that would have to have been hired if Enseña Chile did not exist.

As would be expected from a program that recruits talented youth from all academic disciplines to become teachers, ECh corps members have on average only 1.3 years of teaching experience and the majority became teachers for the first time in 2009. Also consistent with the structure of the program, most ECh teachers do not have a teaching certificate (73.7%) although during 2009 about 60% of them have been temporarily certified by the Ministry of Education of Chile. Interestingly, and suggesting that ECh selects talented professionals independently of their academic background, 26.3% of ECh teachers have a teaching diploma from a university. In addition, approximately 50% of ECh teachers have a graduate degree (post-graduate diploma, post-title, master) related to education and another 5.6% a graduate degree in other areas. This indicates that ECh teachers have more schooling than novice controls, and again reflects the emphasis of the program in attracting candidates with stellar academic credentials. Lastly, ECh teachers differ considerably in their demographic and educational characteristics from the other teachers that work in ECh-benefited schools.

Enseña Chile teachers use slightly different pedagogical strategies to those used by control teachers, including when compared to novice teachers. ECh professionals tend to structure their class more often around questions and answers, make more use of presentations of learning content, and to decide themselves group composition when working in groups instead of leaving group formation to the students (Table 10).

Teachers' Expectations about their Students

Enseña Chile's core values include believing that all students can excel, as long as their teachers have high expectations for them and can motivate them to work hard. The ECh teachers' expectations of student's academic progress and discipline is in general more positive than that of the control group, both in baseline and in follow-up data. They also show a higher conviction of helping all students to improve on their learning, and expect more from their student's future academic progress, than control teachers.

At baseline, there are no significant differences between ECh teachers and control teachers expectations of the probability that their best students will attain a score that will allow them to enter a university. However, there are significant differences in the

probability that they will graduate if they enter university. Also, there are statistically significant differences in the expectation of the probability that their students will have access to student loans and/or scholarships (Table 11).

At follow-up, Enseña Chile teachers still show higher expectations of their students, feel that they have a larger proportion of students eager to learn, and believe that they have less problematic students in their classrooms when compared to the other teachers (Table 12).

Teachers' Opinions of non-traditionally trained teachers teaching

At follow-up and baseline, all teachers in the sample were asked their opinion about non-traditionally-trained teachers' teaching in Chilean schools both at baseline and follow-up. This question was asked in the context of the debate that was taking place at the beginning of 2009 about a new law, *Ley General de Educacion*, that included an article allowing for this possibility if teaching subjects similar to their profession in secondary schools over a period of no-more than 5 years, after which non-teachers have to be certified to continue teaching.

As one would have expected, Enseña Chile professionals were in agreement of this article, with a high percentage of the control teachers against it: 41.7% disagreed strongly, and 22.9% disagreed. A large percentage of novice control teachers were in disagreement as well (53.9%), Table 13.

An interesting fact is that almost 30% of the controls within schools that had an Enseña Chile professional are in agreement (or highly in agreement) with this possibility, while only 12.7% of the outside controls agreed. This could have been due to the fact that they had been working with and ECh professional for a year, which may have modified their original perception. In future versions of this paper, we will be comparing the baseline and follow-up data on this perception of non-traditionally-trained teachers' teaching.

5. ESTIMATION RESULTS

Results of the model, controlling for attrition of the Enseña Chile teachers, clustering by school and controlling for *comuna*, show a positive and significant impact of Enseña Chile professionals on language and mathematics test scores of the students. Progress is robust when comparing with controls within the same school, and controls outside the school (Table 14). It is important to point that ECh teachers were not necessarily teaching Spanish or Math, as was explained earlier. Thus, the treatment variable in this estimation constitutes having had an Enseña Chile teacher in any subject.

Results of the non-cognitive abilities tested, yield positive and significant results in self-efficacy, meta-cognitive, self-esteem and intellectual abilities; there does not appear to be a statistically significant impact of Enseña Chile teachers on social skills.

Self-efficacy is constructed with 14 items to reflect the self-confidence that students have on their own capacity to learn, manage time and regulate the efforts related to academic performance. The impact of Enseña Chile teachers on self-efficacy is positive and statistically significant. As described earlier, meta-cognitive abilities are constructed with 18 items to reflect the decisions that the individual takes about how to plan his learning process, how to self-evaluate during this process, and what adjustments are needed in order to obtain the desired learning goals. The impact of the Enseña Chile teachers on these abilities is positive and statistically significant (Table 15).

