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STUDY ON SPANISH FOR NATIVE SPEAKERS CURRICULUM
AND ACADEMIC ACHIEVEMENT IN FLORIDA

by

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ABSTRACT

Using data on all Hispanic high school students in Central and Southern Florida, this study examines Cummins' Linguistic Interdependence concept by studying how the availability and English Language Learners (ELL) student participation in Spanish for Native Speakers (SNS) programs in Florida high schools is associated with Hispanic academic achievement. The availability of SNS programs was studied using data provided by the Florida Department of Education (FLDOE) on all high schools in Florida for 2009-2010. The study used individual level data on all Hispanic ELL students in Central and Southeast counties who attended 12th grade during each year from 2006/2007 through 2009/2010, and then tracked the students' entire high school experience from 9th to 12th grade. Student Florida Comprehensive Assessment Test (FCAT) scores were used as the dependent variable. Testing for differences in means and linear and logistic regression analysis were used to examine these questions. The results showed that SNS tend to be offered in large high schools, with a large Hispanic student and teacher population, which have lower average FCAT scores, and are located in counties that tend to vote Democratic. The results found indicate that student participation in SNS program does not affect students' overall FCAT scores. However, students who participate in SNS courses tend to perform better in Math FCAT, but not in Reading FCAT, when compared to their peers of similar Hispanic background that did not participate in SNS courses. The results supported Cummins' Linguistic Interdependence concept, as First Language (L1) maintenance may promote academic achievement, depending on the academic subject. The most important attribute of these results was the association found between L1 maintenance and academic skills in Math. The study argues for the possibility of cognitive development occurring at deeper levels due to L1 maintenance, and expressed through abstract and logical thought such as Mathematical

proficiency. Future studies may benefit by approaching this subject in a longitudinal manner and examine how student participation in SNS is associated with educational attainment, including high school graduation, college enrollment and graduation, job prospects and social mobility. The results also suggest that there is a higher probability that SNS curriculum is offered in high schools located in counties that tend to vote Democratic, indicating that location is intrinsically dependent on stakeholders' political views on the education of minority students. Therefore, future studies may examine stakeholders' involvement in the decision making process of curriculum at the county, school, and classroom level, in order to find out what are the driving forces making possible or not the availability of SNS curriculum in the state of Florida.

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LIST OF ABBREVIATIONS/NOMENCLATURE/ACRONYMS

AATSP - American Association of Teachers of Spanish and Portuguese

ACTFL - American Council on the Teaching of Foreign Languages

BICS - Basic Interpersonal Communicative Skills

CALP - Cognitive Academic Language Proficiency

CUP - Common Underlying Proficiency

ELL - English Language Learner

FCAT - Florida Comprehensive Assessment Test

GPA - Grade Point Average

HL - Heritage Language

HSGPA - High School GPA

IRB - Institutional Review Board

LEP - Limited English Proficient

L1 - First Language

L2 - Second Language

NAEP - National Assessment of Educational Progress

NABE - National Association of Bilingual Education

NCES - National Center for Education Statistics

NCLB – No Child Left Behind

SUP - Separate Underlying Proficiency

SNS - Spanish for Native Speakers

SSS - Sunshine State Standards

CHAPTER ONE: INTRODUCTION

Hispanics are the largest minority in the United States, making up 15.8% of the U.S. population (U.S. Census, 2010a). One in five public school students are Hispanic, and more than 79% of English Language Learners (ELL) come from Spanish-language homes (Loeffler, 2007). Nevertheless, Hispanic students are not doing well in school as they tend to have low academic achievement, high dropout rates (Pew Hispanic Center, 2003; NCES, 2008; Fry, 2010), low college enrollment (HACU) and low graduation rates (Pew Hispanic Center, 2004), which in turn lead to limited job prospects. This situation is exacerbated by the fact that today's economy is not an industrial one like the one at the turn of the 20th century which demanded great manpower in low skilled factory jobs. Today's economy has bifurcated by demanding highly skilled professionals and technicians at the high end, and unskilled and menial service workers at the low end. In this hourglass labor market, adult immigrants with low levels of education tend to get caught at the low end of the labor market (Smith & Edmonston, 1997). Moreover, their children have a harder time achieving gradual social mobility as previous immigrant generations were able to attain, since jobs that require some education tend not to pay much above living wages (Sassen, 1990). Thus, in today's world, not having an education can lead to permanent or serial unemployment or a combination of both for the rest of a worker's life, which may put a burden on society. Therefore, how Hispanics perform in school is of great importance for the overall social and economic wellbeing of the United States.

While the high number of Hispanic ELL students in schools demand language programs that can address their linguistic and academic needs, the United States does not have a defined

language policy on how to serve them. Instead, language policies on how best to educate immigrant children have been centered on two differing views on how the mind stores languages. The SUP views the mind as having two separate areas where each language is stored, but working and interfering with each other (Baker & Prys Jones, 1998; Cummins, 1986a). Based on SUP view, ELL immigrant students need to spend much time exposed to the English language in order to learn it, and avoid the exposure and use of their Heritage Language (HL)¹. On the other hand, the CUP views the mind as having only one area for storing languages. According to Cummins (1981b, 1989) languages may differ in their surface characteristics such as pronunciation and grammar, nevertheless there is an underlying cognitive/academic proficiency that is common for all languages. Thus, whatever is learned in one language, such as knowledge, skills and concepts, can be accessed using other languages allowing for the transfer of cognitive/academic and literacy abilities across languages (Cummins, 1986a; Durgunoglu & Verhoeven, 1998; Durgunoglu, 2002; Javorsky, 2008). Hence, these same language skills can be transferred to their learning of English, helping them to accelerate the acquisition of academic English through language transfer (Cummins, 1979b, 1981b).

The purpose of the present study is to examine Cummins Linguistic Interdependence theory in the context of a HL maintenance program called Spanish for Native Speakers (SNS) offered in secondary education in Florida, and study how the availability of SNS program and Hispanic ELL participation is associated with academic students' outcomes.

¹ Heritage language refers to a language student who is raised in a home where a non-English language is spoken, who speaks or at least understands the language, and who is to some degree bilingual in that language and in English (Valdés, 2000).

Statement of the Problem

Hispanics are the largest minority group in the United States. While most Hispanic ELL students are born in the United States (2nd generation) and tend to be concentrated in elementary schools, ELL foreign born students (1st generation) tend to be concentrated more at the upper grades (6 to 12) rather than at the elementary levels (Pre-K to Grade 5) (Ruiz de Velasco & Fix, 2000). In the year 2000, more than one-third (44 percent) of ELL students at the secondary level were foreign born, while less than one-fourth (24 percent) were in elementary grades (Capps et al., 2005). Thus, secondary schools are faced with the task of educating 1st generation ELL students that may have difficulties making the academic adjustment into American only-English secondary education in a limited time.

While ELL immigrant students at the elementary level may have more time to develop oral and academic English proficiency, ELL immigrant students in secondary education do not have the time to first learn English in order to understand content in English. Studies done on Second Language (L2) Acquisition have found that it takes between five to seven years to acquire academic language, the kind of language necessary for academic success (Hakuta, Goto Butler & Witt, 2000; Thomas & Collier, 2002). Despite the fact that it is important that immigrant students learn English, they must also learn core content at the same state approved academic standards as the rest of the students (Capps et al., 2005; FLDOE.b). Furthermore, they must do it in a short period of time in order to obtain the credits required to graduate from high school. Therefore, based on Cummings' Linguistic Interdependence Theory, it may be argued that by continuing the development of their first language (L1) these 1st generation and 2nd

generation ELL Hispanic students may be able to transfer cognitive linguistic abilities to the acquisition of academic English, helping them to accelerate the acquisition of academic English otherwise called Cognitive Academic Language Proficiency (CALP), through language transfer (Cummins, 1979b, 1981b).

Purpose of this Study

The present study aims to examine Cummins' Linguistic Interdependence concept by exploring how the availability and ELL student participation in SNS programs in secondary education in Florida is associated with Hispanic academic achievement. The Linguistic Interdependence concept assumes that "experience with either language can promote development of the proficiency underlying both languages, given adequate motivation and exposure to both either in school or in the wider environment" (Cummins & Swain, 1986, p. 83). Thus, this study will be carried out in two parts: First, it will examine how the availability of SNS program in Florida varies across district and school variables; second, it will study whether or not the availability of the SNS program and student participation is associated with academic achievement across student, school, and county variables.

Significance of the Study

While the present study will be focused on Hispanic academic achievement, it is unique in terms of the language program and educational level studied, as well as the region of interest. Other studies have been done on Hispanics and academic achievement at the elementary level, and especially evaluating language programs like dual language programs, immersion programs,

and the various types of bilingual programs such as developmental, transitional, early and late exit bilingual programs. Most of these studies have been done in other parts of the United States with a large Hispanic population such as in California (Lindholm-Leary & Block, 2010), Texas (Ramirez, Perez, Valdes & Hall, 2009), and Arizona (Rolstad, Mahoney & Glass, 2005).

However, this study will focus on a HL program offered within the foreign language department at the secondary level in Central and South Florida, urban areas where Hispanic presence has increased tremendously in the last several decades and where Spanish can be easily heard in all segments of society.

As the Hispanic population continues to increase, making it a larger portion of the workforce, and given the inconsistent educational success of Hispanic students, one might assume that language policies and school practices do not serve them well. Today's economy requires more schooling and specialization, thus academics are more important than ever for integration into a service economy. How students perform during the last four years in school will define much the kind of life these students will have for the next ten years and beyond. By focusing in the last school years of Hispanic immigrant students, especially on their language skills, this study will examine in what way does the maintenance of Spanish, as a mean to speed up their acquisition of academic English, is associated with these Hispanic ELL students educational outcomes.

Research Questions

Cummins' model of Linguistic Interdependence presents a Common Underlying Proficiency (CUP) model that views literacy-related aspects of bilingual proficiency in L1 and

L2 as being interdependent across languages (Cummins & Swain, 1986, p. 82). As immigrant students continue to develop and maintain their literacy in Spanish by participating in the SNS program, the present study aims to evaluate if language transfer occurs from L1 to L2 as expressed in immigrant students' FCAT scores. Thus, the present study has two objectives; first to document how the availability of SNS program varies across district and school variables in Florida, and second to examine the relationship between Hispanic students' performance and the availability of SNS program and student participation.

This study aims to answer the following questions:

- i. How does the availability of SNS curriculum vary across county and school variables in Florida?
- ii. In what way(s) is/are the availability of SNS curriculum and Hispanic student participation associated with student academic achievement?

Definitions

Bilingualism

Bilingualism is the ability to use two languages. People may become bilingual either by acquiring two languages at the same time in childhood or by learning a second language sometime after acquiring their first language (Baker & Prys Jones, 1998).

Biliteracy

Is the ability of effectively communicate or understand thoughts and ideas through two languages' grammatical systems and vocabulary, using their written symbols (Hargett, 1998).

Biliterate

Is the ability to be able to read and write in two languages (Baker, 2011).

Bilingual

It is the ability to understand and communicate to a certain degree in two languages (McNamara, 1967).

Common Underlying Proficiency (CUP)

CUP is the idea that two languages may exist and stored together and the knowledge be linked and interact together (Baker, 2000). The opposing theory is SUP.

English Language Learner (ELL)

Florida Statutes define an English Language Learner (ELL) as “an individual who was not born in the United States and whose native language is a language other than English; an individual who comes from a home environment where a language other than English is spoken in the home; or an individual who is an American Indian or Alaskan native and who comes from an environment where a language other than English has had a significant impact on his or her level of English language proficiency; and who, by reason thereof, has sufficient difficulty speaking, reading, writing, or listening to the English language...” (FLDOE.a).

Ethnicity

Ethnicity refers to a group of people whose members identify with each other, through a common heritage, consisting of a common language, a common culture (often including a shared religion) and a tradition of common ancestry.

Heritage Language (HL)

The term refers to someone that has been exposed to another language other than English, usually at home or is foreign born; the HL term is used along with other terms such as Native Speaker and bilingual (Draper & Hicks, 2000).

Hispanic

The term Hispanic or Latino refers to those individuals that are or can trace their ancestry to one or more of the twenty countries where Spanish is their official language, including Puerto Rico (Calderon, 1992).

Home Language

The language a person acquires first in life or identifies with as a member of an ethnic group (Baker, 2000). It is sometimes referred to as the first, native or primary language.

Generations

The term refers to all the individuals having been born in or as having parents, grandparents, etc. born in a given country (Dictionary.com).

1st generation

This term refers to individuals born outside the United States, its territories or possessions; the individual can be a naturalized U.S. citizen, a legal or undocumented immigrant (Suro & Passel, 2003).

1.5 generation

This term refers to those foreign born individuals who came to the U.S. as school-aged children or early adolescence receiving most of their schooling in the U.S. (Harklau, Losey & Siegal, 1999; Rumbaut, 2004; Rojas, L.B., 2011).

2nd generation

This term refers to individuals born in the United States with at least one foreign born parent, and they are U.S. citizens by birth (Suro & Passel, 2003).

3rd generation

This term refers to individuals born in the United States with both parents also born in the United States, and they are U.S. citizens by birth (Suro & Passel, 2003).

Limited English Proficient (LEP)

Limited English Proficient (LEP) is a term used by the federal government, most states and local school districts to identify those students who have insufficient English to succeed in English-only classrooms (Lessow-Hurley, 1991). Increasingly, English language learners (ELL) or English learner (EL) are used in place of LEP.

Monolingual

It refers to a person who knows and uses only one language (Richards & Schmidt, 2002).

Second Language (L2)

This term is used in several ways and can refer to: 1) the second language learned chronologically; 2) a language other than the native language; 3) the weaker language; or 4) the

less frequently used language. Second language may also be used to refer to third and further learned languages (Harris & Hodges 1995).

Second Language Acquisition

The learning of a second language, often English.

Separate Underlying Proficiency (SUP)

SUP is the largely discredited idea that two languages exist separately and work independently in the thinking system (Baker, 2000). The opposing theory is CUP.

Assumptions and Limitations

While Hispanics may differ in their socioeconomic status, their country of origin, their race, their religion, and their knowledge and use of the Spanish language, they do share ethnic, religious, and linguistic roots as all Latin American countries used to be part of the Spanish American empire (Kanellos, 1998). In general, government agencies, public programs, and literature relevant to this topic often categorize Hispanics as one group and make assumptions about them. Therefore, the present study assumes that the Hispanic student population attending Florida schools and used in this study have similar ethnic, linguistic, and family experiences, as variation within Hispanic subgroups occur randomly across all groups. In regards to SNS programs in Florida, the present study assumes that the amount and quality of the curriculum covered, as well as teaching practices are consistent throughout the state where the program is offered.

The present study may be limited in its generalizability by numerous specific characteristics inherent in it. While this study will address some linguistic aspects of Hispanic

education in the United States, it will be limited to SNS program, a type of HL program offered as a language arts curriculum through the foreign language departments at some High Schools in Central and South Florida. Thus, this study may be limited to specific conditions found in Florida, such as Florida's educational system with its particular funding, curriculum design and variances among schools and students, teacher quality and preparation available in HL teaching practices in Florida, and available SNS teaching materials in Florida's schools.

Conclusion

Immigration has played an important role in the making of American society. Among the various groups of immigrants to the United States, Hispanics are the largest minority accounting for more than half of the total growth in public school enrollments. Today, one in five students attending public schools is Hispanic (Fry & Gonzales, 2008). Still, Hispanic students are not doing well in school, a fact that has grave consequences for the well-being of Hispanics as a group, as well as American society.

By focusing on SNS program at the high school level in Florida, the present study intends to examine Cummins' Linguistic Interdependence model by examining how the availability of a SNS curriculum varies across districts, as well as how Hispanic ELL participation is associated with student performance. In this way this study aims to contribute to the existent scholarship in SNS, language public policy, and Hispanic academic achievement, and informed possible avenues for improving schooling for Hispanic students.

CHAPTER TWO: LITERATURE REVIEW

The present study aims to examine Cummins' Linguistic Interdependence model in the context of the provision of formal education in Spanish in the SNS program. Thus, Chapter Two will review the relevant literature concerning Hispanic ELL students, and their school performance within SNS programs and will be organized as follows: Hispanics in the U.S., SNS program, Theoretical Framework in Second Language Acquisition and Cummins's Linguistic Interdependence Model, and Research done on the Linguistic Interdependence Hypotheses.

Hispanics in the U.S.

The term Hispanic is a pan ethnic label assigned to individuals of diverse origin and race but who can claim their ancestry to one or more of the twenty countries who have Spanish as their official language, including Spain and Puerto Rico (Calderon, J., 1992). While the term Hispanic is mostly used in the United States, individuals from Latin America and Spain do not use it and do not identify themselves with it. Hispanics outside of the United States view themselves as citizens of each of the 18 Latin American countries, and Spain in Europe, and Puerto Rico, a commonwealth of the United States. The term Hispanic was coined by Grace Flores Hughes during the Nixon administration in the early 1970s (American Enterprise Institute, 2003) as a political label for the purpose of applying constitutional anti-discrimination standards such as affirmative action. While the term Hispanic has been used since the 1970s by local and federal government, media, and business, the U.S. Census has used it since the 1980s. Nevertheless, the term Hispanic blends a culturally and racially diverse people into one group.

Therefore, under the term Hispanic individuals of all races may be found, including the many diverse groups of American Indians, African Americans, Europeans, Asians especially Chinese, Japanese and Koreans, and the mixed descendants of them. While the term Hispanic may provide some political clout for such a large and diverse group, immigrants from Latin American prefer to identify themselves with their particular country. Thus, they prefer to use their original nationality or a combination including “American,” such as “Peruvian,” “Cuban” or “Peruvian-American,” “Cuban-American,” etc.

