Optimal investment in human capital through effective K-12 schooling is critical for building a productive work force. This is particularly important for minority and low income students. My dissertation uses econometric techniques to analyze the effects of different educational programs on the academic achievement of elementary and middle school students in Arizona. The first essay evaluates the impact of Arizona’s new English program, the 4-hour English Language Development (ELD) block, on the achievement of students. The second essay assesses the long-run and short-run effects of teacher incentive programs in Arizona. Finally, the third essay compares the academic achievement of immigrant students with native-born students in Arizona.

Essay 1. The Impact of Arizona’s New English Program on the Academic Achievement of English Language Learner Students (Job Market Paper)

English language skills are an important aspect of human capital for immigrant children in the U.S. Public schools across the U.S., therefore, the public schools employ various programs to enhance language skills of diverse categories of immigrant students. The state of Arizona has offered a variety of programs for English Language Learner (ELL) students over the decades. Arizona and four other states educate approximately 70% of ELL students in the U.S. In the 2008-09 academic year, Arizona law required a minimum of four hours per day of ELD during the first year that a pupil is classified as an ELL. Before implementation of this new policy, ELL students were receiving assistance from the Structural English Immersion (SEI) programs, which were offered at the school level. Following establishment of the new law in Arizona, ELL students have been separated from their native English-speaking peers and interact in the same classroom for much of the school day with students who also have limited proficiency in English. To evaluate the effect of this new program, I compile a sample of student-level data from one of the school districts in Arizona during the school years 2006-07 to 2009-10. Using dynamic panel data models, this essay compares changes in the achievement of ELL students with the achievement of their counterparts who are proficient in English. The results of this comparison show that the achievement of ELL students in the math test has slightly (1%) increased and their achievement in the reading test did not change as a result of implementing this policy. In addition, my results suggest no heterogeneity between different genders and different levels of schooling in response to the policy. To examine the robustness of my results, I also compare the academic achievement of ELL students who participated in the ELD-block and the SEI program using the fuzzy regression discontinuity design. Furthermore, different groups of ELL students are compared based on their previous background in English language proficiency to confirm the findings regarding the success of the two ELL programs. This comparison does not indicate any difference between the achievements of ELL students in the two programs. The results
of these analyses suggest that the ELD-block program has not made a notable difference in the academic achievement of ELL students.

Essay 2. Analyzing the Effects of the Teacher Incentive Program in Arizona

Human capital, specifically teacher quality, plays an important role as an input in the education production function. To encourage teachers to improve teaching ability, a number of teacher incentive programs have been implemented all over the world. Teacher incentive programs in Arizona started in 1985-86. The statewide Career Ladder (CL) Program is a performance-based compensation plan that provides incentives to teachers based on the performance of students. This program has not accepted any new grantees since 1994 and will be phased out in 2014-2015. Using panel data techniques, I find a positive effect of the CL program on student achievement. A nationwide performance-based program with some participants from Arizona started in the 2006-07 school year and is called the Teacher Incentive Fund (TIF). This program only targets high need schools, in which at least 50% of students are eligible for free or reduced price lunch, and provides funds not only for teachers, but also for principals who help students achieve higher academic performance. In 2007-08 only one of the school districts in Arizona joined this program. In 2010-11 the budget for this program increased and more school districts in the states including additional school districts from Arizona, joined the program. Using a panel data set for public schools in Arizona from 2006-07 to 2010-11 school year, the effect of the teacher incentive fund program on the achievement of students is estimated using a difference-in-difference method, as well as a regression discontinuity design. The results show that on average there is a small and positive association between student test scores and the TIF program. Comparing the short-run and long run effect of this program, indicates that the long-run effect is greater than that of the short-run.

Essay 3. Comparisons of Academic Achievement of Immigrant and native-born students: Evidence from Arizona

The third essay examines the gap between the educational achievement of immigrant and non-immigrant students. The demographics of immigrants makes Arizona a unique state. In addition to the high portion of illegal immigrants in Arizona, the number of legal immigrants has increased rapidly to 13.4% of the population. Previous studies, which utilize data from other states in the U.S., show that immigrant students out-perform the native-born students in schools. One explanation for this phenomenon is a selection bias in the group of immigrants who are more likely to be highly motivated and more concerned with destination specific skills. On the other hand, illegal immigrants tend to be less educated. The large share of illegal immigrant students in Arizona makes study of the achievement gap between immigrants and native-born students an important one for public policy. Using the autoregressive panel data model and data from school years 2006-07 to 2010-11 in one school district in Arizona, this essay analyzes the gap between the performance of first-generation students, second-generation students and native-born students. Moreover, academic performance of immigrant students with other students will be compared based on the country of origin.