Self-esteem was measured using the Rosenberg scale with 10 items, measuring self-esteem as a global and as a unidimensional construct. The short-run exposure to an Enseña Chile teacher is positive and statistically significant. The test for intellectual abilities provides evidence of a positive and significant impact of Enseña Chile on the four verbal and eight figure-related items. Finally, there does not appear to be a statistically significant impact of Enseña Chile teachers on the students self-reported social skills, as measured by the competencies of students in social relationships, conflict resolution and communication skills such as assertiveness (Table 16).

If the program seems to have a positive and statistical effect on the language gap and mathematics skills, one could expect this to help improve the overall comprehension of other subjects in the future. Further, the impact on motivation and studying abilities could also impact the student's schooling outcomes beyond their exposure to the Enseña Chile teachers.

Further rounds of data collection, as well as the improvement in the sample as the program expands, will provide more evidence to verify this very preliminary impact.

6. CONCLUSIONS

In today's knowledge-based societies, closing the achievement gap between low-income and high-income students is critical. Otherwise, efforts to reduce poverty and improve productivity and economic competitiveness will be fruitless. Having a good teacher is the single most important school-related factor for student achievement, even to the point of equalizing the gap between students from poor and higher-income socioeconomic backgrounds. Teacher quality is thus a tool for providing equal education opportunities.

Enseña Chile is one model in the direction of helping close the achievement gap in Chile. This organization, inspired after Teach for America, places human capital of the highest quality—selected after a highly competitive process—in the most vulnerable urban and rural schools in the country. The analysis of the baseline database suggests that ECh is serving students who are very disadvantaged socioeconomically. In addition, baseline results indicate that students in ECh-benefited schools have lower performance in Math and Spanish than the Chilean average, an important share of them has poor study habits and that they have relatively low educational expectations. In spite of this, ECh corps members have the conviction that they can turn the tide around and increase their students' odds of continuing their education past high school.

While it is still premature to speculate the full effect of ECh corps members on student academic achievement and cognitive and non-cognitive abilities, preliminary results from the follow-up wave seem to suggest that ECh-treated schools have made greater gains in Spanish and Mathematics test scores, as well as in non-cognitive abilities such as self-esteem, self-efficacy, intellectual and meta-cognitive abilities. One could expect these effects to help improve the overall comprehension of other subjects in the future. Further, the impact on motivation and studying abilities could also impact the student's schooling outcomes beyond their exposure to the Enseña Chile teachers.

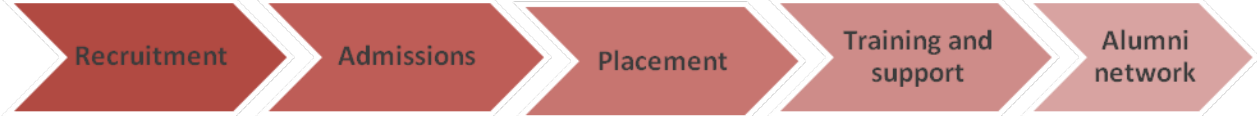
The forthcoming analysis will provide a fuller picture of the effect of ECh corps members on student achievement, cognitive and non-cognitive abilities, and a wide array of other measures, as well as the heterogeneity of the impacts and their effect over time.

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Figure 1: Enseña Chile's Process



Source: ECh (2009).

Table 1: Enseña Chile's 2009 Selection Process

Selection Stages	
Started application	708
Finished application	326
Called for interview	150
Interviewed	94
Selected in interview	42
Started summer institute	31
Started school year 2009	29
Finished school year 2009	23

Source: ECh (2009)

Table 2: Intended and Baseline Samples

	Intended Sample				Baseline Sample			
	Total	Treatment	Within-School Control	External Control	Total	Treatment	Within-School Control	External Control
Schools	30	15	n/a	15	39	14	n/a	25
Classrooms	308	132	44	132	251	119	n/a	117
Classrooms with SEPA tests	83	33	17	33	64	28	7	29
Classrooms with abilities tests	199	88	23	88	169	76	59	84
Students*	10,780	4,620	1,540	4,620	6,944	3,480	n/a	3,464
Students tested with SEPA	2,251	895	461	895	1,696	755	229	708
Students tested for abilities	6,965	3,080	805	3,080	4,681	2,111	323	2,241
Subject-classroom-teacher**	590	224	142	224	146	61	n/a	85

* The number of students in the intended sample is calculated assuming 35 students per classroom.