Hispanics in the United States tend to be concentrated in mostly three states: 14 million Hispanics in California (28%), 9.5 million in Texas (19%), and 4.2 million in Florida (8.4%) (US Census, 2010a). Florida’s Hispanic population is made up of Cubans, Puerto Ricans, Colombians and other Latin American countries. While two-thirds (68%) of all Cubans live mostly in South Florida (1.2 million), Puerto Ricans, the second largest Hispanic group in Florida, tend to be concentrated in Central Florida, making up 13% of Orange County and 27% of Osceola County (Rojas, 2011; Pew Hispanic Center, 2011).

General Characteristics of Hispanics

The increasing numbers of immigrants from Spanish speaking countries and the high birth rates have made Hispanics the most prominent minority group in the U.S., making up 16% of the U.S. population. In 2010, the United States Census counted 308,745,538 million inhabitants, out of which 50.5 million were Hispanics (US Census 2010a).

Hispanics are characterized by their diverse origin and race. The largest Hispanic group is made up of individuals that can trace their ethnic origin to Mexico, comprising 66% of the

Hispanic population in the United States. Among other Hispanic groups are those that came from Central and South America (21%), the Associate State of Puerto Rico (9%), and Cuba (4%) (NCES, 2003).

Hispanic families in the U.S. tend to be characterized by having higher rates of single parent households. Thus, among Hispanic students almost two thirds reside in homes with both of their parents compared, while 69% of non-Hispanic white students and 30% of non-Hispanic black students do (Fry, R. & Gonzales, F., 2008). This trend of the disintegration of the Hispanic family worsens for U.S. native born Hispanics. Nationally, in 1980, Hispanic single-parent households constituted 25% of all Hispanic households with minor children, but by 2000, the percentage had augmented to 34%. Certainly, Hispanic families are having problems coping with integration to a new culture and values, as well as the demands the economic system imposes on the family structure. Still, children must manage their parents' distress and their own acculturation into an educational structure encoded in a different language and supported by a value system alien to their family heritage.

Among all minority groups in the United States, Hispanic women have the highest percentages of teenage pregnancy. Among young Hispanic females, more than one fourth will bear a child before they are 19 years old, compared with only 22% of young black females, 11% of young white females, and 6% of young Asian females (Hamilton, B. E., Martin, J.A. & Ventura, S.J., 2009; Mac Donald. 2004). While three fourths of older Hispanics and two thirds of young Hispanic believe is not good for society teenage pregnancy, seven-in-ten Hispanic youths view teenage parenthood as an obstacle to achieving one's life goals. Furthermore, most

of adults consider teenage pregnancy detrimental to the well-being of American society (Pew Hispanic Center, 2009a).

Undoubtedly, two of the major consequences of teenage pregnancy are not being able to finish high school and chronic poverty. Teenage pregnancy negatively affects the possibility of young females' finishing school, as it is evidenced by the numbers. According to Sum, A., Khatiwada, I., McLaughlin, J. & Palma, S. (2009), young female dropouts were more likely to have become pregnant and have become single mothers, than their classmates who had gone to college or were college graduates. Many of these single mothers who were dropouts were also poor and depended on government aid to support their children and themselves.

Even though Hispanics represented less than 16.3% of the U.S. population in 2010, Hispanics made up about 28.2% of those living in poverty. Furthermore, among Hispanic children, 37.3% were living in poor households (Lopez & Cohn, 2011). Among these, more than two-thirds were the children of immigrant parents, and one third the children of U.S.-born Hispanic parents (Lopez & Velasco, 2011). In 2006, 35% of foreign-born Hispanic students lived in poverty compared to 27% of Hispanic students born in the U.S. (Fry & Gonzales, 2008). Moreover, the economic crisis had a great impact on the Hispanic labor market. In 2010, Hispanics had an unemployment rate of 12.5% nationally; while in Florida the rate was 13.6%, more than four points higher than the White non-Hispanic rate of 9.1% (RISEP, 2010; US Department of Labor, 2011).

The high poverty incidence is reflected in their residential patterns. Thus, Hispanics tend to settle in large cities or in their suburbs. According to NCES (2003), in 2000 almost two-thirds

of all Hispanic students resided in large cities or in the suburbs of large cities. This trend has led to an increasing segregation of Hispanic students in inner city schools with high levels of poverty, putting their school success at risk. These schools are characterized by having three times as many uncertified or out-of-field teachers in some subjects such as English and Science (Educate, Jan. 3, 2005, p. 4. quoted by Orfield & Lee, 2005), as well as tend to be characterized by having less experienced principals and teachers than schools in suburban areas (Cosentino de Cohen et al. 2005). Nationally, Hispanics are the largest minority group in the public schools in 22 states. The combination of poverty and school segregation undermines the probabilities of school success for Hispanic students in general, but especially for recent immigrants attending secondary public schools.

According to Berliner (2009), at least one third of Hispanic families do not have health insurance, so Hispanic children don't receive the needed preventive medical attention and chronic health problems often go untreated. Additionally, many poor Hispanic children do not have the proper nutrition they need for the demands that school and learning exert on their cognitive development (Gandara, 2010). Therefore, poverty prevalent among Hispanics may hinder not only their health, but students' access to educational resources as well.

Hispanics in Education

Among the Hispanic student population more than half are of Mexican origin, followed by Puerto Rican, Dominican, Salvadoran, and Cuban. Hispanics are not only the largest minority group in the United States, but also the youngest. One in five schoolchildren is Hispanic, and one in four newborns is Hispanic (Pew Hispanic Center, 2009b). Most Hispanic youths are not

immigrants, as 62% are U.S. native born. They are the offspring of the unending movement of Latin American immigrants since 1965 (Fry, 2008).

Hispanics students are characterized by the low educational attainment of their parents. In 2006, at least one-third of Hispanic students had parents who did not complete high school, compared with only 7 percent of non-Hispanic students who have parents that have not finished high school (Fry & Gonzales, 2008; Gandara, 2010). When considering the educational attainment of Hispanic mothers, among those born abroad, 36% have not finished high school while 46% of U.S. born Hispanic women have at least some college education (Gonzalez, 2007). Furthermore, in the year 2000 among Hispanic foreign-born students, 56% had parents without high school degrees (Capps et al., 2005).

This fact is of great importance for the future of Hispanic students, as studies have shown that parental educational attainment is associated with children's school success (Parveen & Alam, 2008). Parents with more education and training tend to earn more than those without (US Census, 2002), having a positive impact on their children's academic achievement (Sirin, 2005; White, 1982; Davis-Kean, 2005; Dearing, McCartney, & Taylor, 2002; Duncan, Brooks-Gunn, & Klebanov, 1994; Haveman & Wolfe, 1995; Nagin & Tremblay, 2001; Smith, Brooks-Gunn, & Klebanov, 1997), and are able to provide a more stable and healthier family environment, as job instability can trigger frequent moves that have a negative impact of students' academic routine and performance (Alexander, et al, 1996; Family Housing Fund, 2003; Kariuki & Nash, 1999; Popp, et al., 2003). Studies have also found that educated parents tend to get more involved in the education of their children, in this way supporting their children's chances of school success

(Davis-Kean, 2005). While the trend among Hispanics in the United States is toward higher levels of educational attainment, there are still too many Hispanic families with limited schooling and cultural capital to help their children navigate the school system to their advantage.

Being the largest minority group, Hispanics account for 20% of public school students nationally. From 1990 to 2006, the number of Hispanic students in the nation's public schools nearly doubled, accounting for 60% of the total growth in public school enrollments over that period. Today there are approximately 10 million Hispanic students in public schools making up about one in five public school students in the United States (Fry & Gonzales, 2008).

At the secondary level, the share of foreign-born Hispanic students is greater than at elementary levels, making them one in three students (Capps et al., 2005). While Hispanics represent 18% of all 16- to 25-year-olds, they make up a large portion of their age bracket in some states: they represent 51% in New Mexico, 42% in California, 40% in Texas, 36% in Arizona, 31% in Nevada, 24% in Florida, and 24% in Colorado (Pew Hispanic Center, 2009b). Future projection of Hispanic school enrollment is expected to continue to increase to 166% by 2050, from 11 million in 2006 to 28 million. It is expected that, in 2050, there are going to be many more school-age Hispanic children than school-age non-Hispanic white children (Fry & Gonzales, 2008). Therefore, Hispanic students' presence in schools will more than double, making them a large student body with educational needs that must be addressed.

While the number of Hispanic students in schools has increased, education data on Hispanic academic achievement reveal a complex panorama. For the most part, academic achievement scores for the Hispanic student population are still lagging behind those for non-

Hispanic White and Asian American students (Ingels, Planty & Bozick, 2005). According to the NCES, in 2005 among eighth-graders, only 15% of Hispanic students receive a grade at or above proficient on the reading assessment of the National Assessment of Educational Progress (NAEP), while non-Hispanic white students scored at 39% and Asian/Pacific Islander students at 40%. Furthermore, in the 2005 mathematics assessment of the NAEP among eighth-graders, only 13% of Hispanic students scored at or above proficient while non-Hispanic White students scored at 39% and Asian/Pacific Islander students scored at 47% (Kewal Ramani, A. et al., 2007). Nonetheless, the gaps in reading and math achievement between Hispanic and white students were not much different in 2007 compared to the early 1990s (NCES, 2008). These numbers present a dim picture of the educational attainment of Hispanic students in public schools.

Even though Hispanic dropout rates have decreased in recent years, they are still lagging behind those for Whites (Greene & Winters, 2002; Hispanic Scholarship Fund, 2008; Roderick, Nagaoka & Coca, 2009). According to NCES (2003), Hispanic students have higher dropout rates than White or Black students. In 2009, the dropout rate for Hispanics ages 18 to 21 was 17.8%, while for Whites was 8.6% and for Blacks was 13% (U.S. Census Bureau, 2012c). But the greatest gap between racial/ethnic groups in dropout rate was among 22 to 24 years old, as Hispanics had 25% dropout rate, while Whites and Blacks had very similar dropout rates (9.8% and 9.7%). Almost 40% of Hispanic dropouts are characterized by their lack of English language proficiency, especially among those 16- to 19-year-olds (Fry, 2003). However, regardless of their

generation, Hispanic students are still more likely to drop out than students from other races and or ethnicities (NCES, 2003).

Though Hispanic college attendance among 18 to 24-year-old almost triple from 1972 to 2010; Hispanic enrollment rates remain lower than those of their peers: 38% for Blacks, 43% for Whites, and 62% for Asians (Fry, 2011). Still, among all Hispanic students native-born tend more to finish high school and enroll in college and universities than foreign-born Hispanic. A major factor that explains this gap is the high number of Hispanic high school dropouts making them ineligible for college and university enrollment (Fry, 2010).

While the percentage of Hispanic students enrolling in college has increased, they are concentrated in 2-year colleges. In 2000, Hispanics represented 14% of students attending 2-year colleges and only 7% of students enrolled in 4-year universities, whereas non-Hispanic White students made up the majority of students attending 4-year institutions and a minority in 2-year colleges. It may be argued that Hispanics are overrepresented in 2-year colleges, as these institutions tend to charge much lower tuition fees than 4-year colleges, and as these institutions have open enrollment.

Hispanic college completion has increased in the last decades; yet it is lagging behind that of Whites and African Americans. At least 34% of non-Hispanic Whites and almost 18% of African Americans complete a bachelor's degree, while only 10% of Hispanics do so (Gandara, 2009; Kelly, Schneider, & Carey, 2010). Additionally, Hispanics tend to be concentrated in careers such as education, public administration, psychology, and services (NCES, 2003), while the future job growth will be in three main areas: healthcare, technology and scientific

advancements (including space technology), and education (Bureau of Labor Statistics, 2012). While future job growth will also be in education and services, the median wages for these careers tend to be much lower than in those geared toward science, technology, engineering, and mathematics (STEM). While STEM careers tend to pay more than careers in other areas, they also require more study and preparation (Terrell, BLS, 2007).

As the Latino population continues to increase, becoming a larger portion of the workforce, their low college graduation rates may have a negative impact on their socio-economic future. Today's hourglass economy offers two options: a well-paid highly technological skilled job or a low-paid unskilled and service labor one. Hence, not having an education may hinder the socio-economic integration of immigrant students in to American society (Smith & Edmonston, 1997).

Spanish: The Language Hispanics Speak

Though the educational tradition in American schools has always been on English language integration, the case of Spanish speakers is in many ways a special one. The linguistic standing of Spanish is different from other languages due to its historical roots and geographic location. Historically, most of the Southwest, Texas, Florida, and Puerto Rico were part of the Spanish colonial empire (Kanellos, 1998). Whereas historically Spanish has been spoken in these territories for over five hundred years, proximity has assured that Spanish continues to be a vibrant and meaningful linguistic mean for many individuals living in the Southwest, Texas, Florida and Puerto Rico and in other parts of the United States.

Nevertheless, immigrants are under great pressure to learn English and integrate into American society, thus in one or two generations English has become their sole language and that of their children. Still, today there are viable conditions for maintaining a HL like Spanish, as being bilingual and or multilingual makes an individual much more competitive in a globalized market economy. Nationally, a marketplace has emerged to meet the social and economic needs of the growing number of Hispanic population. The business successes of energetic and prosperous media outlets such as Univision and Telemundo, multiple Hispanic radio stations and newspapers in all major American cities, a vibrant Latin music and Hispanic cuisine have become popular in American society, indicating that retaining Spanish is culturally and economically convenient (Guskin & Mitchell, 2011).

While the standing of Spanish in American society has become much more important than in the past, the inconsistent views toward bilingualism have threatened its survival. Some educational policies endorse English language development for speakers of other languages, and view the language and cultural values of minority children as the cause of their poor school performance. Other educational policies support foreign language study for monolingual English speakers and perceived bilingual skills as a national resource such as Spanish (Crawford, 1998; Wiley, & Wright, 2004). It must be pointed out that among all foreign languages, Spanish continues to be the most popular foreign language taught at all levels of the educational system. Several states including Florida have or are considering high school foreign language requirements (NCSSFL, 2010). Furthermore, high school students who aspire to go to four-year universities nationwide and in Florida are required to have completed at least two years of

foreign language courses at the time of applying for admission (Grove, 2011; FLBOG, 2009). Most other universities may require an additional two years of foreign language at the university level in order to graduate with a baccalaureate degree. Although it is important for immigrant students to learn English in order to do well in school, it does not need to be at the expense of losing their HL.

Spanish for Native Speakers (SNS) Program

The United States is a nation of immigrants coming from different cultural and linguistic backgrounds. Thus, the teaching of HL is not something new in the U.S. During the 1800s, the United States received many immigrants, especially Germans that settled in the Midwest (Crawford, 1992; Wiley, 1998). There was no language policy at the time, and bilingual education was accepted where a large language-minority had some power in government. Nevertheless, the burden of providing native language and/or bilingual education rested on local and community interest groups (Wiley, 2007). German was widely spoken during this time and it has been compared to the situation that Spanish has today in the United States, but with a better status (Wiley, 1998). Nevertheless, World War I brought massive changes to American society, including an anti-German attitude which led to the prohibition of the teaching of German in schools (Wiley, 1998, 2000). It is within this context that 20 states enacted legislation to create Americanization programs to ensure that all immigrants would learn English (Piatt, 1990, p. 17, quoted in McCarthy, p. 79).

Almost 200 years later, the U.S. still faces the need to provide adequate education to its increasing and diverse student population. Today ELLs are the fastest growing segment of school

population. In 2007-2008 there were 49.9 million students enrolled in U.S. public schools (pre-K to 12th grade); approximately 5.3 million were ELL students (Batalova & McHugh, 2010). Most ELLs are not foreign born immigrant students. In 2006, U.S. born ELLs represented 64% of all ELL students in American schools (Batalova, 2006). Among ELL students the largest group of HL is the SNS. In 2007, there were 55.4 million people that spoke a language other than English at home, out of which there were 34.5 million (62%) who spoke Spanish (U.S. Census Bureau, 2010b). Thus, some schools at the high school and postsecondary level have begun offering SNS classes as an academic subject, especially in states with a large Hispanic population such as California, Texas, Florida, Illinois, New York, and Arizona (U.S. Census Bureau, 2010a).

However, as the present study is focused in Florida, it is important to point out that the Sunshine State ranks third among all states with the largest number of Hispanic population, as well as third in the number of ELL students. In 2007-2008, there were approximately 2.6 million students enrolled in Pre-K to 12th grade in Florida, out of which 8.8% were ELL students (Batalalova & McHugh, 2010), most of whom spoke Spanish at home (US Census, 2010c). Hence, school districts throughout the state have started to offer SNS program where there is a large Hispanic student population, particularly in Central and South Florida.

Linguistic Adaptation and Motivation to Maintain a HL

Immigrants to the U.S. are faced with the need to learn English in order to fully participate and enjoy the opportunities American society offers to them. Studies have found that HL speakers tend to prefer to speak in English (Portes & Hao, 1998; Ramirez, 2000), even among the 2nd generation who value bilingualism; as English is seen as socially and politically

acceptable (Leibowitz, 1971) and viewed with greater value in American society (Pease-Alvarez, 2002). However, there are a great number of HL speakers that enroll in HL courses such as SNS, indicating that other factors are intervening in the HL maintenance.

