Introduction

Juan Gonzalez grew up in an environment where he felt comfortable and secure, living near people who spoke the same language, participated in similar cultural activities, and faced similar economic conditions. When Juan and his family moved to the United States from Mexico in search of a better life for themselves, he felt isolated from many of the people he attended school with. Not only was there a language barrier that was difficult to break, but the culture and level of academic rigor was much different than what he was used to. Interaction with teachers and other students at his elementary school was hindered, even though he encountered people who spoke English to him everyday. The appropriate instructional tools were not in place to help Juan develop both linguistically and academically, and eventually he began to believe that school was not for him. After struggling academically for several years, Juan dropped out of school in the tenth grade. The better life he and his family had hoped to obtain by coming to the United States was now farther from his grasp.

Depending on where immigrant families settle in the United States, they can experience an array of situations that have an impact on their integration into society. One of the most important factors that contribute to a foreign-born students’ success, and ultimately their attainment of a good job, is proficiency in the English language. Therefore, it is important to ensure that schools put in place appropriate educational programs to help these students achieve academic success before they are left behind.
This study will attempt to find better ways to accomplish goals and understand why things work as they do. Education of today’s youth is an important task for public administrators, and it is often the topic of much debate. Educators and policymakers debate on which strategies are best for teaching specific subgroups of students and which programs yield the best results for students’ academic and social development.

One of the most imminent concerns in the academic arena today is the education of Hispanic limited English proficient (LEP) students. As Fashola et al. (1997, 2) state:

There is a crisis in the education of Latino students, and this crisis is not fully explained by recent immigration status or even limited English proficiency…there are many islands of excellence among schools serving many Latino children, but far too many of these children are placed at risk by schools and community institutions unable to build on the cultural, personal, and linguistic strengths these children are likely to bring with them to school.

Most often these students are immigrants, though sometimes they are native to the United States. In 2003 there were 38.8 million Hispanics in America (Perez 2004). In 2000, nearly half of the Latinos in America were under 25 years old (United States Census Bureau 2000). The population of immigrants into the U.S. consists in large part of children: between 1990 and 2001, the number of children in immigrant families who are eligible to enroll in school rose seven times more than the number of school-eligible native U.S. children (Schmid 2001).

“Both the size of the Latino population and its youthfulness mean that the well-being of the Hispanic community—and especially of Latino children—matters to the future economic and social status of the United States as a whole” (Perez 2004, 122). However, Hispanic children are not as likely as other children to be in preschool programs or to graduate from high school (Perez 2004). Hispanics are less likely to go to
college, which will impact their professional achievement and ultimately affect the extent that the Hispanic group overall will succeed in adulthood (Fuligni and Hardway 2004).

With the implementation of the No Child Left Behind Act (NCLB), states are facing strict requirements to ensure all children perform at a high academic achievement level. States with growing Hispanic populations must quickly develop strategies to facilitate academic development for the increasing numbers of LEP students in their schools (Perez 2004). While there is evidence that distinctive programs can lead to academic success for LEP students, no one particular program can be assumed to be more beneficial (Baker and de Kanter 1983).

**Research purpose**

The purpose of this study is to compare the effectiveness of the structured English immersion (SEI) program in southern California and the bilingual education (BE) program in southern Texas on the reading and math performance of fourth grade Hispanic Spanish-speaking LEP students.

**Conceptual Framework**

This section describes the conceptual framework of the program evaluation study. The goal of this research is explanatory and the conceptual framework utilized is formal hypothesis. “From a [Public Administration] perspective, explanatory research is important because all impact oriented program evaluation is explanatory. All impact program evaluations use formal hypothesis” (Shields 1998, 217).
Before evaluating the impact of educational programs, it is necessary to examine factors contributing to student success in school. These factors should be controlled in a program evaluation that determines differences in reading and math skills of students participating in programs designed to increase English language proficiency. These factors offer potential alternative explanations to observed differences in program outcomes. Hypothesis 1 (H₁) and Hypothesis 2 (H₂) address how the controls are linked to the impact evaluation of BE and SEI programs.

Controlling for these variables, the study will evaluate the impact of the structured English immersion (SEI) and bilingual education (BE) programs on the Reading and Mathematics National Assessment of Educational Progress (NAEP) scores of fourth grade Hispanic Spanish-speaking LEP students. Because SEI programs immerse students in English at a faster rate than BE programs, it is the assumption that students participating in SEI will have a better grasp of both English and the academic content areas. Therefore,

H₁:  Controlling for economic status, ethnicity, gender, parent’s education level, migrant status, and primary language spoken at home, limited English proficient students participating in structured English immersion will score higher on the **Reading** NAEP than limited English proficient students participating in bilingual education.