** One teacher can teach multiple classrooms and multiple subjects, so each combination was considered as an individual observation even though the teacher is the same. This implies that some teachers have to reply several times to each questionnaire.

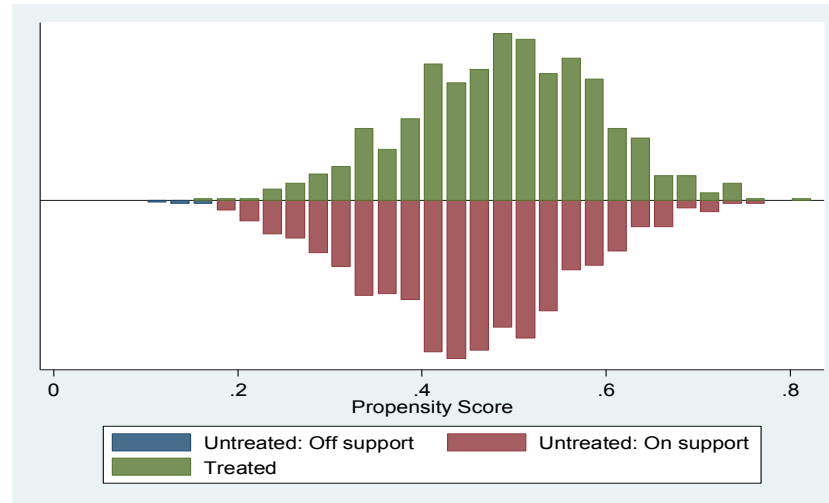
Source: MIDE-UC (2009a, 2009b), Observatorio Social (2009), and Enseña Chile Baseline Database.

Table 3: Propensity Score Matching Results for Rebalancing Treatment and Control Groups at the Student Level

Estimated Strata*	Control			Treatment		
	N	P Score (mean)	P Score (sd)	N	P Score (mean)	P Score (sd)
1	157	0.278	0.041	67	0.292	0.038
2	535	0.424	0.045	382	0.433	0.045
3	303	0.559	0.044	373	0.566	0.044
4	21	0.703	0.029	30	0.703	0.032
Total	1016	0.447	0.108	852	0.490	0.103

* Stratification of individuals based on propensity score blocks. 28% of sample remains.
Source: authors' computations based on Enseña Chile Baseline Database.

Figure 2: Student-level Propensity Scores



Note: The Propensity Score Matching (PSM) was estimated using demographic and household characteristics. Education outcomes (test scores), cognitive and non-cognitive abilities were also included. Three different models were specified to estimate the PSM. Models varied in the number of controls and restrictions imposed for common support blocks. Model 3 was selected because it included more controls within its specification, and due to the high scores obtained between matched groups.

Source: authors' computations based on Enseña Chile Baseline Database.

Table 4: Baseline Student Socioeconomic Characteristics

Variables	Original Sample				Rebalanced Sample			
	Treatment	Control	Full Sample	Significant Diff. of Means *	Treatment	Control	Full Sample	Significant Dif of Means *
<i>Father's Schooling</i>								
6 years or less	23%	20%	21%	Yes	12%	12%	12%	No
Between 7 and 11 years	52%	41%	46%	Yes	48%	41%	44%	Yes
12 years (high school diploma)	17%	26%	21%	Yes	34%	39%	37%	Yes
More than 12 years	4%	8%	5%	Yes	6%	8%	7%	No
<i>Mother's Schooling</i>								
6 years or less	23%	18%	21%	Yes	14%	11%	13%	Yes
Between 7 and 11 years	52%	52%	52%	Yes	45%	41%	43%	No
12 years (high school diploma)	18%	24%	21%	Yes	39%	42%	41%	Yes
More than 12 years	7%	8%	7%	No	2%	3%	2%	No
<i>Monthly Household Income (Ch 000)</i>								
Less than Ch\$100 (US\$190)	28%	19%	24%	Yes	16%	14%	13%	No
Between Ch\$100.1 and Ch\$200	41%	44%	42%	Yes	40%	44%	42%	No
Between Ch\$200.1 and Ch\$300	20%	19%	20%	No	25%	23%	24%	No
Between Ch\$300.1 and \$400	6%	6%	6%	No	10%	8%	11%	No
More than Ch\$400 (US\$765)	6%	12%	6%	Yes	9%	11%	10%	No

* Statistical difference between proportion means at least 10%.
Source: Enseña Chile Baseline Database.