Some have argued that the language attitude HL speakers may have towards their parents' language could be an important element in the preservation and fluency in the HL (Portes & Schaufler, 1994). Nonetheless, studies done across language groups indicate a stronger desire to preserve their HL among 2nd generation than among 1st generation (Lee, 2005; Pease-Alvarez; Portes & Shauffler). Other studies done on 2nd generation of Chinese American teenagers indicated that peers are the deciding factor in HL maintenance (Luo & Wiseman, 2000).

While the norm is the shift towards English throughout generations, there are exceptions too. In her study of young adults with high levels of HL literacy, Tse (2001) found that the deciding factor to slow the loss of HL is having HL books and other HL printed material at home, as well as watching television in the HL (Cho & Krashen, 2000; Bialystok, Luk & Kwan, 2005). Moreover, those students who enjoyed reading in their HL as a pastime were able to achieve high levels of HL proficiency (Tse, 1998; McQuillan, 1998). Hence, having access to HL printed material may help with language development and perhaps avoid HL loss.

There are several studies done on the importance of family relationships in HL preservation and development. Those parents who were concerned with their children's identity, moral development, and academics had a great impact on their children's HL maintenance (Guardado, 2002), as well as parental commitment with HL maintenance (Zhang, 2004). Parental

use of HL fostered HL development (Hinton, 2001), especially during adolescence, as those parents that communicated with their adolescents children in their HL achieved the highest levels of cohesion and communication (Tseng & Fuligni, 2000). Furthermore, some studies have focused on the quality of parent-child relationship indicating that those families who had a positive parent-child relationship fostered children's preservation of HL across generations (Arriagada, 2005; Romero, Robinson, Haydel, Mendoza, & Killen, 2004). Other family members, such as grandparents living in the home also played an important role in HL maintenance (Ishizawa, 2004; Kondo-Brown, 2005).

The community plays an important role in the preservation of HL (Hinton, 1999). Communities that have more literate HL speakers with which to interact, as well as access to HL books and print materials, tend to slow the rate of HL loss (Tse, 2001). Travel to the home country may awake the desire to develop the HL (Cho, 2000; Cho & Krashen, 2000). Still, HL speakers may lack basic instruction in the language, making it harder to achieve further HL development (Lee, 2002). Hence, HL programs offered by schools may address the linguistic needs of the growing Hispanic population in the United States, as they offer the formal teaching of HL.

SNS Student Profiles and Teaching Practices

SNS students form a largely heterogeneous student population encompassing varying levels of Spanish language proficiency; they still display language skills much more advanced than a monolingual English student (Valdes, 1997b). Their linguistic and cultural knowledge, as well as their socioemotional needs, are very different from the typical foreign language student.

Foreign language curriculum and teaching practices are catered toward English speaking monolinguals born in the United States with no linguistic and cultural knowledge of Spanish and Hispanic culture. On the other hand, SNS students are immigrants or the children of immigrants and present varying levels of bilingualism, requiring teaching practices fine tuned to their linguistic and socioemotional landscape (Lewelling & Peyton, 1999).

HL speakers are made up of various groups depending upon when they arrived in the United States. The present study will use demographic terms to refer to generations. Thus, foreign born children of foreign born immigrants are called 1st generation (Suro & Passel, 2003). Generation 1.5 are those foreign born children who came to the U.S. as school-aged children or adolescents, receiving most of their schooling in the U.S. (Harklau, Losey & Siegal, 1999), as linguistically they have more in common with the 2nd generation in their native language (L1) development (Suarez, 2007). Those HL speakers who were born in the U.S. with at least one parent born abroad are called 2nd generation (Suro & Passel, 2003), and those U.S. born HL children with both parents born in the U.S. are called 3rd generation (Suro & Passel) and beyond. Although Puerto Rico is an associated state of the United States, the U.S. Census Bureau only considers U.S.-born those children with parents born in Puerto-Rico and living in the continental U.S., as children living in Puerto Rico are not considered U.S. native born (Capps et al., 2005).

HL instruction is provided in two ways: community-based and school-based, either as an academic subject or as program model such as dual immersion. The traditional way is for the HL community to offer after school and weekend classes. These HL programs aim to maintain the HL and culture among the young members of the community. Their success has been limited due

to inadequate resources such as trained teachers, teaching materials, and funding (Brecht and Ingold, 1998). These community-based HL programs are popular among the Chinese, Koreans, and Russian communities (Valdes, 1995).

The school based programs are offered by some school districts either as a dual immersion program or as a HL program such as the SNS programs in Florida. Both programs are taught by teachers as an academic subject or as an after school program. In the case of the dual immersion program, the student population is made up of HL students along with English monolingual students (Valdes, 1997a). Both languages are used as the medium of instruction. According to the National Dual Language Consortium, at the elementary level the partner language is used at least 50% of the time during the school day. However, these programs are offered mostly at the elementary level, starting in kindergarten or first grade and some lasting for five years. Some may continue into middle and high school.

In the case of HL programs such as the SNS, these are usually offered at the middle and secondary level and are designed as a Language Arts class similar to English Language Arts class (Potowski et. al, 2008), thus offering SNS students the opportunity to study Spanish formally. SNS programs do not replace ESL instruction, instead it is offered as a foreign language elective. While the purpose of SNS program is to develop the linguistic repertoire of HL students, it also aims to develop cognitive academic language skills needed for academic success.

According to Valdes (1997b), the goals of a well-structured SNS program should be geared to language maintenance, development of bilingual range, attainment of a prestige variety

of Spanish, and the transfer of literacy skills. Consequently, the instruction is directed toward reading, writing, grammar use, increased command of vocabulary, access to the cultural and language issues of Hispanic communities, and developing awareness of Spanish language and identity. The development of the bilingual range includes communication skills in two languages based on the context and purpose of the communication. The attainment of a prestige variety of Spanish involves awareness of the diverse linguistic registers and their appropriate use, as well as the development of the standard Spanish required in the professional field. The transfer of literacy skills refers to the development of reading and writing skills that can be transferred from one language to another, enhancing and supporting biliteracy (Valdes, 1997b, pp. 22-32).

Although there is a great demand for SNS programs they are not widely offered, only 9% of SNS programs were offered at secondary level in 1997 (Rhodes & Branaman, 1999); however, in 2002 18% were offered at the postsecondary level (Ingold, Rivers, Tesser & Ashby, 2002). It may be argued that SNS programs are not widely offered due in part to the lack of standards of SNS teacher preparation, lack of coursework on how to teach SNS (Potowski & Carreira, 2004), as well as the fact that no state offers a SNS teacher certification program or endorsement for public school teachers (Potowski, 2003). Still, some postsecondary institutions, such as Hunter College, California State University at Long Beach, and New Mexico State University offer SNS courses on a regular basis. Furthermore, some SNS teacher preparation programs are available and sponsored by the National Endowment for the Humanities, the Heritage Language Initiative, the University of New Mexico at Las Cruces, and the American Association of Teachers of Spanish and Portuguese (AATSP), the American Council on the

Teaching of Foreign Languages (ACTFL), and the National Association of Bilingual Education (NABE). While those teachers interested in acquiring the preparation to teach in SNS programs may gain knowledge and skills through these postsecondary institutions, none are readily accessible for language teachers in Florida.

Bilingualism among SNS

SNS students may be considered to present some kind of bilingualism by the mere fact that they have been exposed to two languages. This includes Hispanics born abroad and Hispanics born in the U.S. Their proficiencies in both languages range in varying degrees from their first language (L1) to their second language (L2) in each of the four language skills (understanding, speaking, reading, and writing). In the case of immigrant bilingualism, language proficiency in Spanish tends to follow a generational pattern. Usually 1st generation speakers tend to be highly proficient in Spanish and have some speaking abilities in English. But 2nd and 3rd generation of SNS tends to become English dominant speakers, and may continue to communicate at various levels of proficiency in Spanish, especially with members of the 1st generation. However, by the 4th generation, most descendants of immigrants become English monolingual speakers, with the exception of a few who may retain some competence in the HL, in this case Spanish (Valdes, 2007b; Portes & Rumbaut, 2001; Veltman, 1983; Fishman, 1966).

Levels of Spanish Language Proficiencies of SNS Students

SNS students are fundamentally different from the traditional foreign language student, especially in their developed functional proficiencies in Spanish. Even though SNS students vary

in their language proficiency in Spanish and may display some language deficiencies, they do possess Spanish language skills such as pronunciation and fluency, a large vocabulary, mastery of a wide range of grammatical structures, and understanding of implicit cultural norms crucial to effective communication (Valdes, 1997b); a level of language acquisition that would take several years and many hours of instruction, energy and effort to monolinguals to achieve (Campbell, 1996). However, the fact immigrant students have to live with two languages in contact, their language proficiencies tend to be affected. Thus, SNS speakers are characterized for displaying nonstandard and dialectic features, use of code-switching, English borrowings, and calques. All of these require individualized special instruction in order to acquire formal standard register in Spanish, necessary to succeed in school and later in the professional arena (Hornberger, 2003).

SNS students are a diverse HL population comprised of students that were born abroad and those born in the United States. They range from having received excellent academic education in a Spanish-speaking country, as well as having a high level of mastery of the prestige variety of Spanish, to those who have no academic skills in Spanish, have poor academic skills in English, and have some proficiency in contact variety of rural Spanish (Valdes, 1997b). For those that were born in the U.S., Spanish may have been learned at home. They are characterized for having better listening and speaking skills, but lacking reading and writing proficiencies since they may have not received formal education in Spanish (Potowski & Carreira, 2004; Valdes, 1995). Each one of these types of students has different needs and expectations for learning the

language, requiring that the curriculum, teaching practices and pedagogical materials be adjusted to their needs (Valdes, 1997b; Carreira, 2007).

Theoretical Framework

The purpose of this section is to provide background information in the fields that inform the teaching of ELL and SNS: Second Language Acquisition, Bilingualism, and Cummins' Linguistic Theories.

Second Language Acquisition

While the acquisition of a first (L1) and second language (L2) goes through a similar progression of developmental stages of language development, most children succeed in learning their first language but not all children do so with a second language. L2 acquisition is a complex phenomenon that depends much on the interaction of external and internal factors. Hence, the acquisition of L2 depends on the availability and frequent access to speakers of the L2, the extent in which the context of L2 is emotionally supportive, and the implicit and explicit messages the society, parents, family, friends, and school provides in regards to the mastery of L2. Furthermore, if the child's school and home values bilingualism, children will very likely learn L2 and become bilingual (Winsler, Diaz, & Espinoza, 1997).

There are several internal factors that may also affect second language acquisition such as verbal intelligence, attitude and motivation towards L2, language distance, the prestige of the target language, home support, personality factors such as mental flexibility and tolerance towards ambiguity, social skills, and the matching of the student's learning style and the

classroom teaching style (Smiley & Salsberry, 2007). Nevertheless, the most significant student background variable in regards to the learning rate of L2 is the amount of formal schooling the student has had in their first language, regardless of the location (Cummins, 1991a, 1996; Garcia, 1994; Genesee, 1994; Perez & Torres-Guzman, 1996; Snow, 1990). This is especially crucial for the language required in school, as academic language proficiency demands large vocabularies, deeper levels of reading comprehension, and abstract thinking in the expression of ideas and concepts (Smiley & Salsberry, 2007).

Bilingualism

The interplay of bilingualism and academic achievement is at the center of the present study, especially for SNS students who arrive to the United States during their last four years in school. These Hispanic immigrant students are fluent in Spanish, yet they may lack command of the English language. Still, these students become bilinguals in various degrees as they learn English and continue to use their native tongue.

Being bilingual may mean having the ability to communicate in two languages with varying degrees of proficiency, while others may use the term to imply that the individual has at least one of the four language skills (listening, speaking, reading and writing) with some level of development (MacNamara, 1967). Despite the fact that the bilingual ideal is the ability to communicate equally in two languages, the reality is that most bilingual individuals tend to be more proficient in one language (Grosjean, 2002; Baker, 2011).

Still, we wonder whether or not the presence of bilingualism can foster and sustain academic achievement. Based on research done on bilingualism, it can be argued that being

bilingual is more an asset than a liability, especially for cognitive and linguistic functions. Research done on bilingualism has shown that being able to communicate in two or more languages improves cognitive abilities (Peal & Lambert, 1962; Samuels & Griffore, 1979), and in general bilingualism fosters literacy and academic achievement among language minority children and adults (Cummins, 1979a, 1981b, 1985, 2001; Cummins & Swain, 1989; Eldesky, 1986; Krashen & Biber, 1988; Merino & Lyon, 1990; Ramirez, 1992; Melendez, 1990; Robson, 1982). Additionally, bilingualism improves verbal and spatial abilities (Diaz, 1983), and divergent thinking (Landry, 1974; Kharkhurin, 2009). Thus, bilingualism may promote academic achievement among those who have some form of fluency in the two languages.

Furthermore, being bilingual may allow access to a wider communication network, and enhanced metalinguistic awareness (Cummins, 1981b; 1984). Besides, maintaining a HL while building English proficiency is crucial for the well-being, cohesion and the strength of families and communities (Wong Fillmore, 2000), as well as the enhancement of self-esteem (Rumbaut, R., 1994) and fostering a sense of identity (Huang, 1992). In socioeconomic terms, being bilingual provides greater employment opportunities as adults, and higher income potential (Lynch, A., 2000).

However, language dominance is an important factor to consider when describing the communication skills of bilinguals. In general, bilinguals tend to have greater proficiency in one language, especially in one or more of the four language skills (understanding, speaking, reading, and writing), and especially depending on the context. Thus, an individual may present L1 dominance at home and in personal relationships, while present L2 dominance at work

(Gottardo, A. & Grant, A., 2008). Nonetheless, Hispanic immigrant students that arrive during their last four years in school demonstrate language dominance in Spanish regardless of the context, while 2nd generation Hispanic students or those Hispanic immigrant students that arrived at a young age may present language dominance in English in some contexts such as in school, while presenting Spanish dominance in others such as home and heritage community activities. Yet, the interplay of the two languages in the academic development of SNS students is very important, as proficiency in one language may promote proficiency in the other and be expressed in improved academic achievement.

Cognitive Models of Bilingualism

There are two main views as how the mind stores two or more languages: the SUP and the CUP (Baker & Prys Jones, 1998; Cummins, 1986a) illustrated in Figure 1 (with permission to reprint it, please see Appendix A). SUP views the mind as having two separate areas where each language is stored, but working and interfering with each other. Language programs such as Structured English Immersion (SEI), Content-based English as a Second Language (ESL), and Sheltered Instruction Observational Protocol (SIOP) are among language programs that approach language teaching and learning from the SUP perspective, as all of these programs promote English proficiency only (Linguati, 1999). On the other hand, CUP views the mind as having only one area for storing languages. Bilingual programs such as Two-way Immersion or Two-way Bilingual, Dual Language Immersion, Late Exit Transitional, Developmental Bilingual or Maintenance Education, and HL or Indigenous Language Program are language programs that

approach language teaching and learning from the CUP perspective, as all of them promote biliteracy and bilingualism (Linguati).

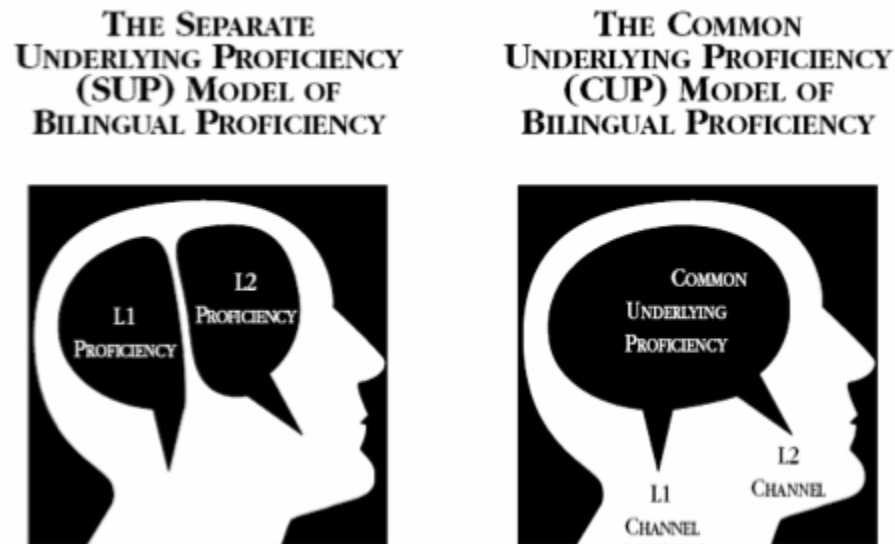


Figure 1: Cognitive Models on how the mind stores languages

The Iceberg Analogy (illustrated in Figure 2, with permission to reprint it; please see Appendix A) visually represents the Common Underlying Language Proficiency, as languages may differ in their surface characteristics such as pronunciation and grammar; nevertheless there is an underlying cognitive/academic proficiency that is common for all languages (Cummins, 1981b, 1989). Thus, whatever is learned in one language, such as knowledge, skills and concepts, can be accessed using other languages allowing for the transfer of cognitive/academic and literacy abilities across languages (Cummins, 1986a; Durgunoglu & Verhoeven, 1998; Durgunoglu, 2002; Javorsky, 2008).