H₂:  Controlling for economic status, ethnicity, gender, parent’s education level, migrant status, and primary language spoken at home, limited English proficient students participating in structured English immersion will score higher on the **Mathematics** NAEP than limited English proficient students participating in bilingual education.

The hypotheses are summarized and linked to the supporting literature in Table 1.
Table 1. Conceptual Framework for Determining the Impact of Structured English Immersion and Bilingual Education Programs

<table>
<thead>
<tr>
<th>Formal Hypotheses</th>
<th>Scholarly Support</th>
</tr>
</thead>
</table>

Methodology

This study evaluate the limited English Proficiency and English immersion programs using utilize existing data from the 2005 NAEP data. The NAEP data are standardized national assessment instrument administered randomly to a “nationally representative probability sample of students” every two years at the fourth, eighth, and
twelfth grades (USDE 2006). A multiple regression analysis will be used to compare the impact of BE programs in southern Texas and SEI programs in southern California.

**Operationalization**

The hypotheses were tested using models that contained one treatment and several control variables associated with the likelihood of student success in school identified in the literature. The operationalization of the hypotheses is found in Table 2.

**Table 2. Operationalization of the Hypothesis**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hypothesis</th>
<th>Definition/ Measurement</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic performance in Reading</td>
<td></td>
<td>2005 Reading NAEP scale scores</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Academic performance in Math</td>
<td></td>
<td>2005 Mathematics NAEP scale scores</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td><strong>Independent</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus program type</td>
<td>H&lt;sub&gt;1&lt;/sub&gt; + H&lt;sub&gt;2&lt;/sub&gt; +</td>
<td>0=California 1=Texas</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>C</td>
<td>0=Female 1=Male</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Economic status</td>
<td>C</td>
<td>0=Not eligible for free/ reduced lunch 1=Eligible for free/ reduced lunch</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Parent’s secondary education level</td>
<td>C</td>
<td>0=Did not graduate high school 1=Graduated high school/no college</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Parent’s postsecondary education level</td>
<td>C</td>
<td>0=Some education after high school 1=Graduated college</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Migrant Status</td>
<td>C</td>
<td>0=Not migrant 1=Migrant</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Language other than English spoken at home</td>
<td>C</td>
<td>0=Once in awhile or less often 1=Half to all of the time</td>
<td>National Center for Education Statistics</td>
</tr>
</tbody>
</table>
Dependent Variables

The first dependent variable is the scale score achieved on the 2005 fourth grade Reading NAEP. The second dependent variable is the scale score achieved on the 2005 fourth grade Mathematics NAEP. The scale scores on both sections of the 2005 NAEP define the student’s academic performance for the purposes of this study. Both dependent variables are continuous variables with values between 0 and 500. In 2005, the national average Reading NAEP scale score for fourth grade students was 219, and the average Mathematics NAEP scale score for fourth grade students was 238 (USDE 2006). For fourth grade LEP students, the 2005 national average Reading NAEP scale score was 187 and the average Mathematics NAEP scale score was 216 (USDE 2006). This information is shown in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>2005 Reading NAEP</th>
<th>2005 Mathematics NAEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 4th Grade Students</td>
<td>219</td>
<td>238</td>
</tr>
<tr>
<td>4th Grade LEP Students</td>
<td>187</td>
<td>216</td>
</tr>
</tbody>
</table>


Independent Variables

The treatment variable for this study is campus program type. The treatment variable is dichotomous, with the value of 0 representing that the student attended a campus in California that offered a Structured English Immersion (SEI) program in the fourth grade, and the value of 1 representing that the student attended a campus in Texas that offered a Bilingual Education (BE) program in the fourth grade.
Control Variables