**Table 4a: Additional Baseline Household and School Characteristics
(Rebalanced Sample)**

Variables	Treatment	Control	Full Sample	T-Value (Mean Diff)	Significant Difference*
<i>Household Characteristics</i>					
T.V	49%	46%	48%	1.07	No
Computer	68%	67%	67%	0.16	No
Internet Access	47%	50%	48%	1.08	No
Dictionary	95%	96%	95%	1.10	No
Calculator	93%	94%	94%	1.04	No
Sanitation	98%	99%	98%	1.50	No
Oven	73%	76%	74%	1.52	No
Vehicle	40%	41%	40%	0.28	No
Electronic Devices	48%	45%	47%	1.25	No
Male Head	84%	84%	84%	0.10	No
Head of Household Average Age	42.5	41.7	42.1	1.20	No
Household Members Average	5.2	4.8	4.9	1.67	Yes
<i>School Characteristics</i>					
Chairs and Tables in bad condition	29%	28%	29%	0.21	No
School windows in bad condition	20%	19%	19%	0.46	No

* Statistical difference between proportion means at least 10%.
Source: Enseña Chile Baseline Database.

Table 5: Baseline Test Results

	Original Sample				Rebalanced Sample			
	Treatment	Control	Full Sample	Significant Difference *	Treatment	Control	Full Sample	Significant Difference *
Intelligence Ability	N/a	N/a	N/a		5.8	5.3	5.6	No
Self-Esteem	22.2	22.3	22.3	No	30.6	30.3	30.5	No
Self-Efficacy	37.6	37.8	37.7	No	40.6	39.9	40.2	No
Social Abilities	49.7	50.2	50.5	Yes	57.6	57.7	57.6	No
Meta-cognitive Strategies	46.6	47.4	47.0	Yes	47.9	47.5	47.7	No
SEPA Spanish	170.0	169.9	169.9	Yes	178.2	176.7	176.8	No
SEPA Mathematics	172.7	174.3	173.5	Yes	181.1	180.3	180.6	No

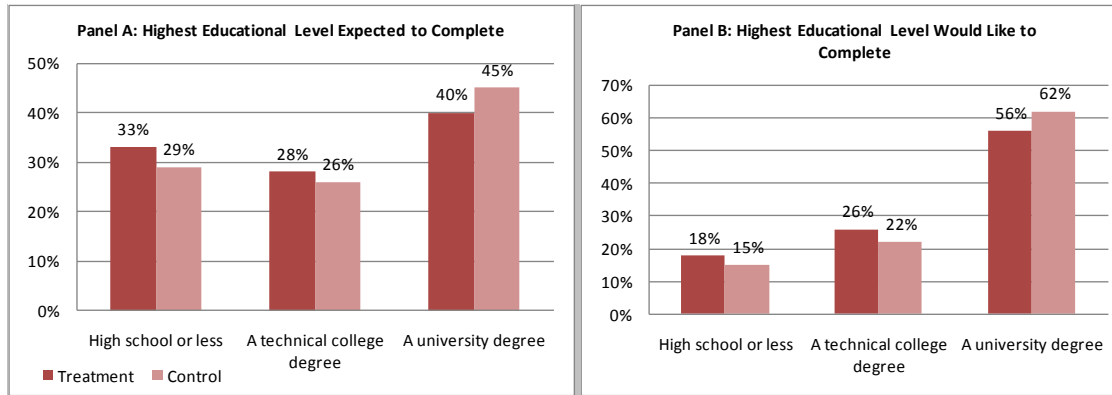
* Statistical difference between proportion means at least 10%.
 Source: Enseña Chile Baseline Database.