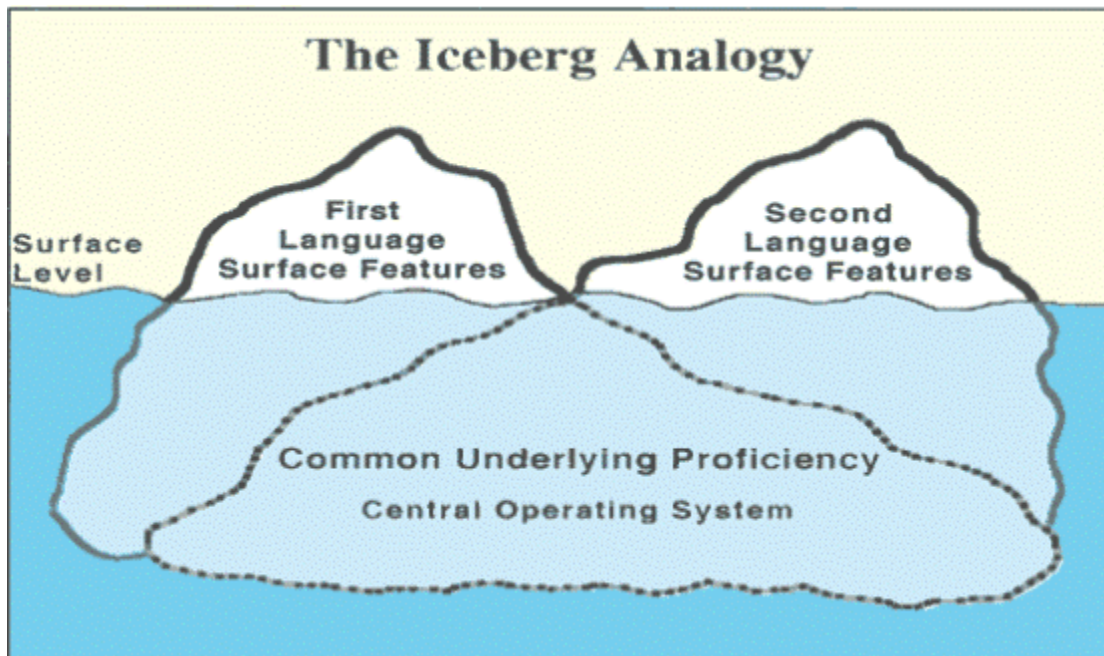


Figure 2: The Iceberg Analogy of the Common Underlying Proficiency

However, in order to gain full advantage from bilingualism, the language used in academics needs to be well developed in order for the student to be able to process the cognitive demands of schooling. Hence, if students are required to learn complex academic material in school in a language not sufficiently developed, the result may turn out to be of poor quality (Baker, 2011).

Cummins' Linguistic Interdependence Hypotheses

This study will examine the Cummins' Linguistic Interdependence Hypotheses of cross-language transfer in the context of language maintenance in SNS programs in Florida. The Linguistic Interdependence Hypotheses proposes that while developing proficiency in one language, the individual develops cognitive skills and metalinguistic awareness, somewhat like a

universal understanding of language which facilitates the acquisition of a second language (Cummins, 1979b, 1981c; 1984; 1986a). Some concepts and skills that may transfer across languages are: awareness of the names and sounds of the letters of the alphabet and their spelling; the notion that print carries meaning and the use of comprehension strategies; abilities and habits of reading and writing; strategies and skills in higher level thinking and metacognition; and especially content knowledge as content learned and mastered in one language transfers to other languages (Swan & Smith, 2001). Hence, having a good command in one language may facilitate the learning of a second one.

To further study the relationship between bilingualism and cognition, Cummins (1976) proposed the Threshold Hypothesis. Based on research on cognition and bilingualism, this theory indicates that there are two thresholds in the level of language proficiency of each individual. The first threshold refers to the level of language proficiency the individual must attain to avoid the interference and mixing of two languages. The second threshold refers to the level of language competence the individual must achieve in order to benefit from bilingualism.

This theory explains in part the reason why minority children taught in their L2, such as immigrant students in the United States, may tend to have a weaker academic performance in school. By not having developed enough language competencies in their L2, ELLs have difficulties in processing complex ideas and concepts in the curriculum, leading them to mediocre and sometimes inferior academic performance (Baker, 2011). Thus, it is important that bilinguals, such as immigrant students, achieve a certain level of proficiency in both languages in order to reap any benefits from being bilingual.

Cummins' Dimensions of Language Proficiency

Language proficiency in school is made up of three distinct dimensions (Cummins, 2002): BICS, CALP, and Discrete Language Skills. Therefore, the English language development of ELL students goes through a more or less precise process, ranging from one to two years to develop BICS, to five to seven years to develop CALP, while acquiring Discrete Language Skills throughout the whole process. Therefore, it is important to analyze how these language skills affect the academic achievement of ELL students.

The most noticeable language dimension is BICS; the “ability to carry on conversation in familiar face-to-face situations” (Cummins, 2002, p. 19). This type of language proficiency or social language is context-embedded and requires low cognition. BICS is acquired easily during daily activities by using simple grammatical structures and basic vocabulary (Cummins, 1979a, 1981b, 1984, 1991b). Although English native speakers already have BICS when they start school, ELLs take one or two years of second language immersion in English to obtain it (Collier, 1989; Cummins, 1981a, 1981b, 1996, 2000a). This language ability may deceive teachers and parents, as the ELL student is able to carry a conversation with ease; therefore, they may assume s/he can be mainstreamed into regular classrooms. However, the student will not be able to earn good grades as s/he lacks CALP in order to understand and process complex language and abstract ideas.

Meanwhile, ELL students must learn specific aspects of English, such as phonological, literacy, and grammatical and orthographic skills, vocabulary, cultural assumptions, values, and themes that are embedded in each language and culture, as well as story structure and rhetorical

features, as these may differ across languages (Cummins, 1979a, 1981b, 1984, 1986a). These language skills have been identified as Discrete Language skills and must be taught in detailed. While ELL students can acquire these skills while learning vocabulary and conversational literacy, there is very little language transfer to other academic language areas like linguistic concepts, vocabulary, sentence memory, and word memory (Geva, 2000; Kwan & Willows, 1998).

On the other hand, most school work requires understanding and knowledge of low-frequency vocabulary words, abstract ideas, and high cognitive abilities such as analysis, synthesis, and evaluation that depend on much more complex oral and written language skills. Cummins has identified this language proficiency as CALP (1979a, 1981b, 1984, 1991b, 2002). One important characteristic of CALP is that is context reduced; it is this language proficiency that is needed for reading, decoding, and academic writing language.

CALP is a complex process for all students, but especially for ELLs who may take at least between five to seven years to reach advanced oral proficiency and be at par level with their English native speakers' peers (Hakuta, K., Goto Butler, Y., & Witt, D., 2000; Thomas & Collier, 1997). However, exposure to English does not assure ELLs academic proficiency. Thus, CALP must be explicitly taught in all areas of language (Listening, Speaking, Reading, and Writing).

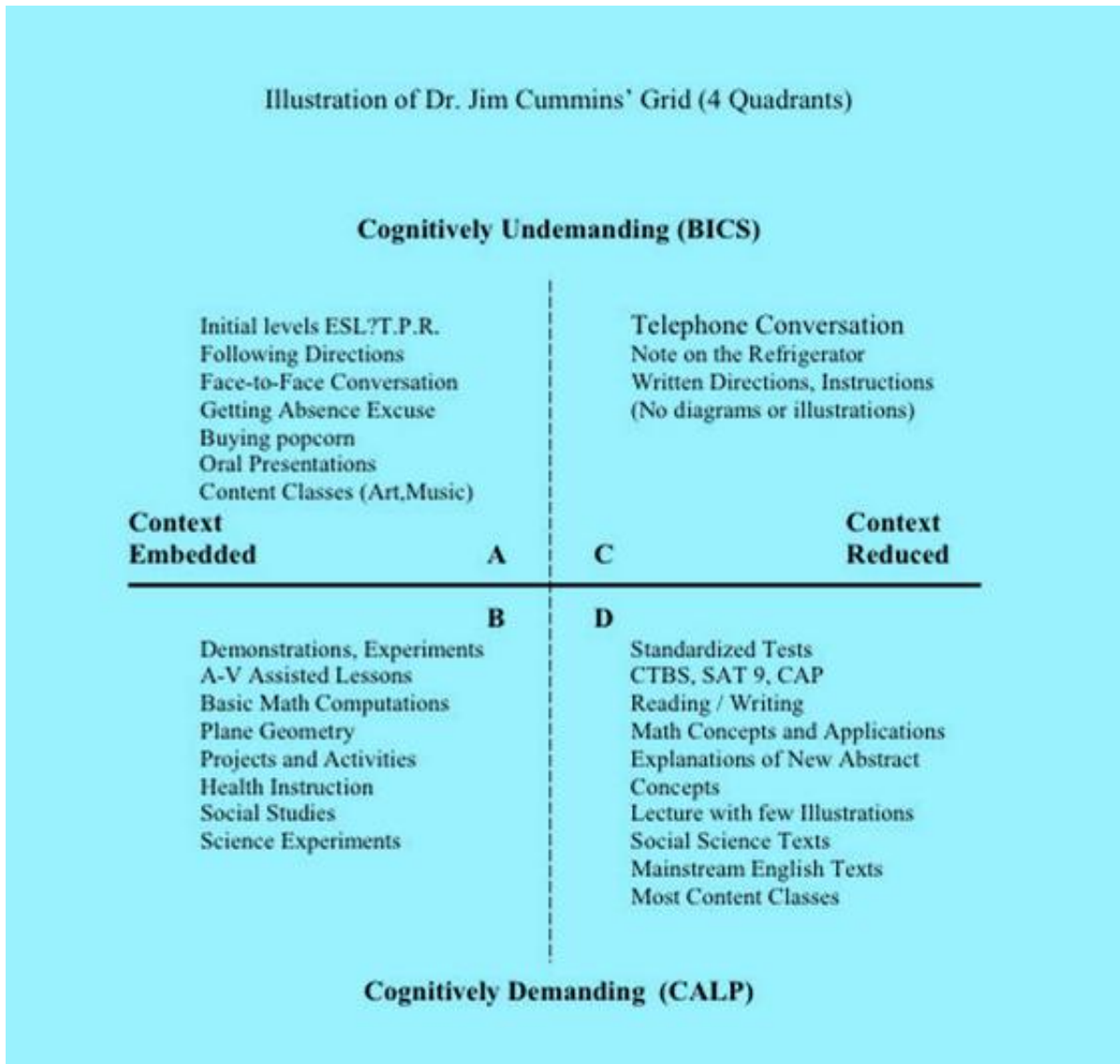


Figure 3: Cummins' Quadrants

Figure 3 illustrates (with permission to reprint it; please refer to Appendix A) how the dimensions of context and cognitive demand are arranged into four quadrants to describe language learning. Thus, in Quadrant A language learning will be the easiest as it will involve a context embedded situation and low cognitively demanding tasks, such as following instructions,

face-to-face conversations, and oral presentations. Quadrant B language learning will be harder than in Quadrant A, as it will involve context reduced situation but with low cognitively demanding task. Tasks such as telephone conversations and short written notes are among some representative cognitively undemanding tasks in context reduced environment. But Quadrant C and Quadrant D will be increasingly more difficult, as both will involve high cognitively demanding tasks. The only difference between them is that language learning in Quadrant C will involve context embedded situations while Quadrant D will be context reduced ones. Thus, the hardest task will be found in Quadrant D which, among others, includes standardized testing required by state and federal agencies as part of accountability school measures in place. Still, ELL students must develop the necessary skills to complete these tasks, as academic achievement depends on these.

SNS instruction supports ELLs' literacy skills in Spanish and English, as cognitive academic language learned in L1 can be transferred to L2. This is important, as content knowledge acquired in the native language does not need to be relearned in the second language. Additionally, aspects common to most languages such as phonological awareness, word reading, concept of printed language and reading comprehension can transfer from one language to the other. Furthermore, this transfer of knowledge is reciprocal; hence second language learning should not interrupt ELLS' cognitive development (Collier, 1995). Therefore, for ELLs to continue developing their native language while learning L2 makes sense, as ELLs cannot afford to wait to learn concept knowledge until they have acquired English.

However, Cummins' constructs of BICS and CALP have received criticisms on two educational dimensions: from a sociopolitical perspective and from an instructional perspective. The criticisms on the sociopolitical perspective are catered toward the constructs of BICS and CALP for not addressing the importance of social factors involved in educational practices, especially power relations (Eldesky et al., 1983; Romaine, 1990; Troike, 1984; Wald, 1984). Cummins responded by saying that power relations between majority and minority groups at the societal level are enacted in the classroom between teachers and minority students. Thus, for minority students to succeed in school, societal power relations must be changed so that minority students are empowered. Additionally, as current societal tendency in maintaining majority/dominant versus minority/-dominated power relations persists, it can be forecast that any changes in the educational structure that may threaten this power struggle are going to be forcefully fought (Cummins, 1986b).

The concept of CALP has been criticized for the validity of using tests to measure CALP. Thus, according to Eldesky et al. (1983) the concept of CALP corresponds to no more than to test-know-how. Cummins responded by indicating that the construct of academic language proficiency is not dependent on test grade, either for its construct validity or importance for education. In addition, the cognitive development in literacy skills and knowledge is very different from a kindergarten student to a high school one, no matter the kind assessment used.

Other criticisms have been directed towards the use of CALP to denote minority/bilingual students' low academic outcomes to lack of sufficient cognitive academic proficiency instead of to inappropriate school environment and practices. Hence, the whole idea of CALP denotes a

“deficit theory” as it assigns minority/bilingual students’ low academic achievement to their inadequate cognitive academic proficiency instead of unsuitable school environment and practices (Edelsky, 1990; Edelsky et al., 1983; Martin-Jones & Romaine, 1986). Cummins approaches this criticism by emphasizing that language proficiency is an important variable that can intercede in students’ academic outcomes, but at the same time CALP is not independent of the sociocultural environment found in schools. He points out that much of the development of BICS and CALP is contingent on the language patterns and contexts in the classroom and in school, deciding the school success of minority student (Cummins, 2000b).

While criticisms toward Cummins’ constructs of BICS and CALP have helped refine the research and practice in the teaching of ELL students in the United States, Cummins’ theoretical model has contributed greatly to differentiate between the acquisitions of English at the social level (BICS) with the language needed in academic contexts (CALP). Doing so has helped to better evaluate the English proficiency of ELL students before being mainstreamed into regular classroom instruction. Thus, BICS and CALP constructs have greatly contributed to demonstrate that standardized tests used in psychological testing, as well as minority students’ hasty early exit from bilingual programs based on BICS instead of CALP in English, have been a factor in the maintenance of unequal power relations in the educational system (Cummins, 2000b).

Furthermore, by identifying the Common Underlying Proficiency, Cummins have contributed to the understanding that any knowledge or skill acquired in one language will benefit the proficiency in a second language. This concept also serves to explain why the acquisition of additional languages becomes increasingly easier. Another contribution of Cummins theoretical

model is his quadrant on task difficulty based on cognitive and context features. Thus, this model has helped teachers to better understand student learning as well as better adapt their teaching practices to promote student motivation and learning while offering increasingly cognitive demanding tasks. Moreover, Cummins' Threshold Hypothesis and research done on this concept have shown that when the L1 continues to be developed and the ELL students' culture is valued while developing a L2, students tend to do better in school than those students whose L2 is acquired while their L1 and culture is devalued or suppressed (Cummins, 1994).

Review of the Research

The present study is interested in examining the possibility that language transfer occurs among high school Hispanic ELL students participating in SNS, a HL program, as expressed in educational outcomes in English. Hence, the review of the research in HL and academic achievement will include studies done on language programs in the United States that promote biliteracy. Among bilingual education programs that promote biliteracy are the late exit transitional/developmental bilingual/maintenance education and two-way immersion/dual language program. Among foreign language programs, one-way immersion program, usually offered at the elementary level or as a language camp during the summer, aims to develop biliteracy in students. Therefore, the present review of the research will cover the most relevant studies done on language programs, such as those mentioned above that promote biliteracy in two languages. The present review will be organized as follows: Studies done on primary language instruction and academic achievement, and meta-analyses studies done on the importance of primary language instruction and the academic achievement of ELL students.

Studies Done on Primary Language Instruction and Academic Achievement

Several studies have been done at the national level to evaluate bilingual education and the academic achievement of ELLs. For example, Ramirez, Yuen & Ramey (1991) carried out a federally funded study that traced the progress of 2,000 Spanish speaking ELLs in nine school districts within five states for a period of four years. The study compare three types of curriculum offered to language-minority students that differ from each other in the amount of students' native language use and support while learning English and subject content area in English. Thus, the study compared three most common bilingual programs: transitional bilingual programs (early-exit), developmental bilingual programs (late-exit) and English structured immersion programs. The study found that ELLs in developmental bilingual programs (late-exit), a bilingual program that gradually transitions students into English, showed increased development of mathematical skills than those ELLs in transitional bilingual (early-exit) programs and those attending English structured immersion programs in English tests. English language and reading skills for students in the three programs developed the same or more than those students who did not attend any language program. By comparing different language programs and evaluating their effectiveness in promoting academic achievement in English, the findings of this study indicate that providing instruction in student's L1 does not affect the acquisition of L2. Secondly, ELL students instructed in their L1 40% of the time throughout four years who were gradually introduced to English were able to achieve and sustain higher academic scores in mathematics and other content areas than students who were transitioned into English-only instruction. Also, this study is important as it encompassed student data that covered four years, providing a longitudinal view of bilingual

language development. Nevertheless, the Ramirez et al. (1991) has been criticized for its methodological design, as some of the schools involved did not have a comparison group. Other limitations of the study include lack of documentation of the objectives of the study, and weak alignment between the objectives and the research design of the study (Meyer and Fienberg, 1992).