There are a total of six control variables identified through the literature that will be used in the regression analysis. The first control variable is gender, which should be controlled for in studies that measure academic success and language proficiency. Often females perform better academically and attain English proficiency faster than males (Schmid 2001; Portes and Hao 1998). Next, socioeconomic status is determined. The NCES (USDE 2007) defines socioeconomic status as “a measure of an individual or family’s relative economic and social ranking.” For the purpose of this study, socioeconomic status is measured in terms of economic status (eligibility for free and reduced lunch) and parent education level (broken out into secondary and postsecondary). Students with low SES are more likely to dropout of school (Rumberger 1995) and be at risk for other social ills (Perez 2004). Parent education levels and family income will eventually determine the importance placed on education in the home and the amount of support offered towards completion of homework and other school activities (Duncan and Magnuson 2005; USDE 2001; Shields and Behrman 2004; Hernandez 2004). Another variable that will be controlled for is a students’ migrant status. The children in migrant families often experience an unstable academic environment that can put them at risk of dropping out of school. Studies have shown that the less students change schools, the more likely they are to stay in school (USDE 2007; Rumberger 2003). The next control variable is language spoken at home, as exposure to others speaking English may allow for enhanced language acquisition and ultimately academic success (Hannah 2003). However, non-English speaking families tend to move into communities where there is a high concentration of people who speak the same primary language (Van Hook and
Balistreri 2002; Padilla and Gonzalez 2001), possibly hindering English-language
development. All of the control variables are dichotomous variables. The answer
categories for migrant status and language spoken at home have been converted into
dummy variables for the purpose of the analysis.

Sample

The sample of students selected for the 2005 Reading and Mathematics NAEP is
based on an aggregate of public school student samples from each region that participates
in the assessment (USDE 2006). Next, the aggregate sample is merged with a
representative student sample from nonpublic schools around the country (USDE 2006).
The sample of this study is comprised of Hispanic Spanish-speaking LEP fourth grade
students from five campuses in southern California and five campuses in southern Texas
that participated in the 2005 administration of the Reading and Mathematics NAEP.

Fourth grade students were looked at because often there are fewer than 20 LEP
students in the higher grades, so in Texas many middle schools implement English as a
Second Language (ESL) programs instead of bilingual education. Also, districts are not
required to report NAEP results to the National Center of Education Statistics (NCES),
and the assessment level least often reported is twelfth grade; therefore the data at this
grade level would possibly be unreliable and biased.

Campuses were selected from Texas and matched with similar campuses from
California based on percent Hispanic, percent economically disadvantaged, school size,
and percent LEP. Schools in Texas were selected as the first group based on the rule
regarding 20 LEP students per grade, as it was necessary to ensure that the campuses
selected met that criterion for Spanish-speaking LEP students.

*Procedure*

*Independent Samples T-Test*

The first procedure that is used for this study is an independent samples t-test, which is used to determine if the means of the two groups are similar. This method is an appropriate first step to determine if California and Texas are performing similarly on the NAEP at baseline. If these two groups are not similar, this will need to be adjusted for in the regression analysis.

*Multiple Regression Analysis*

The second procedure is a multiple regression analysis, which is used to determine “the impact of two or more independent variables on a single dependent variable” (Babbie 2004, 450). The method is appropriate to determine whether the treatment or control variables have an impact on the reading and math NAEP scores. The assumptions made for regression analysis are the absence of nonsampling errors, continuous interval data, and simple random sampling (Babbie 2004). I will run two separate regression analyses to determine the impact that the SEI and BE programs have had on the reading NAEP score and math NAEP score. The regression models are detailed below.
Model 1:
2005 Reading NAEP scale score \( (y) = a + b_1 \) (campus program type) + \( b_2 \) (gender) + \( b_3 \) (economic status) + \( b_4 \) (parent’s secondary education level) + \( b_5 \) (parent’s postsecondary education level) + \( b_6 \) (migrant status) + \( b_7 \) (language other than English spoken at home)

Model 2:
2005 Math NAEP scale score \( (y) = a + b_1 \) (campus program type) + \( b_2 \) (gender) + \( b_3 \) (economic status) + \( b_4 \) (parent’s secondary education level) + \( b_5 \) (parent’s postsecondary education level) + \( b_6 \) (migrant status) + \( b_7 \) (language other than English spoken at home)

Design Weaknesses

The NAEP data is limited in that only the twelve largest school districts in the country are required to submit their results to the National Center for Education Statistics (NCES). This voluntary submission of data means that the number of campuses that have both reading and math data available are limited. In addition, the data provided to NCES may be biased, as lower-performing districts may choose not to submit their scores. Another limitation is that limited English proficient students are exempt from participating in the NAEP “if they have received instruction in English for less than three years and are judged by school staff to be incapable of participating in the assessment in English” (Haertel 2003, 8). This exception reduces the number of LEP students that have taken the NAEP.

Human Subjects Protection

There were no foreseeable risks or discomforts to the subject population utilized in this research project as anonymity was maintained due to the nature of the data assessed. The NCES provided the data with individual subjects being identified by number only. The identification numbers representing individual subjects are not
included in this paper. Computer security procedures aligned with NCES security standards are in place to protect the confidential records.
Bibliography