Table 6: Baseline Students' Study Habits and Self-Assessments about Learning Abilities

	Completely Disagree	Disagree	Neither Agree nor Disagree	Agree	Completely Agree
I am able to learn just like my classmates	2%	3%	10%	40%	46%
Even if a subject is difficult, with effort and study I can understand it	1%	3%	10%	48%	40%
In general, I have little comprehension of what is being taught in my classes	12%	25%	29%	26%	8%
I have difficulties concentrating and paying attention in class	14%	23%	24%	26%	13%
In general, I do my homework even if I find it difficult	4%	8%	24%	41%	23%
My workbooks tend to be incomplete	23%	27%	24%	20%	7%
I like to prepare for my exams with enough time	9%	19%	33%	25%	14%
It is important that I get good grades	2%	1%	6%	27%	64%
I take notes of everything taught in my classes	9%	16%	33%	28%	14%

Source: Enseña Chile Baseline Database.

Figure 3: Baseline Students' Educational Expectations



Source: Enseña Chile Baseline Database.

Table 7: Students' Perceptions About Classroom Environment

	Completely Disagree	Disagree	Neither Agree nor Disagree	Agree	Completely Agree
Teachers have difficulties starting their daily lessons in my classroom	6%	16%	31%	29%	18%
There is a good relationship between most students and teachers	6%	11%	25%	37%	22%
There is a good relationship between most students	4%	8%	20%	42%	26%
Teachers have difficulties teaching in my classroom	7%	16%	33%	27%	16%
There are fights between classmates during class time	17%	25%	30%	19%	9%
Classes are frequently interrupted by the teacher to quiet students down	3%	10%	24%	38%	25%
Some teachers have to raise their voices to keep the class in order	8%	16%	24%	32%	20%
Most teachers have difficulties maintaining order in the classroom	6%	17%	29%	29%	19%

Source: Enseña Chile Baseline Database.

Table 8: Follow-up Teacher Sample

	Subject-Class-Teacher		Individual Teachers	
	Frequency	Percentage	Frequency	Percentage
Enseña Chile	159	39.9	21	15.9
Traditional teachers	240	60.2	117	84.1
External control	142	59.2	66	56.4
Internal control	16	6.7	13	11.1
Treated class	82	34.2	38	32.5
Total	399	100.0	138	100.0

Source: authors' computations based on Enseña Chile Baseline Database.

Table 9: Teachers Demographic and Educational Characteristics

	Control				Enseña Chile
	All	External	Within	Novice	
Gender					
Female	51.02	52.6	48.8	50.0	68.4
Age					
Average age	44.2	46.4	41.1	30.0	27.2
Average age at college graduation	27.6	27.8	27.3	28.2	25.3
Teaching Experience					
Average years of teaching experience	16.9	18.9	14.3	1.8	1.3
1 year or less of teaching experience	12.1	10.5	14.3	44.4	68.4
Between 2 and 4 years of experience	15.2	8.8	23.8	55.6	21.1
Between 5 and 9 years of experience	6.1	5.3	7.1	0.0	10.5
Between 10 and 15 years of experience	9.1	10.5	7.1	0.0	0.0
More than 15 years of experience	57.6	64.9	47.6	0.0	0.0
Undergraduate Education					
Teaching diploma from Normal School	2.0	0.0	4.8	0.0	0.0
Teaching diploma from university	86.9	93.0	78.6	80.8	26.3
Teaching diploma from professional institute	2.0	1.8	2.4	0.0	0.0
Not teacher, graduate of education school	3.0	1.8	4.8	7.7	5.3
Not teacher, with technical title	1.0	0.0	2.4	0.0	0.0
Not teacher, with temporary license from MINEDUC	5.1	3.5	7.1	11.5	57.9
Other university degree	0.0	0.0	0.0	0.0	10.5
Graduate Education*					
Graduate diploma in education	61.4	57.7	66.7	45.0	50.0
Graduate diploma not in education	4.6	5.8	2.8	0.0	5.6
Sample Size	98	57	41	27	19

Source: authors' computations based on Enseña Chile Baseline Database.