An important longitudinal study carried out by Thomas & Collier (1997) examined the long term effects of instructional practices on academic achievement of ELL students. The study included five large urban and suburban school districts in different geographical areas of the United States between 1982 and 1996. More than 700,000 students' records were collected and analyzed using quantitative and qualitative methods. Regardless of student's native language, country of origin, socioeconomic status, and student background, the study found that when all instruction is given in English, ELLs with no schooling in their first language can take from seven to ten years or more to reach age and grade level English language proficiency; ELLs that have received two to three years of academic schooling in their first language in their country of origin before coming to the United States, take from five to seven years to reach native speaker language proficiency, and students who are schooled bilingually take four to seven years to reach the level of native English speakers' proficiency. Furthermore, the study results found that the use of remedial education does not support language development at the level these students need; by receiving remedial education, ELLs continue to remain behind their grade-level peers and it becomes very difficult to catch up with them. Also, any interruption of academic development in lieu to learn English first will definitely affect academic development in the long run. The results of this study highlights the importance of previous schooling in the learning of L2 and academic

achievement, as well as the time it takes for an ELL student to develop CALP in their L2, in this case English.

Language transfer was examined by Cunningham & Graham (2000) by studying how participation in a Spanish immersion program affected the English native speakers' vocabulary. Thirty 5th and 6th grade students participating in the immersion program and 30 English monolinguals took the 4th-grade Cognitive Abilities Test (CAT) and the Peabody Picture Vocabulary (PPVT) Test 60 consecutive times. Additionally, the students took a 20-item Spanish–English Cognate Test (SECT), in order to test low-frequency English words recognition with high-frequency Spanish cognates. While the results for the CAT and the PPVT showed comparable verbal ability between groups, but on the SECT immersion students significantly outperformed English monolinguals. The results of this study support cross linguistic transfer as positive transfer happens from Spanish as L1 to English L2 vocabulary repertoire.

Yeung, Marsh & Suliman (2000) used a National Education Longitudinal Study of 1988 (NELS88) database to study the relationship between L1 (non-English) proficiency, English proficiency, and academic achievement. Using structural equation modeling the results showed that L1 proficiency did not affect English test scores and GPA in tenth grade. By 12th grade, L1 proficiency had a positive effect on standardized tests in English, math, and history. The results showed that the use of L1 did not have negative effects on English and academic achievement, and there was a need to support L1 maintenance. In addition, Shibata (2004) examined the relationship between Japanese proficiency, English learning, and academic achievement with a group of second

generation college students and found that knowing Japanese did not interfere with the English knowledge of these students.

In the last 10 years, two major studies have been done in states with a large Hispanic population such as Florida and Texas. In Dade County, Florida, Oller & Eilers (2002) compared 952 students participating in bilingual and English immersion programs. The study evaluated the oral language and literacy skills of U.S. native born English only and bilingual children in Kindergarten, 2nd grade, and 5th grade. The study showed that by 2nd grade students attending bilingual programs received higher scores in English literacy, and their literacy rate increased even more by 5th grade compared with those ELLs participating in all English immersion programs.

Thomas & Collier (2002) carried out a federally funded study similar to that of Ramirez et al. (1991). The study covered a five-year period (1996-2001) focusing on the great variety of programs offered to K-12 language minority students in U.S. public schools. The study included five urban and rural research areas throughout the United States. The study included 210,054 student records from the five participating school districts. Quantitative and qualitative methods were used to analyze student outcomes from eight different programs for ELLs. The results of the study confirmed what Ramirez et al. (1991) had found: ELLs perform academically better when attending programs that emphasized native-language development, and those students attending two-way (dual) immersion programs performed the best of all. “The strongest predictor of L2 student achievement is the amount of formal L1 schooling, thus, the more L1 grade-level schooling, the higher L2 achievement” (p. 7).

Pagan (2005) examined the academic achievement scores of ELLs in a two-way immersion program and an English immersion program in two California elementary schools. The study also compared the English and Spanish academic achievement of ELLs with the one earned by English native speakers in the same program. The study found and supported the results of previous studies that teaching ELLs in their native language does not delay the learning of English. Also, English native speakers in the two-way immersion program achieved at or above grade level in English and Spanish.

Shneyderman and Abella (2009) examined throughout a four year period how student participation in a two-way immersion bilingual program affected maintenance/acquisition of Spanish language proficiency as well as on reading and mathematics achievement in English. The study found that students in the programs that offer Spanish and one content area in Spanish, did better in reading comprehension in Spanish than students participating in the Spanish language program only. Students in the two-way immersion bilingual program performed at the same level or above in reading and mathematics than those students that were not in the program. Thus, having to learn content in two languages did promote biliteracy and academic achievement.

Ramirez, Perez, Valdes & Hall (2009) studied the long term effects (35-36 years) of a K-3 bilingual-multicultural program, examining former Mexican-American participants and controls as adults in their 30s and 40s. The results supported the findings of previous long-term bilingual programs effectiveness studies, indicating that participation in dual language programs affect long term academic achievement, and increased high school graduation rates. Also, the

results indicated that bilingualism do not delay Americanization or interfere with academic achievement in English. All participants view bilingualism as an advantage that enriches their quality of life.

Lindholm & Block (2010) examined the academic achievement of Hispanic students participating in dual language programs in low SES schools with high Hispanic student concentration. The study findings showed that Hispanic students in dual language programs in low SES schools performed above or at equal levels compared to their mainstream classmates in tests in English.

Meta-Analyses Done on the Importance of Primary Language Instruction and the Academic Achievement of ELL Students

There have been several quantitative syntheses or meta-analyses done on the importance of primary language instruction and the academic achievement of ELL students in the past since the 1980s. According to Goldberg & Coleman (2010), “a meta-analysis is a statistical technique that allows researchers to combine data from many studies and estimate the average effect of an instructional procedure.” (p.25). By controlling for various variables in each study, such as sample size, program model, research design, outcomes measures, and more, meta-analysis help to minimize reviewer bias when categorizing the results or when deciding which studies to include or exclude (Krashen & McField, 2005). Most importantly, meta-analyses help deal with the conflicting results derived of studies of the same type of programs, by measuring the average effect size of a particular treatment. If the average effect is positive or negative, then it looks if

the magnitude effect is large, thus important, or small, hence of no consequence, or the magnitude effect is in between (Goldberg & Coleman; Krashen & McField).

Baker and de Kanter (1981) located about 300 ELL language programs from the United States and the rest of the world, out of which only 28 studies were selected as they met methodological appropriate research design based on their criteria. They rejected studies that did not use random assignment of students to language program conditions, or did not make sure that students in the treatment groups were comparable. Baker and de Kanter wanted to compare transitional bilingual education program to three other language programs: English as a second language (ESL), submersion, and structured immersion (SI) programs. The study concluded that there is weak evidence to support bilingual education for ELL students, thus no particular language program need to be supported or preferred by the Federal government (Baker, 2011). Nevertheless, Yates & Ortiz (1983) have criticized this study for its methodological errors such as non-random assignment of subjects, high attrition of subjects, extremely small sample sizes, inappropriate measurement instruments or procedures, inappropriate pretest/posttest time frames, inconsistent design, lack of control of critical learning variables, variations in qualifications of instructional personnel, and lack of recency of the studies cited. Additionally, the authors' had problems with identifying Canadian Immersion Programs as structured Immersion, fatally comprising their conclusions (Brisk, 1998).

In 1985 Willig carried out meta-analyses on the value of Bilingual Education on selected studies. Because the selected studies had a series of methodological inadequacies, the magnitude of effect sizes was affected. Still, when statistical control was applied to the methodological

deficiencies, the results showed a slightly moderate statistical significance of bilingual education in reading, language skills, mathematics, and achievement in tests written in English, and for reading, language, mathematics, writing, social studies, listening comprehension, self-concept, and attitudes toward school when the tests were in other languages.

Also, Willig concluded that when weaknesses in the methodology were controlled, bilingual education had stronger positive effects on ELL educational outcomes (Krashen & McField, 2005).

Rossell & Baker (1996) carried out an analysis of the effectiveness of Bilingual Education. They reviewed the literature as far back as possible up until 1995. For a study to be included, it had to be a true experiment with randomly assigned students to a treatment and control groups, and outcomes measures had to be in English; the study had to be a program evaluation that applied the effectiveness of bilingual education as treatment. Only 72 studies were included, most of them were done using Spanish-speaking students at the elementary and junior high levels in the United States. Only a few international studies were accepted, and all of them were from Canada. The study concluded that based on the studies reviewed, bilingual programs were not better than English-only approaches for ELL students. Still, the study had its flaws, as Cummins (1999) stated that Rossell & Baker used (5) Canadian French-English bilingual programs and (2) Canadian French-English-Hebrew trilingual program and labeled them as structured immersion programs geared toward developing monolingualism. Other studies were used and mislabeled, and were used to argue against bilingual education. Also, the study had additional issues, such as the criteria used for making decisions about the studies

sound methodology; these criteria seem to be imprecise and applied in a subjective form, such as applying a criteria such that would exclude bilingual programs that promote bilingualism and biliteracy (Cummins, 1999; Greene, 1997).

Using meta-analysis, Greene (1998) reworked the data Rossell & Baker analyzed. His selection criteria were based on studies with at least a year of treatment, resulting in only 11 studies selected for analysis. Because the average effect size for English reading, math, and Spanish reading, and because the average effect size was positive, the study concluded that bilingual education had a positive effect. Still, of the 11 studies included in Greene's analysis the average duration was two years. Thus, the results underestimated the long term effect of Bilingual Education on ELL's academic achievement, as it takes at least five to seven years for ELLs to acquire CALP, allowing researchers to accurately measure the full impact of Bilingual Education (Cummins, 1979a, 1981b, 1984, 1991b; Thomas & Collier, 1997).

In 2005, Rolstad, Mahoney & Glass carried out a meta-analysis of Ell's program effectiveness. They included as many studies as possible, as well as 17 studies done since Willig's earlier meta-analysis, instead of applying quality criteria for inclusion. When controlling for ELLs, the meta-analysis showed that Bilingual Education was better than all English programs, and that Developmental Bilingual Programs were better to Transitional Bilingual Education Programs. The study concluded that bilingual Education Programs may promote academic achievement among ELL students.

Slavin & Cheung (2005) reviewed experimental studies on ELL reading programs in bilingual and English only programs. They used a systematic literature search, and effect sizes as

inclusion criteria. Only 17 studies were selected based on the pre-established criteria. Of these, 13 studies were on elementary reading for Spanish Speakers; nine of these had a positive effect on English reading, and four had no effect. There were two studies of HL (French and Choctaw) programs as well as two secondary studies; all of them indicated that bilingual education was superior to other teaching approaches for ELL students. Still, while the review concluded that the number of studies analyzed was modest, the data showed bilingual approaches were better, especially when teaching reading in the native language and English at separate times each day.

In 2006, Francis, Leseaux & August used electronic databases searching for comparative studies on the use of native language instruction and English-only approaches. They included all the studies included in the previous reviews done by Willig (1985), Rossell & Baker (1996), Greene (1997), and Slavin & Cheung (2004). Only 15 studies were included using meta-analysis, yielding an overall favorable effect size to bilingual education approaches. Additionally, the analysis concluded that bilingual education does not interfere with the academic achievement in English or in the HL in all the various types of bilingual instruction.

While the debate on the how best to educate language minority students continues in the United States, the research done on English acquisition and academic achievement have been catered mainly toward the evaluation of bilingual education and English programs, especially comparing how well ELL students do academically in bilingual programs versus those students participating in English-only programs. Nevertheless, most evaluations on language programs have issues with their research design due to differences in the curriculum, teaching, and/or assessment procedures and goals among bilingual and English language programs (Howard,

2010). Among the meta-analysis, some studies have problems with inadequate study selection criteria, such as Rossell & Baker, as they included studies with no comparison group violating their own selection criteria (Krashen, 1996; Greene, 1998). Additionally, several of them presented methodological problems. For the most part they encounter issues with the selection of studies due to the great variety of language programs, issues with pre-established criteria selection, as well as their limited number of studies included. Most of all, several of them underestimated the long term effects of bilingual education on ELL students' academic achievement.

Still, the present research review shows that ELL students tend to benefit from language programs that include the use of their native tongue while they learn English, as it supports cross-language transfer between L1 and L2. At the same time, this review indicates that using and learning in L1 does not have a negative effect on English acquisition and academic achievement. Of great importance for developing CALP is the amount of previous schooling in L2 acquisition and academic achievement, a relevant factor in our study as it is focused on 1st generation Hispanic ELL students attending high school.

Conclusion

The purpose of the present study is to examine Cummins' Linguistic Interdependence hypothesis in the context of the SNS program in Florida. Chapter Two covered how Hispanics in the United States are doing, including their diverse origin, settlement, family background, and educational outcomes, in order to provide background information to understand how Hispanic students, especially ELLs, are doing in school. The chapter described HL and SNS programs in

the United States, as well as provided an overview of the linguistic student profiles and curriculum features. In addition, Chapter Two highlights the importance of Hispanic ELL bilingualism and the implications for L2 acquisition. Cummins Linguistic Interdependence Hypotheses, the focus of this study, informs how L1 and L2 are interconnected at a deeper cognitive level, and how learning done in one language may actually be transferred and used in another. Of most importance for the teaching and learning of ELL students are Cummins' constructs of BICS and CALP, as these can inform and give guidance in the selection, evaluation, and teaching of ELL students.

While the review of the research has covered relevant studies done on Bilingual Education and the Linguistic Interdependence Hypothesis, the results have not been conclusive. Most research done on English acquisition and academic achievement for language minority students have been on comparative evaluation of the various bilingual education program and English only programs. Furthermore, these studies have been criticized for their research design and methodological issues. Still, the present research review highlights the fact that ELL students tend to benefit from educational approaches that include their L1 while learning English, as well as indicate that the use of L1 to learn does not have a negative impact on English acquisition and educational outcomes.

CHAPTER THREE: METHODOLOGY

This study will focus on Hispanic ELL students in Central and South Florida to find out if there is any possible relationship between Hispanic ELL participation in the SNS program and academic achievement. The state of Florida is a good case for examining Cummins' linguistic interdependence, as in 2010 Florida was the fourth most populous state in the U.S. (US Census Bureau, 2010a), ranked third nationally in the number of ELL students, and accounted for 8.4% of the U.S. Hispanic population with 4.2 million Hispanics (Batalova, J. & McHugh, M., 2010; US Census Bureau, 2010a). Additionally, SNS program, a HL maintenance program is offered at selected high schools, especially in high schools with a large Hispanic student population.

Descriptive quantitative design (Hopkins, G. 2008) will be used in order to establish an association between participation in the SNS program and academic achievement. The methodology section of this study will include the following sections: Research Questions, Context/Site of Study, Population/Sample, Data Collection, Data Analysis/Statistical Procedures, Approval to Conduct the Study, and a Summary.

Research Questions

While the present study aims to examine Cummins' linguistic interdependence theory by focusing on Hispanic ELL student participation in SNS program and its association with their school success, the methodology will be guided by and intend to answer the two following questions:

- i. How does the availability of SNS curriculum vary across district and school variables in Florida?
- ii. In what way(s) is/are the availability of SNS curriculum and student participation associated with Hispanic ELL students' academic achievement?

Context/Site of Study

In order to answer the first question (RQ1), “How the availability of SNS curriculum varies across district and school variables in Florida?” the study will include all 67 district (Figure 4) and school data at the secondary level (Grades 9-12) during 2009-2010, identifying where SNS programs are offered.



Figure 4: Map of Florida Counties

To answer the second question (RQ2) “In what way is the availability of SNS curriculum and student participation associated with student academic achievement?” the study will examine school data of the 14 counties which comprise Central and Southeast Florida, where there is a large Hispanic concentration. These areas are Central Florida with its (9) counties: Marion,

Sumter, Lake, Seminole, Orange, Osceola, Polk, Hardee and Highlands; as well as Southeast Florida with its (5) counties: Martin, Palm Beach, Broward, Miami-Dade and Monroe (Figure 5).

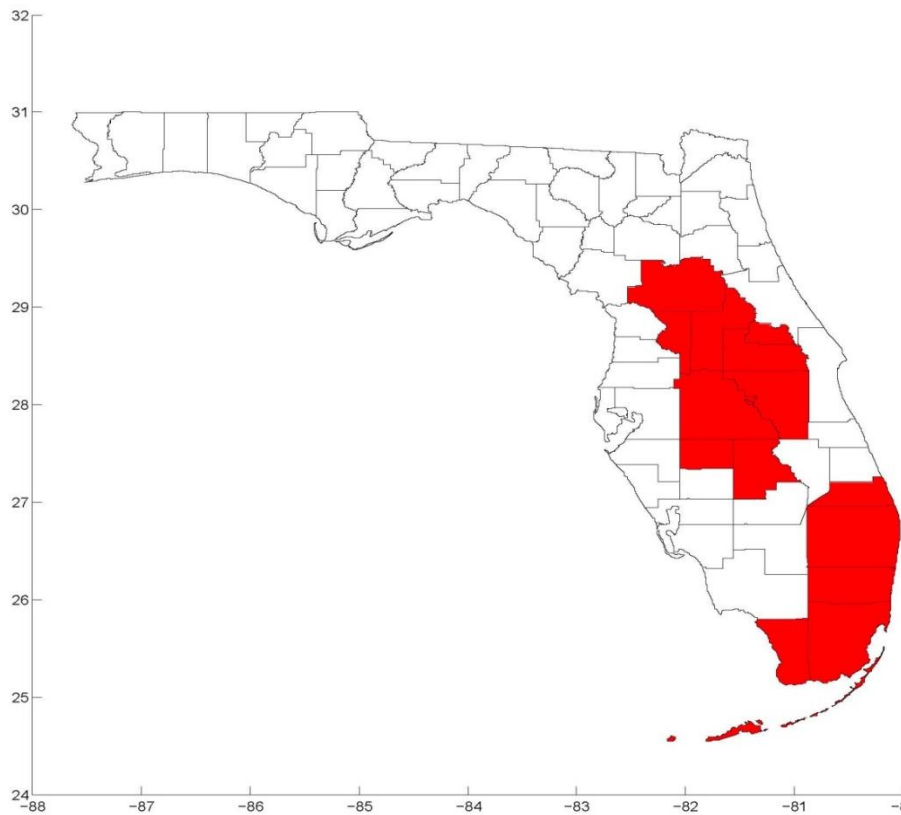


Figure 5: Map of Central and Southeast Florida Counties

According to the Florida Department of Education (a), in 2010-2011, Hispanics represented 75.8% of all ELL students in Florida. There were nine counties with 10% or more in the number of ELL students in the state of Florida; South Florida had three counties with 10% or more of ELL students: Dade County was the county with the highest number of enrolled ELL students (18.9%), followed by Martin county (13.1%) and Palm Beach county (10.6%). In Central Florida, there were two counties with 10% or more of enrolled ELL students, Orange

County had 16.1%, while Osceola County had 18.1% and was the second county with the highest number of enrolled ELL students in Florida (FLDOEa, 2011).

Population/Sample

While quantitative research usually uses probability sampling that involves the use of randomization, the present study will use administrative data which covers the entire population of interest in specific years and geographic areas. Thus the sample used in this study is selected through purpose sampling, a non-random sample technique. Purpose sampling is used when a researcher wants to focus on specific characteristics of a population based on a criterion, such as a specific region and/or subjects, allowing you to select information for an in-depth analysis linked to the main issues being examined (Gay, L.R., 1996). Despite the fact that purposive sampling may be prone to researcher bias when the criterion used is not well considered, in the present study the criterion used to select the sample is both clear and focused, and is integrally related to the issues being studied (Lund Research, 2010).

For RQ1, the population of this study includes all Florida counties school data, and the sample consists of Florida counties school data and individual student level data of all students attending high school in 2009/2010. Individual student level data is used in order to be able to identify where SNS programs are offered in the state of Florida.

For RQ2, the population consists of all Central and Southeast counties high school data. The sample includes all Hispanic ELL students in Central and Southeast counties who attended 12th grade during each year from 2006/2007 through 2009/2010 and then they are tracked back through their entire high school experience starting in 9th grade.

Data Collection

The study utilized secondary data at the student, school, and district level provided by the Florida Department of Education (FLDOEc). A Unit Record Data Request was completed in March 1, 2011 (Appendix B). The data request had several items that needed to be completed in order for FLDOE to process it. Among these were an explanation of the purpose of the study, the research questions, a list of all the cohorts requested, specific characteristics required for the requested cohort, description of the methodology being used for this analysis, and a description of the variables being requested. In June 6, 2011 the Unit Record Data Request was approved by FLDOE, and was sponsored by Lori Rodriguez, Bureau Chief for Student Achievement through Language Acquisition (Appendix C). In March 15, 2012 the data was delivered electronically to me. Thus, the process of requesting the data, have it approved, and receiving it took one year.

The data request at the district, school and student level includes the following:

1. Student race and ethnic composition, as these are intimately related to various forms of inequality from family background, educational practices, educational expectations, and educational opportunities (Orfield & Lee, 2005).
2. School size is an important school characteristic. Some have argued that smaller schools tend to offer a more personal environment, promoting better communication between teacher and students and between teachers and administrators. Teachers are much more engaged in their students' learning and have greater opportunities to work collaboratively with other teachers, benefiting the overall school culture and environment (Muir, 2001). Others have argued that small school may promote student academic achievement, as well as they tend to have a lower

dropout rate than larger schools (Walberg 1992; Stockard and Mayberry, 1992). Above all, smaller schools tend to benefit low SES students and ethnic minorities, as teachers and administrators tend to know their students and students have a greater sense of belonging (Fowler and Walberg, 1991; Stockard and Mayberry 1992; Stolp 1995; Walberg, 1992).

Some researchers have argued that larger schools are more cost effective, as school facilities are used by a larger number of students and administrative tasks can be centralized. Additionally, larger schools have more funding and allow students to take a more varied curriculum (Cotton, 1996; Muir, 2001). While there is no consensus as to what size is a small or big school, most researchers find that the best size for a high school ranges between 400 to 800 students (Cotton; Muir).

3. Two descriptors of socioeconomic status (SES): Free/Reduced Lunch (FRL) and Title 1. SES is an important school characteristic as school level poverty tend to be related to other school variables that may affect the school ability to educate their students effectively, such as parent educational levels, availability of advanced courses, teachers with certification in the content area being taught, unstable student enrollment, dropouts, health related problems due to malnutrition and lack of medical preventive attention, lower college enrollment rates, etc. (Orfield & Yun, 1999).

a) Percentage of FRL students is a measure of poverty that has been associated with low academic achievement (Coleman, 1969; Metz, 1988; Chubb & Moe, 1990; Sirin, 2005). Students are eligible for FRL in one of two ways: students can qualify for direct certification if the household receives food stamps, takes care of foster children, or

receives one or more of the federal assistance programs. Usually these students do not have to submit paperwork for FRL, as social service agencies identify them directly (Harwell & LeBeau, 2010). The second way students qualify for FRL is based on federal poverty guidelines. Students qualify for Reduced Lunch if their household income is less than 185% of the federal poverty guidelines; while for Free Lunch students must come from a household income that is less than 130% of the poverty guidelines. While many students qualify for these federally funded programs, not all participate in it as it is voluntary (Food and Nutrition Service [FNS], 2011).

b) Whether or not the school is Title 1, as it would give an indication of the socioeconomic status (SES) of the student population in particular high schools.

According to the U.S. Dept. of Education (2009), a school is labeled Title 1 when more than 40 percent of the students come from low-income families. However, Title 1 has not been very successful at improving educational outcomes in highly concentrated poverty schools (US Dept. of Education, 1999; Van der Klauuw, 2007).

Although FRL program is based on federal poverty guidelines and is widely used as a measure of SES by researchers and government agencies, some have argued that FRL may not be a very good measure of SES (Harwell & LeBeau, 2010). They argue that participation rates are not constant across grades which tends to decrease de higher the grade is, as well as it lacks validity as an indicator of household income. FRL does not reflect accurately SES as schools characteristic, as it depends on voluntary participation on one hand, and on the other, it is based on various and differing measures that are not

valid. On the other hand, Title 1 is based on the US Census Bureau poverty thresholds that take into consideration dollar amounts; hence it is a much more accurate measure of household poverty. However, for the purpose of this study, both measures of SES will be included.

4. Average teacher educational attainment and experience, as these are considered two important features of teacher quality. Although researchers and policy makers consider these as an important mean to improve student outcomes (Darling-Hammond, 1999; Greenberg, Rhodes, Ye, & Stancavage, 2004; King Rice, 2003), the review of the research is inconclusive and provides contradictory results (Goldhaber, 2004; Wenglinsky, 2002). Nevertheless, the “No Child Left Behind Act” demands that “all the teachers in core academic subjects should be highly qualified by the end of the 2005-2006 school year” (Greenberg, Rhodes, Ye, & Stancavage, p. 1). By highly qualified, NCLB must have full state certification, have a minimum of a bachelor’s degree in the content area, and have enough content knowledge and pedagogical abilities (Greenberg, Rhodes, Ye, & Stancavage). By utilizing these descriptors, this study intends to contribute to the existent literature on this topic.

5. School staff race and/or ethnic status, as some researchers and policy makers believe that the recruitment and retention of minority teachers may increase the achievement of minority students (Chu Clewell & Villegas, 1998; National Commission on Teaching and America’s Future 1996; Joint Center for Political Studies 1989; Graham, P.A., 1987).

6. Number of Hispanic ELL students in the school, and individual ELL student status, as these are the focus of the present study; in addition, studies have found that limited English proficiency is detrimental toward student's possibilities of graduating from high school (Fry, 2003).

7. Educational Curriculum including program subject, program type and name, as we need to identify where SNS programs are being offered, as well as what Hispanic students have participated in the program during 2006/2007 through 2009/2010. The availability of curriculum is an important topic when we consider resource differences among districts and schools. Studies have found that the types of courses a student take in high school may have a great impact on post graduation plans and goals, and economic success, especially when the type of curriculum is considered (Oakes, 1983). While having a degree is important, having higher level of skills including language skills opens greater earning opportunities, thus the kind of curriculum a student participate is critical (Darling-Hammond, 2000).

Data request at the student level only includes the following:

1. Language spoken at home as another way to identify bilingualism among Hispanic students.
2. Gender is an important variable; as studies have found girls tend to do better in school, as well as girls have lower dropout rates than boys (Stillwell, 2009).
3. FCAT is the school outcome measure we are interested in when examining possible relationship between participation in SNS program and educational outcomes.

Additionally, data will be collected on voting results at the county level and county level data on income and demographics from the Census Bureau. County vote share is an important descriptor of school county districts, as political parties do have an overt/covert attitude toward

language policies (Knight, Ready & Barboza, 2007). County average per capita income will also be collected, as more than half of school funding comes from property taxes and other local revenue sources (NCES, 2010).

Data Analysis/Statistical Procedures

The empirical method of the present study has two main objectives: first, to document the availability of SNS program in Florida to determine if the availability of SNS classes is associated with characteristics of teachers, students and general community. The second objective is to examine if there is any evidence that participation in SNS classes is positively correlated with the academic achievement of Hispanic ELL students. This quantitative section of the study is approached in two parts.

Testing for Differences in Means

Because this study is focused in relationships between groups, Testing for Differences in Means allows comparing two or more sample means between or across groups. RQ1 will be studied by comparing the characteristics of schools that offer SNS classes with those of schools who do not offer SNS classes. School variables of interest in this application are: the percent of Hispanic students, the percent of students who receive free lunches, whether or not the school is Title 1, and the total number of students at the school. Teacher characteristics are also included, such as the percent of teachers who are Hispanic, the percent of teachers with advanced degrees, and the average teacher age at the school. This is complemented with county average per capita income to describe school funding, as well as by applying the percent of counties that voted

Democratic in the last presidential election. This last variable is meant to capture the overall community attitude towards immigrants, and can be correlated with spending more resources on special curriculum such as SNS.

For RQ2, the study will analyze the differences in average academic achievement across groups of students who have been exposed to the SNS classes and those who have not. This is implemented by first testing to see if the average FCAT are higher for the group of Hispanic ELL students who participated in SNS classes with that of those Hispanic ELL students who did not participate. This is done with a difference of means t-test with the adjustment for different sized samples (Shavelson, 1996).

An important assumption in the previous procedure is that observations of ELL students are sampled independently; in other words, that students are randomly assigned to the SNS classes. It may well be possible that within a school that offers SNS classes, students who choose not to participate in SNS classes may be different from those who do participate in SNS classes before attending them. For this reason, it is also useful to compare the average academic achievement of all Hispanic ELL students at schools where the course is offered versus schools where it is not offered independently or whether the student took the class or not. This would measure the effect of the availability of the SNS class if it is to be assumed that schools have SNS classes for reasons not related to the type of ELL students, and ELL students are not choosing the counties which they immigrate to, based on the availability of SNS classes.

Regression Analysis of Availability of SNS Program in Florida

Regression analysis is a statistical tool used to examine the relationship between continuous variables, especially naturally occurring variables. Although regression analysis allows predicting a dependent variable from several independent variables, it does not determine a causal relationship between these (Lomax, 2001; Shavelson, 1996). This study used two different types of regression analysis. The first is the logistic regression which is suited for applications where the dependent variable is discrete or is an indicator variable. The second type of regression is the linear regression which is ideal for dependent variables (the left hand side variable) that are continuous (Wooldridge 2010).

RQ1: Logistic Regression to Study the Availability of SNS Curriculum

The logistic regression used had the following form:

$$Pr(SNS_i = 1) = g(\alpha_1 + \alpha_2 Teachers_i + \alpha_3 Students_k + \alpha_4 Community_i + \varepsilon_i) \quad (1)$$

SNS_i is an indicator variable that takes the value of 1 if the school i offers SNS curriculum to its students and it takes the value 0 if it does not. The probability that a school offers SNS is thus modeled as a nonlinear function (logistic) which allows modeling discrete outcomes appropriately (Wooldridge, 2010). The variables $Teachers_i$ represent teacher characteristics such as the percent Hispanic and the average age of teachers at the school. The variable $Students_k$ includes the percent of Hispanic students, the percent of students who get FRL, and the total number of students. The variable $Community_i$ includes the Democratic vote share of the 2008 presidential elections, the income of the district in the last Census, and if the school is

categorized as a Title 1 school. The sign of the significant parameters associated to each of the variables was useful to determine what characteristics are systematically associated with the availability of SNS curriculum.

RQ2: Linear Regression Analysis of Academic Achievement and SNS Classes

This study used a large dataset provided by the Florida Department of Education, which comply with the assumption of the ideal ratio of the number of cases-to-Independent Variables of 20:1; by working with an established dataset, this study avoids having to deal with the accuracy of data entry; and the independence assumption of all scores will be met. The other three assumptions of normality, homoscedasticity, and linearity were examined with the use of a scatterplot (Shavelson, p. 536).

This study uses a regression framework to model the academic achievement of students measured by their individual FCAT scores. Specifically, the model used in this study has FCAT scores as academic achievement on the left hand side, and school characteristics, student demographics (including ELL-Hispanic status), and a variable which indicates if the person has participated in SNS class or if this class is available depending on the regression model. This can be written for any student in a school k as the following regression equation:

$$A_{ik} = \alpha_1 + \alpha_2 X_i + \alpha_3 X_k + \beta SNS_{ik} + \varepsilon_{ik} \quad (2)$$

The first term on the right hand side is a constant. The second variable X_i represents characteristics of the student like their sex, race, FRL status and ELL status. The third variable is SNS_{ik} which indicates if the student had participated in a SNS class at some point. In a second regression model, this is modified to represent only the availability of the class in contrast to

actual attendance. This is done to see if there are any big differences which could indicate that Hispanics who participate in SNS program might be different from those who do not in ways for which the study cannot control. The last term is random error term which is assumed to have a normal distribution and an average of zero, as is usual in simple regression analysis (Shavelson, pp. 198-203).

The value of β tells us the way SNS classes are correlated with academic outcomes. Assuming that students are able to attend this type of class for reasons that are not related to their academic outcomes, a positive and significant value of β can be taken as evidence that suggests a role for SNS in promoting academic achievement among Hispanic ELL students. In other words, the correlation can be interpreted as a causal relationship under the assumption that students are assigned to schools in a way that is unrelated to the availability of SNS courses or how much they would benefit from them.

Measure of Educational Achievement

This study measured student educational achievement by using student's FCAT scores. Despite criticisms voiced by parents, teachers and administrators of FCAT as a measure of academic achievement (Creston, 2010; Tyko, 2012), studies have found that the math and reading results of FCAT scores are highly correlated with the Stanford 9, a standardized test that is nationally recognized, indicating that the FCAT may be considered a reliable measure of student academic performance (Greene, 2001).

The FCAT is part of Florida's statewide assessment programs; it started in 1998 in order to improve student achievement by using higher educational standards. While the FCAT has

been administered to students in grades 3-11 and measured student achievement based on the Sunshine State Standards, in 2011-2012 the Next Generation Sunshine State Standards were introduced with a new version called FCAT-2. According to the FLDOE, “in 2011 the FCAT 2.0 in reading was administered to students in grades 3 – 10 and FCAT 2.0 in Mathematics was administered to students in grades 3 – 8, while in 2012, FCAT 2.0 Science will be administered to students in grades 5 and 8.” All students attending school and working toward a standard high school diploma, including English Language Learners (ELLs) and students with disabilities, must take the FCAT. The FCAT writing is usually administered in February, while the FCAT in reading, mathematics, and science are administered in March.

Validity and Reliability/Trustworthiness

This study used secondary data provided by the K-20 Education Data Warehouse, Division of Accountability, Research and Measurement (ARM) of the Florida Department of Education. The ARM Division maintains an accountability system that measures student progress toward highest student achievement, seamless articulation and maximum access, skilled workforce and economic development, and quality efficient services. (FLDOE.d). All data used in this study has external validity, as it has been collected and organized by the ARM Division of the Florida Department of Education. Additionally, this secondary data available from FLDOE is operated and designed by professional experts in the field of sample design.

Florida school districts and schools are required to report to the FLDOE on all areas of education, as part of the NCLB Adequate Yearly Progress (AYP) accountability measures. This is the same data the state of Florida is required to report to state constituents, as well as the

federal government for curricular and funding purposes. Therefore, the study assumes the data collection is accurate, relevant and recent.

The dependent variable used in this study is the students' FCAT scores. The FCAT is a criterion referencing assessments in mathematics, reading, science, and writing, which measure student progress toward meeting the Sunshine State Standards (SSS) benchmarks. The validity and reliability of this instrument is assumed to be accurate as the FCAT is designed and tested by experts in the field. Therefore, the instruments used in this study are assumed to be valid and reliable measure of educational outcomes.