Table 10: Class, evaluation, and group-work strategies

	Controls				Enseña Chile
	All	Out-school	In-school	Novice	
<i>Class strategies</i>					
Presentation of learning content	39.4	39.9	38.7	49.2	64.3
Class organized around questions and answers	43.8	47.8	37.8	51.7	72.1
Field-trips	3.1	3.0	3.3	0.0	7.8
<i>Evaluation Strategies</i>					
Use of true-and-false questions for evaluating everyday student work	39.7	47.0	29.0	29.5	54.0
Group projects with written report	16.9	15.7	18.7	29.5	28.6
<i>Group work strategies</i>					
Uses students of similar grades in groups	0.4	0.8	0.0	0.0	1.9
Uses students with heterogeneous grades in groups	17.3	26.4	5.2	9.2	23.9
Forma grupos similares según disciplina	0.4	0.8	0.0	1.5	0.7
Forma grupos heterogéneos según disciplina	4.9	7.8	1.0	3.1	3.2
Students decide the composition of groups	75.7	64.3	90.7	84.6	68.4
<i>Commonly used didactic resources</i>					
Blackboard	82.8	86.0	78.4	90.9	87.7
Textbook	53.5	66.9	35.1	26.2	31.8
Computer or projector in class	23.3	18.5	29.9	24.6	53.6

Source: authors' computations based on Enseña Chile Baseline Database.

Table 11: Baseline Teachers' Expectations of their Students Educational Possibilities

	Treatment	Control
<i>Thinking about the best 5 students in this class</i>		
1. Probability of Finishing College		
Low	7%	9%
Medium	20%	64%
High	73%	27%
2. Probability of Obtaining a Student Loan		
Low	0%	5%
Medium	0%	55%
High	100%	41%
3. Probability of Receiving a Scholarship		
Low	0%	32%
Medium	20%	41%
High	80%	27%

Source: Enseña Chile Baseline Database.

Table 12: Follow-up Teacher Expectations of Students

	Controls				Enseña Chile
	All	Out-school	In-school	Novice	
<i>Percentage of students that seem eager to study</i>					
Few or very few	10.8	10.4	11.3	20.0	5.2
Less than half	16.8	19.3	13.4	20.0	25.2
Half	25.0	24.4	25.8	21.5	15.5
More than half	36.6	35.6	38.1	29.2	35.5
All or almost all	10.8	10.4	11.3	9.2	18.7
<i>Percentage of students that are noisy or distracted</i>					
Few or very few	25.7	25.4	26.0	16.9	43.2
Less than half	31.7	27.6	37.5	33.9	22.6
Half	21.7	27.6	13.5	20.0	16.1
More than half	18.3	17.2	19.8	26.2	16.8
All or almost all	2.6	2.2	3.1	3.1	1.3
<i>Confidence that students with learning difficulties will learn</i>					
Unsure	1.3	1.5	1.1	1.6	0.0
Slightly unsure	18.0	18.5	17.2	14.8	17.5
Sure	61.0	56.3	67.7	60.7	42.9
Very sure	19.7	23.7	14.0	23.0	39.6
<i>Confidence that students from poor households will learn</i>					
Unsure	0.9	0.7	1.1	1.6	0.0
Slightly unsure	2.2	3.7	0.0	0.0	0.0
Sure	26.8	29.6	22.6	19.7	11.0
Very sure	70.2	65.9	76.3	78.7	89.0

<i>Confidence that students with initial low motivation learning</i>					
Unsure	1.8	2.2	1.1	1.6	1.3
Slightly unsure	14.5	14.1	15.1	14.8	13.6
Sure	54.8	53.3	57.0	36.1	38.3
Very sure	29.0	30.4	26.9	47.5	46.8
<i>Confidence that problematic students will learn</i>					
Unsure	4.4	4.4	4.3	8.2	2.0
Slightly unsure	22.4	23.7	20.4	11.5	9.1
Sure	45.6	40.7	52.7	50.8	40.3
Very sure	27.6	31.1	22.6	29.5	48.7
<i>Probability that the top 5 students in the class will be able to go to college</i>					
Low	10.0	9.7	10.3	4.6	11.0
Medium	49.8	50.0	49.5	41.5	33.1
High	40.3	40.3	40.2	53.9	55.8
<i>Probability that the top 5 students in the class will be able to finish college</i>					
Low	12.6	12.7	12.4	3.1	4.6
Medium	49.4	46.3	53.6	56.9	31.2
High	38.1	41.0	34.0	40.0	64.3
<i>Where do you think that in 20 years your students will be working</i>					
In an interesting job	37.4	39.5	34.4	29.9	41.2
In a job with a good salary	25.1	25.2	25.0	23.2	38.6

Source: Enseña Chile Baseline Database.