Approval to Conduct the Study

Following university regulations, the research procedures for study on "Spanish for Native Speakers Program and Academic Achievement in Florida" was submitted to the University of Central Florida Institutional Review Board (IRB) and was approved (Appendix D). Although this research studied human behavior, it did not include any interaction either in person or via mail or phone with any of the parties involved. While the present study had access to individual student information, the Florida Department of Education did not provide any identifiable information for the purpose of this research.

Originality Report

As a part of this chapter, an originality report was submitted to document original work of the researcher. The originality report was generated from Turnitin®, an online program that utilizes over 24 billion archived web pages, 300 million student papers, and 90,000 journals, as

well as a multitude of library databases (Turnitin.com, 2013). The report was revised to exclude the author's own work written while a student at UCF. The originality rating for this study was 2%, which is within the acceptable range for the chair of this proposal.

Conclusion

In order to study Cummins' Linguistic Interdependence theory, the present study utilized a descriptive quantitative design to document the availability of SNS program in Florida and examine if there is a relationship between participation in the SNS program and academic achievement among Hispanic ELL students. The study used a pre-established dataset provided by the Florida Department of Education of Central and South Florida individual district, school and student data at the high school level for three cohorts of students followed through high school. FCAT scores and student demographics were used, as well as individual district and school data on racial/ethnic student and teacher composition, number of ELL students, number of students receiving FRL, and individual courses offered. Descriptive statistics were used to locate where SNS programs are offered in Florida, as well as the number of ELL students in certain locations.

To study the characteristics associated with the availability of SNS program in Florida two statistical tests were used: "testing for differences in means" and "regression analysis". Two types of regression analysis were used: to document the relationship between availability of SNS curriculum and participation in SNS and academic achievement of Hispanic immigrant students, logistic regression were used as this application has a discrete dependent variable; to document

the relationship between availability of SNS curriculum and participation in SNS and academic achievement of Hispanic immigrant students, a linear regression will be used.

By focusing on Hispanic ELL students at the high school level, this study will examine Cummins' linguistic interdependence theory by studying if participation in a Spanish language maintenance program such as SNS program offered at the secondary level is associated with student academic achievement in English.

CHAPTER FOUR: FINDINGS

The purpose of the present study is to examine SNS curriculum in Florida. Chapter Four presents the results obtained using the data set provided by the FLDOE, and is organized in three main sections. The first section answers RQ1 and includes the location of high schools that offer SNS curriculum in the state of Florida, the description of school and county variables, the results and analysis of testing for differences in means with the description of the school level characteristics of schools with and without SNS, and the logistic regression analysis to study the availability of SNS curriculum. The second section begins with the preliminary statistics to describe some demographic information about Hispanic students in Central and Southeast Florida from 2006/2007 to 2009/2010 and their participation in SNS program, followed by the linear regression analysis of Hispanic ELL students' participation in SNS program and their academic achievement. This chapter ends with a summary and conclusion of the study's findings.

RQ1: How does the availability of SNS curriculum vary across district and school variables in Florida?

This study focused on a specific curriculum, which is a HL program called SNS that is offered as a language arts program. SNS curriculum is an elective course among foreign languages for those students who wish to further their Spanish language development, while at the same time fulfilling college admission requirements for most Florida universities.

Location of high schools that offer SNS curriculum in the state of Florida

The state of Florida is the fourth most populous state in the United States, and the third state with the largest Hispanic population (U.S. Census, 2010a). This study data set includes all high schools in the state of Florida during the 2009-2010 academic years. Figure 6 illustrates the location of all high schools that offer SNS (with blue dots) and high schools where SNS is not offered (red dots) in the Sunshine state. The graph clearly shows that SNS is offered in areas where there is a large Hispanic concentration, mainly in Central and Southeast Florida. However, SNS is also offered in some rural areas scattered throughout the state. This may be the case, as much of the agricultural labor in these areas is done by migrant workers; almost half of whom are born in Mexico, Central America, and Puerto Rico. According to FloridaLegal Facts.org, 82% of Florida's farm workers are Hispanic, and 75% of them report Spanish as their native language. Although migrant students are a small number, Title I, Part C-Migrant Education Program (MEP), ensures that migrant students (3- to 21-year-olds) receive additional support and coordination of educational and support services¹. Therefore, it may be the case that SNS curriculum is offered in some of these semi-rural or rural schools due to the number of migrant students living and attending school there.

The Florida maps (Figure 6) also illustrate that, while the SNS curriculum is offered throughout the state, there are more high schools that do not offer it. It makes sense that this particular language curriculum is offered mainly where there is a demand for it, as it is catered

¹ FLDOE (e) Migrant Education Program

for students who have been exposed to Spanish at home and have some language proficiency in Spanish. Nevertheless, Hispanic students regardless of their immigrant generation may not have access to SNS curriculum, as it is not widely offered.

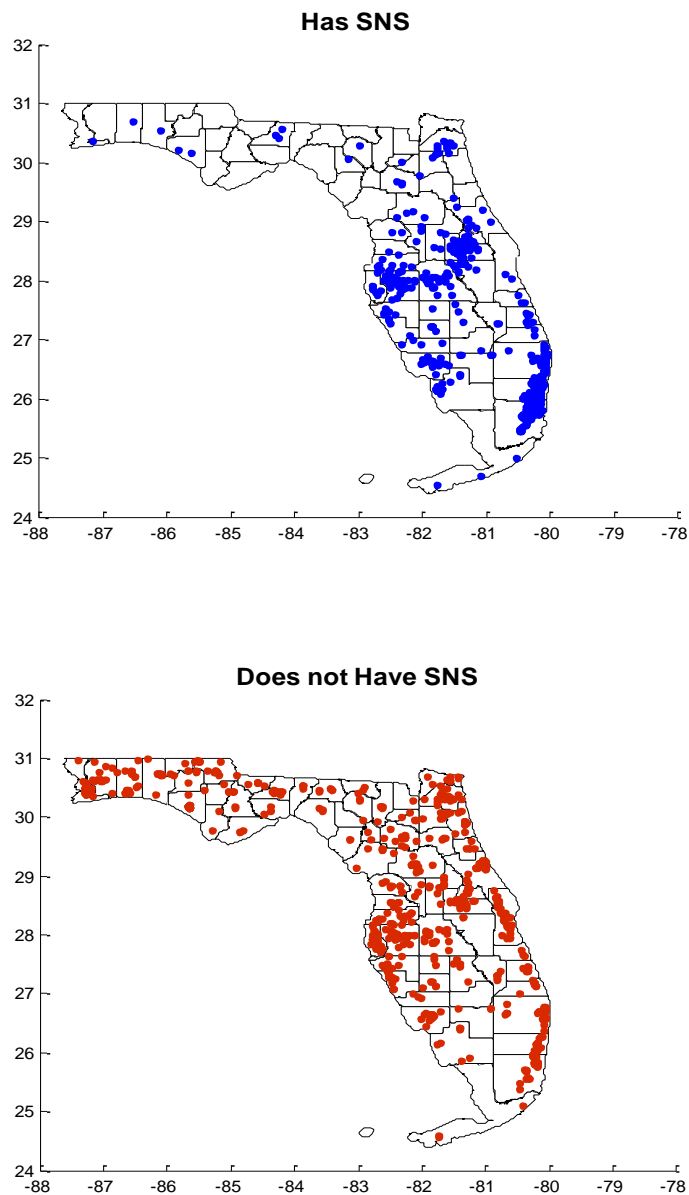


Figure 6: Location of high schools in the state of Florida with and without SNS curriculum

Description of School and County variables

This study is focused on nine school variables and two county level variables (Appendix E: Table 1). Thus, the following variables are examined at the school level: 1) if the school has SNS program or not; 2) school average FCAT scores; 3) Title 1; 4) Free Reduced Lunch (FRL); 5) school size in 2009; 6) percent of Hispanic students; 7) percent of Hispanic teachers; 8) average teacher age; and 9) teacher advanced degrees., In addition to these variables, county income and county Democratic vote share in 2008 presidential election are examined.

SNS courses is a categorical variable that included 1198 schools with a mean of 37%, 0% median, a standard deviation of .48, with a minimum of zero percent and a 100% maximum.

School average FCAT scores included 1117 schools with a mean of 285.2628 and a median of 285. The standard deviation was 33.2326 with a minimum of 170.9101 and a maximum of 389 points.

Title 1 is a categorical variable that included 1200 schools with a mean of 48% and a median of 0%. The standard deviation was .49 with a minimum of 0% and a maximum of 100%.

FRL included 1132 schools with a mean of 48% and a median of 49%. The standard deviation was .272 with a minimum of 0% and a maximum of 100%.

Percent of Hispanic students included 1132 schools with a mean of 22% and a median of 13%. The standard deviation was .25 with a minimum of 0% and a maximum of 100%.

Percent of Hispanic Teachers included 1031 schools with a mean of 10% and a median of 4%. The standard deviation was .13 with a minimum of 0% and a maximum of 100%.

Average Teacher Age included 1031 schools with a mean and median age of 48 years. The standard deviation was 4.66 with a minimum of 27 years and a maximum of 67 years.

Teacher Advanced Degrees included 1012 schools with a mean and median of 33%. The standard deviation was .14 with a minimum of 0% and a maximum of 100%.

School size 2009 included 1087 schools with a mean of 788 and a median of 274 students. The standard deviation was 909.5 with a minimum of 1 student and a maximum of 4,186 of students.

County Income included 1113 high schools, each one assigned to their corresponding county; with a mean per capita income of \$25,695 and a median of \$25,490. The standard deviation was \$4,627.465 with a minimum income of \$13, 657 in Union County in the Northeast region, and a maximum per capita income of \$37, 046 in Collier County in the Southwest region.

County Democratic Vote Share included 1113 high schools, each one assigned to their corresponding county; with a mean of 52% and a median of 49%. The standard deviation was 11.28% with a minimum of 17% in Holmes County and a maximum of 69% in Gadsden County.

Results and analysis of Testing for Differences in Means

Because this study is focused in relationships between groups, Testing for Differences in Means allows comparing two or more sample means between or across groups. To examined RQ1 the study compared the characteristics of schools that offer SNS classes with those of schools who do not offer. For this analysis the study used data from all Florida high schools during the academic year 2009-2010, and the results are displayed in Table 1.

Table 1: Main Results – Summary Table

| | All Schools | | With SNS | | Without SNS | | T-Test |
|-----------------------------------|-------------|------|-----------|-----|-------------|-----|--------|
| | Average | N | Average | N | Average | N | |
| FCAT Average | 285.2 | 1117 | 293.9 | 444 | 279.56 | 673 | -7.21 |
| Is Title 1 | 0.48 | 1200 | 0.61 | 445 | 0.40 | 753 | -7.24 |
| Percent Free Lunch | 0.48 | 1132 | 0.47 | 444 | 0.48 | 688 | 0.58 |
| Percent Hispanic Students | 0.22 | 1132 | 0.30 | 444 | 0.16 | 688 | -9.46 |
| School Size | 788 | 1087 | 1312 | 443 | 427 | 644 | -17.94 |
| Percent Teachers with Masters PhD | 0.33 | 1012 | 0.34 | 432 | 0.32 | 578 | -1.70 |
| Average Teacher Age | 47.54 | 1031 | 46.96 | 431 | 47.96 | 600 | 3.39 |
| Percent of Hispanic Teachers | 0.09 | 1031 | 0.15 | 431 | 0.04 | 600 | -14.49 |
| County Income | 25,694.78 | 1113 | 26,201.65 | 438 | 25,353.11 | 673 | -3.00 |
| Democratic Vote Share | 48.88 | 1111 | 53.67 | 438 | 45.77 | 673 | -12.12 |

Note: Math and Reading FCAT are average scores across schools. County Income is the average per capita household income across counties. Democratic Vote share is the average across counties of the percent Democratic vote in the presidential elections of 2008. Results that exceed the critical value of two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more are significant.

School level characteristics of schools with and without SNS

School Average FCAT (Math and Reading scores)

The summary of the main results (Table 1) shows that high schools that offer SNS tend to have higher average FCAT scores when compared to the school average FCAT scores, as well as to those high schools that do not offer SNS. The results for schools that offer SNS curriculum with an average FCAT scores is significant as the t-test is -7.21, exceeding the critical value of

the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, 1996, p. 619).

Poverty measures: Title 1 and Free/Reduced Lunch (FRL)

While the percentage of FRL among Florida high schools is 48, the percentage is negligent for those high schools that offer SNS (47%) compared with those who do not offer it (48%). That is not the case with Title 1 as a measure of poverty, as 61% of high schools who offer SNS classes are Title 1, while only 40% of those who do not offer SNS classes are Title 1. The results for Title 1 are significant as the t-test is -7.24, exceeding the critical value of the two-tailed t-test of 1.96 at the 5 percent level of confidence for DF 120 or more. Nevertheless, the results for FRL are not significant as the t-test is 0.59 much lower than the critical value of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, p. 619).

Percent of Hispanic students

Though Hispanics only represent 22% of Florida high schools students, high schools that offer SNS tend to have a much higher Hispanic concentration compared with those high schools who do not offer SNS classes. These results make sense, as SNS classes are catered to Hispanics who would like to further their Spanish development at the high school level, as well as be able to earn foreign language credits for college. Thus, the study assumes that SNS curriculum would be offered in high schools with a larger Hispanic student population. The results for Percent of Hispanic students is significant as the t-test is -9.46, exceeding the critical value of the two-tailed t-test of 1.96 at the 5 percent level of confidence for DF 120 or more (Shavelson, 1996, p. 619).

School Size

The results of the study indicate that SNS curriculum tend to be offered more in larger schools with an average size of 1312 students. This is a significant characteristic (t-test -17.94) as it is almost double the size of the average high school in Florida and almost three times larger than those high schools where SNS classes are not offered. The result for School Size is significant as the t-test is -17.94, exceeding the critical value of the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, p. 619).

Percent Teachers with Masters/PhD

Table 1 shows that although there is a slight difference in teacher preparation among schools that offer SNS curriculum compared with the average teacher preparation in Florida counties and high schools that do not offer SNS curriculum, it is not significant as the t-test is -1.70, not exceeding the critical value of the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, p. 619).

Teacher Experience/Average Teacher Age

The average teachers' age in high schools that offer SNS is younger than the average teacher age in Florida high schools, as well as that of the teachers in high schools that do not offer SNS classes. Thus, high schools that offer SNS classes are characterized by a younger teacher composition than high schools that do not offer SNS curriculum. The result for Teacher Experience/Average Teacher Age is significant as the t-test is 3.39, exceeding the critical value of the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, 1996, p. 619).

Percent of Hispanic Teachers

High schools that offer SNS have a much higher percentage of Hispanic teachers than the average high school in Florida. Furthermore, when the percentage of Hispanic teachers in high schools that offer SNS classes is compared with high schools that do not offer SNS, the disparity is even more acute. The result for Percent of Hispanic Teachers is significant as the t-test is -14.49, exceeding the critical value of the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, p. 619).

County Income

Florida high schools that offer SNS classes are located in counties with a higher per capita income than the average per capita income per county in Florida, as well as richer counties than those high schools that do not offer SNS curriculum. The result for County Income is significant as the t-test is -3.0, exceeding the critical value of the two-tailed t-test of 1.96 at the 5% level of confidence for DF 120 or more (Shavelson, p. 619).

Democratic vote share

Although almost 49% of all high schools in Florida are located in counties where residents voted Democratic in 2008, almost 54% of high schools that offer SNS classes are located in such counties, a significant figure as only 45% of high schools that do not offer SNS are so located. The result for Democratic vote share is significant as the t-test is -12.12, exceeding the critical value of the two-tailed t-test of 1.96 at the 5 percent level of confidence for DF 120 or more (Shavelson, 1996, p. 619).

Testing for differences of means have provided an overview of the most significant school characteristics of Florida high schools and the availability of SNS curriculum. Thus, it may be concluded that high schools in Florida that offer SNS curriculum tend to be characterized by having higher school average FCAT scores, more students, a large percentage of Hispanic teachers and students, younger teachers, and by being a Title 1 school. Characteristics of the community surrounding the school were also significantly different at schools with SNS curriculum. These counties had a higher Democratic vote share and were richer in terms of income per capita; however, FRL and teacher education were not significantly different on average at schools with or without the availability of SNS curriculum in Florida's high schools (Table 1).

Logistic Regression to Study the Availability of SNS Curriculum

To further examine what characteristics of schools and the surrounding communities are associated with the availability of SNS curriculum in Florida, logistic regression was used. It must be noted that while this type of multivariate regression analysis allows analyzing the relationship between the dependent variable of interest and several other covariates of interest simultaneously, the present analysis is not a causal one and is meant to further describe the correlation between these variables (Lomax, 2001; Shavelson, 1996).

The logistic regression serves to model, in this framework, the probability that a school has SNS curriculum. The characteristics of schools found to be significantly associated with the dependent variable would indicate a higher chance of finding SNS curriculum at a school with these characteristics. The first school characteristics examined was school size and the two

poverty variables in this study, Title 1 and FRL, as Hispanic students tend to have low SES. The logistic regression (Table 2) shows that among the three variables used, the probability SNS is offered in Florida high schools, school size and Title 1, are significant ($p < .05$), but not for FRL percent ($p > .05$). These variables are systematically related, making more probable that a high school have SNS classes.