Table 13: Opinion about the possibility of non-traditionally trained teachers teaching

	Controls				Enseña Chile
	All	Out-school	In-School	Novice	
Highly agree	6.3	7.3	4.9	15.4	63.2
Agree	13.5	5.5	24.4	19.2	21.1
Indifferent	15.6	18.2	12.2	11.5	15.8
Disagree	22.9	27.3	17.1	19.2	0.0
Highly disagree	41.7	41.8	41.5	34.6	0.0

*Data at follow-up data

Source: Enseña Chile Baseline Database.

Table 14: Impact of Enseña Chile Graduates on Student´s Subject Grades

	Spanish			Mathematics		
	(1)	(2)	(3)	(1)	(2)	(3)
Spanish Score at Baseline	0.376 *** [0.046]	0.406 *** [0.049]	0.367 *** [0.094]			
Math Score at Baseline				0.384 *** [0.055]	0.373 *** [0.066]	0.374 *** [0.089]
Enseña Chile Teacher	5.971 *** [2.078]	6.030 *** [2.059]	4.561 *** [1.970]	3.681 ** [1.608]	3.808 * [1.939]	4.246 * [2.385]
Control for Non-cog scores	NO	NO	NO	NO	NO	NO
Control for the other Subject Score	NO	NO	NO	NO	NO	NO
Student Characteristics	YES	YES	YES	YES	YES	YES
Teacher Characteristics	YES	YES	YES	YES	YES	YES
Fixed Effects Comuna Level	YES	YES	YES	YES	YES	YES
<i>R-squared</i>	<i>0.443</i>	<i>0.402</i>	<i>0.424</i>	<i>0.714</i>	<i>0.715</i>	<i>0.606</i>
<p>Model (1) longitudinal sample (baseline and follow-up) with information available only for subject score. Model (2) longitudinal sample (baseline and follow-up) with information available for both subject scores. Model (3) longitudinal sample (baseline and follow-up) with information available for both subject scores and non-cognitive abilities.</p> <p><i>Cluster Robust Standard Errors in brackets</i> * Significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors in brackets Source: Authors' estimations based on Enseña Chile Database.</p>						

Table 15: Impact of Enseña Chile Graduates on Students' Non-Cognitive Abilities

	Self-Efficacy		Meta-cognitive	
	<i>Only Self-efficacy Test Available (Long Sample)</i>			
Enseña Chile Teacher	0.774 **	0.629 **	1.089	1.354 *
	[0.405]	[0.315]	[0.95]	[0.805]
Baseline score (respective)	0.674 ***	0.686 ***	0.528***	0.536***
	[0.060]	[0.055]	[0.095]	[0.041]
Control for Subject scores	NO	NO	NO	NO
Control for Other Non-Cognitive Scores	NO	NO	NO	NO
Student Characteristics	YES	YES	YES	YES
Teacher Characteristics	YES	YES	YES	YES
Fixed Effects at the <i>comuna</i> level	NO	YES	NO	YES
<i>R-squared</i>	0.656	0.589	0.506	0.393

Cluster Robust Standard Errors in brackets

* Significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors in brackets

Source: Authors' estimations based on Enseña Chile Database

Table 16: Impact of Enseña Chile Graduates on Students' Non-Cognitive Abilities

	Social Skills		Self-esteem		Intelligence abilities	
Enseña Chile Teacher	0.136	0.071	0.869 *	0.862 *	1.139 **	0.745 **
	[0.811]	[0.883]	[0.525]	[0.520]	[0.513]	[0.321]
Baseline score (respective)	0.475 ***	0.485 ***	0.637***	0.644***	0.473 ***	0.462 ***
	[0.080]	[0.076]	[0.059]	[0.055]	[0.095]	[0.101]
Control for Subject scores	NO	NO	NO	NO	NO	NO
Control for Other Non-Cognitive Scores	NO	NO	NO	NO	NO	NO
Student Characteristics	YES	YES	YES	YES	YES	YES
Teacher Characteristics	YES	YES	YES	YES	YES	YES
Fixed Effects at the comuna level	NO	YES	NO	YES	NO	YES
<i>R-squared</i>	<i>0.555</i>	<i>0.454</i>	<i>0.536</i>	<i>0.463</i>	<i>0.611</i>	<i>0.535</i>

Cluster Robust Standard Errors in brackets * Significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors in brackets
 Source: Authors' estimations based on Enseña Chile Baseline Database.