Table 2: Logistic Regression of SNS with Title 1 and Percent of Free Lunch

| Has SNS | Coefficient | Standard Error | z | p>z |
|-----------------------|-------------|----------------|-------|------|
| Is Title 1 | 0.47 | 0.17 | 2.82 | 0.01 |
| Percent Free Lunch | -0.05 | 0.32 | -0.16 | 0.87 |
| School size | 0.00 | 0.00 | 13.87 | 0.00 |
| Constant | -1.64 | 0.17 | -9.55 | 0.00 |
| Number of Obs. = 1132 | | | | |

The percentage of Hispanic students was then included in the model to examine how these variables are related and can describe the availability of SNS in Florida high schools. The results in Table 3 shows not only that the percentage of Hispanic students in a school is significant ($p < .05$), but also that FRL is significant, indicating that when controlling for ethnicity, the two poverty variables are important when trying to describe school characteristics and the availability of SNS curriculum. This suggests that once the role of the percent of Hispanics is controlled for, lower income schools are less likely to have SNS curriculum.

Table 3: Logistic Regression of SNS, Title 1, FRL, school size, percent of Hispanic students

| Has SNS | Coefficient | Standard Error | z | P>z |
|---------------------------|-------------|----------------|--------|------|
| Is Title 1 | 1.19 | 0.19 | 6.16 | 0.00 |
| Percent FRL | -2.24 | 0.40 | -5.56 | 0.00 |
| School size | 0.00 | 0.00 | 13.38 | 0.00 |
| Percent Hispanic Students | 3.99 | 0.38 | 10.44 | 0.00 |
| Constant | -1.96 | 0.18 | -10.84 | 0.00 |
| Number of Obs. = 1132 | | | | |

By including other variables to the model such as the Democratic vote share and the percent of Hispanic teachers, Title 1 and FRL variables are no longer significantly ($p > .05$) associated with schools having SNS curriculum, but the other variables maintain their significance (Table 4).

Table 4: Logistic Regression of SNS, Title 1, FRL, School Size, percent of Hispanic students, percent of Hispanic teachers, and Democratic vote share.

| Has SNS | Coefficient | Standard Error | z | P>z |
|------------------------------|-------------|----------------|-------|-------|
| Is Title 1 | 0.304 | 0.236 | 1.28 | 0.199 |
| Percent FRL | -0.680 | 0.499 | -1.36 | 0.173 |
| School size | 0.001 | 0.000 | 11.36 | 0.000 |
| Percent Hispanic Students | 5.840 | 0.721 | 8.09 | 0.000 |
| Percent of Teachers Hispanic | 1.988 | 1.046 | 1.90 | 0.057 |
| Democratic Vote Share | 0.049 | 0.009 | 5.37 | 0.000 |
| Constant | -4.925 | 0.512 | -9.62 | 0.000 |
| Number of Obs. = 951 | | | | |

Table 5 adds the average school FCAT scores, showing that those schools with lower FCAT scores are more likely to have SNS than schools with higher FCAT scores, once the other

characteristics have been accounted for. While higher school-average FCAT scores are associated with the availability of SNS (Table 1), once the school size is controlled for, the association turns negative. Therefore, larger schools tend to offer SNS curriculum as they may have more resources to do so, but at the same time it is more likely that among schools the same size, those with lower school average FCAT scores will offer SNS classes. Both SES variables, Title 1 and FRL continue to be not significantly associated with the availability of SNS curriculum, while the rest of the variables maintain their significance.

Table 5: Logistic Regression of SNS, FCAT scores, Title 1, FRL, School size, Percent of Hispanic students, Average Teacher Experience, Percent of Hispanic Teachers, and Democratic Vote Share.

| Has SNS | Coefficient | Standard. Error | z | P>z |
|------------------------------|-------------|--------------------|-------|-------|
| Average school FCAT score | -.011 | 0.003 | -3.14 | 0.002 |
| Is Title 1 | 0.360 | 0.242 | 1.49 | 0.136 |
| Percent FRL | -.872 | 0.510 | -1.77 | 0.087 |
| School size | 0.001 | 0.000 | 9.96 | 0.000 |
| Percent Hispanic Students | 6.291 | 0.755 | 8.33 | 0.000 |
| Percent of Hispanic Teachers | 2.481 | 1.107 | 2.24 | 0.025 |
| Democratic Vote Share | 0.048 | 0.009 | 5.02 | 0.000 |
| Constant | -1.836 | 1.130 | -1.62 | 0.104 |
| Number of Obs. = 907 | | | | |

Finally, Table 6 adds in all school characteristics, displaying that the significant outcomes are the same while some new additions are not significant, such as average teacher experience, percent of teachers with advanced degrees, and finally county income. It is notable that in contrast with the test of means in Table 1, here average teacher experience and county income are not significant once the other characteristics have been accounted for.

Table 6: Logistic Regression

| Has SNS | Coefficient | Standard Error | z | p>z |
|-----------------------------------|-------------|----------------|-------|-------|
| Average FCAT score | -0.011 | 0.003 | -3.19 | 0.001 |
| Is Title 1 | 0.372 | 0.243 | 1.53 | 0.126 |
| Percent FRL | -0.854 | 0.513 | -1.67 | 0.096 |
| School size | 0.001 | 0.000 | 9.90 | 0.000 |
| Percent Hispanic Students | 6.274 | 0.758 | 8.27 | 0.000 |
| Average Teacher Experience | 0.005 | 0.022 | 0.24 | 0.812 |
| Percent Teachers with Masters/PhD | 0.304 | 0.702 | 0.43 | 0.664 |
| Percent of Teachers Hispanic | 2.419 | 1.128 | 2.14 | 0.032 |
| County Income | -6.87e-06 | 0.000 | 0.32 | 0.751 |
| Democratic Vote Share | 0.0474 | 0.009 | 4.75 | 0.000 |
| Constant | -2.265 | 1.631 | -1.39 | 0.165 |
| Number of Observations = 903 | | | | |

The study has used logistic regression to study the characteristics of schools and their communities and the probability that a high school in Florida would offer SNS curriculum. The characteristics of schools found to be significantly associated with the availability of SNS are presented in Table 6. As the data shows, there is a greater probability that a high school in Florida will offer SNS curriculum when the high school has a lower average FCAT score, has a fairly large student population, have a large percentage of Hispanic teachers and Hispanic students, and the county in which the school is located has a tendency to vote for Democratic candidates.

RQ2: Preliminary Statistics

In order to examine Hispanic students' general demographic and SNS participation, the study used a data set from three cohorts (2006-2009) of high school students from Central and Southeast Florida. The study used descriptive statistics to tabulate certain categories so it can better understand the group under study, and provide some general parameters about it. The first thing the study seeks to establish is how many Hispanic students are found in Central and Southeast Florida high schools, the two regions where there is a large concentration of Hispanics. The research found that there are 96,413 Hispanic students in these two regions, representing a 35% of the total high school student population in Florida (Appendix F: Table 1). Almost one-third were born in a Latin American country. Hence, first-generation Hispanic students represent almost 11% of the high school student population in Central and Southeast Florida (Appendix F: Table 2).

Because the study seeks to examine the potential Hispanic student population that may participate in SNS classes, it tabulated the category of Hispanic students that report speaking Spanish at home. Among all students in Central and Southeast Florida, almost 27% report that they speak Spanish at home (Appendix F: Table 3), more than double the percentage of first-generation Hispanic students, indicating that Spanish is retained by a certain number of Hispanic students born in the United States.

Next, the study examined how many ELL students are in high school in Central and Southeast Florida during the academic years of 2006-2009, as it is designed to test Cummins' Interdependence Theory in the context of SNS curriculum. The results show that among high

school students in Central and Southeast Florida, there are 59,661 ELL students, representing almost 22 percent of the student population (Appendix F: Table 3).

Among all Hispanic students in these two regions, almost 45% is ELL (Appendix F: Table 5) representing 72.5 percent of all ELL students in Central and Southeast Florida. Considering that Florida has the third highest number of Hispanic students and the tenth highest percentage of ELL students in the country (US Census 2010b), the number of ELL students undoubtedly put a burden in high schools to have the necessary language programs that can support and foster English language development, allowing these ELL students to graduate from high school on time, and further pursue education and training.

The next step is to find out how many students who report speaking Spanish at home are also ELL students. These two variables were tabulated, showing that more than 56% of students who report speaking Spanish at home are also ELL students (Appendix F: Table 6).

As the study is examining SNS curriculum, it is important to find out how many students who have participated in SNS are also ELL. The results show that more than 56% of the students that have ever participated in SNS in high school are also ELL. These results indicate that SNS serves as much ELL students as Hispanic students who are fluent English speakers (Appendix F: Table 7).

There were 157,599 students who received FRL in Central and Southeast Florida, more than 57% of all students (Appendix F: Table 8). Among Hispanic students that report speaking Spanish at home, more than 80% receive FRL during 2006-2009 (Appendix F: Table 9). While these statistics are consistent with previous studies done on Hispanic poverty rates, as in 2010

there were 6.1 million (37.3%) poor children who were Hispanic (Lopez & Velasco, 2011), this figure presents a much more dire picture of the economic situation of Hispanic high school students in Florida within the sample.

Moreover, more than 85% of ELL students received FRL at school in 2006-2009 (Appendix F: Table 10). Therefore, it may be argued that a great number of ELL students who receive FRL are in fact Hispanic—many of them first-generation (Appendix F: Table 2). This high percentage of FRL indicates the SES conditions of these students are dismal. Previous studies done on poverty rates among first-generation Hispanic students support these findings, as in 2010 more than two-thirds of Hispanics living in poverty (4.1 million) were the children of immigrant parents, having a poverty rate of 40.2%—the highest since 1994 when it was 43.9%, as well as much higher poverty rate than those for second-generation Hispanic children (Lopez & Velasco, 2011).¹

Among Hispanic students in Central and Southeast Florida that report speaking Spanish at home, more than 43% have participated at some time in SNS program in high school (Appendix F: Table 11). These figures indicate that SNS curriculum serves an important role in addressing the linguistic and cultural needs of Hispanic students in Florida. Additionally, these figures give an overall glimpse of the Hispanic student body composition based on generations that are participating in SNS programs in Florida.

¹ The poverty rate for Hispanic children with U.S. born parents was 27.6 percent. These statistics are based on the 2010 new Supplemental Census Measure (SPM), which includes more factors than the official poverty status measure.

In summary, these preliminary statistics have provided an overview on the Hispanic student population in Central and Southeast Florida. Four patterns were found. First, there is a high Hispanic student concentration in these two regions, representing more than one-third of all high school students. Second, considering that almost 57% of all high school students received FRL during 2006-2009 academic years, 81% of Hispanic students that report speaking Spanish at home did so, and more than 85% of Hispanic ELL students received FRL. Third, although 22% of all high school students are ELL, almost 45% of Hispanic students are, and among those students who report speaking Spanish at home, almost 57% are also ELL students. Fourth, while 27% of Hispanic students report speaking Spanish at home; more than 43% of them have participated in SNS. Furthermore, among Hispanic ELL students, almost 57% have participated in SNS curriculum. Therefore, it may be concluded that in Central and Southeast Florida Hispanic students represent a large student population characterized by low SES, their continued use of Spanish, and English language needs. This student population tends to become bilingual by striving to learn English while continuing to develop their Spanish language skills. Thus, SNS curriculum does seem to be providing valuable services by addressing this growing student population language, sociocultural and academic needs.

RQ2: In what way(s) is/are the availability of SNS curriculum and student participation associated with Hispanic ELL students' academic achievement?

In this section, the study intends to examine how student participation in SNS classes is associated with academic achievement. The independent variable is the FCAT scores in Math and Reading high school students received in 2010 in Central and Southeast Florida. The study

first compared the average FCAT scores in Math and Reading of Hispanic ELL with that of non-ELL students. Table 7 shows Hispanic ELL students do not do well in the FCAT, as on average they received 13.35 points less in Math than non-ELL students, and 25.12 points less in the Reading section.

Table 7: Average FCAT scores of Hispanic ELL students and Non ELL students.

| Hispanic ELL students | Obs | Mean | Std. Dev. | Min | Max |
|-----------------------|---------|--------|-----------|-----|-----|
| Math FCAT Score | 3,8548 | 314.15 | 41.55 | 100 | 500 |
| Read FCAT Score | 3,9428 | 285.88 | 54.03 | 100 | 500 |
| | | | | | |
| | | | | | |
| Non-ELL students | Obs | Mean | Std. Dev. | Min | Max |
| Math FCAT Score | 286,265 | 327.50 | 39.60 | 100 | 500 |
| Read FCAT Score | 290,006 | 311.00 | 50.40 | 100 | 500 |

It may be argued that the 25.12 points difference in Reading FCAT scores may be due in part to the lack of English language proficiencies and cultural exposure to English literature and American current affairs, topics that are the content of the Reading FCAT. On the other hand, the Math FCAT score difference is almost half the difference of the Reading FCAT. While Hispanic ELL students may continue developing their Math skills as expressed in higher Math FCAT scores, their scores remain lower than the average Math FCAT score received by non-ELL students. This may be due to the lack of English language proficiencies to decode word problems, as well as understand and follow FCAT instructions.

Linear regression analysis of Hispanic ELL students participation in SNS program

The next step was to analyze how Hispanic ELL students who participated in SNS program performed in the FCAT. The interaction between FCAT scores and Hispanic students who report speaking Spanish at home and participate in SNS was examined using linear regression. Table 8 shows that Hispanic ELL students who reported speaking Spanish at home and participated in SNS program received almost 2.43 points more in their Math FCAT scores during 2010 than those that did not take SNS classes. The t value ($5.74 > 1.96$) is significant and indicates that participating in SNS classes may have a positive effect on academic achievement represented by Math FCAT scores. It also points out that being biliterate may support and enhanced academic achievement in Math.

Table 8: Linear regression for FCAT Math scores of all ELL students who speak Spanish at home, and SNS participation.

| Math FCAT | Coefficient | Standard Error | t | P> t |
|--------------------------------|-------------|----------------|---------|------|
| Took SNS | 2.43 | 0.423 | 5.74 | 0.00 |
| Constant | 312.99 | 0.292 | 1071.17 | 0.00 |
| Number of observations = 38548 | | | | |
| R-squared = 0.001 | | | | |

Furthermore, these results remain unchanged when controls for student income levels (FRL) and gender are included in the regression (Table 9), indicating that this is not simply that students taking SNS are scoring differently because they are observably different along these dimensions.

Table 9: Linear regression for Math FCAT scores of all ELL students who speak Spanish at home, FRL, and Gender.

| Math FCAT | Coefficient | Standard Error | t | P> t |
|---------------------------------|-------------|----------------|--------|------|
| Took SNS | 2.78 | 0.421 | 6.60 | 0.00 |
| FRL | -11.90 | 0.608 | -19.58 | 0.00 |
| Gender | 4.95 | 0.421 | 11.78 | 0.00 |
| Constant | 320.70 | 0.632 | 507.13 | 0.00 |
| Number of observations = 38,548 | | | | |
| R-squared = 0.0142 | | | | |

On the other hand, Hispanic ELL students participation in SNS program did not have a significant effect on their Reading FCAT scores (Table 10), but at the same time participation in SNS classes had a negative effect on their reading scores. These students score 2.38 points lower in their Reading FCAT scores during 2010 than those Hispanic ELL students that did not participate in SNS classes.

Table 10: Reading FCAT scores of all ELL students who speak Spanish at home.

| Reading FCAT | Coefficient | Standard Error | t | P> t |
|---------------------------------|-------------|----------------|-------|------|
| Took SNS | -2.38 | .544 | -4.37 | 0.00 |
| Constant | 287.02 | .376 | 761.9 | 0.00 |
| Number of observations = 38,548 | | | | |
| R-squared = 0.00 | | | | |

When income levels (FRL) and gender were added to the model, Reading FCAT scores improved slightly for those students who participated in SNS (Table 11). Thus, overall Hispanic ELL students' participation in SNS curriculum negatively affected their Reading FCAT scores.

Table 11: Reading FCAT scores of all ELL students who speak Spanish at home, FRL and gender.

| Reading FCAT | Coefficient | Standard Error | t | P>[t] |
|---------------------------------|-------------|----------------|--------|-------|
| Took SNS | -2.202 | 0.541 | -4.07 | 0.00 |
| Free Lunch | -19.216 | 0.782 | -24.57 | 0.00 |
| Gender | -1.065 | 0.540 | -1.97 | 0.04 |
| Constant | 304.012 | 0.813 | 373.80 | 0.00 |
| Number of observations = 39,428 | | | | |
| R-squared = 0.0157 | | | | |

The results of this study indicate that Hispanic ELL participation in SNS curriculum may be associated with academic achievement, especially in mathematics, as expressed in higher Math FCAT scores. At the same time, Hispanic ELL participation in SNS curriculum may delay English language acquisition as expressed in students' FCAT Reading scores. While Math FCAT scores were slightly higher than the average Hispanic ELL that did not participate in SNS program, the Reading FCAT scores was slightly lower, but the aggregate of these two scores indicate that student participation in SNS does not have an overall negative effect on Hispanic ELL students' FCAT scores.

These results need to be evaluated cautiously and consider the following two important issues: First, while Math is considered a universal language and is not so much dependent on a specific language code to be able to understand, learn, and do well in school, English reading proficiency is highly dependent on context reduced language such as CALP. Hispanic ELL students must learn low-frequency vocabulary words, abstract ideas, and high cognitive abilities such as analysis, synthesis, and evaluation that depend on much more complex oral and written language skills. Additionally, the Reading FCAT includes Discrete Language skills that

encompass those aspects of English, such as literacy, grammatical and orthographic skills, vocabulary, cultural assumptions, story structure and rhetorical features, values and themes that are embedded in each language and culture. These Hispanic ELL students in secondary education do not have the time to learn English first in order to understand content, as studies have found that it takes between five to seven years for ELLs in academic settings to develop CALP (Thomas & Collier, 2002). Thus, the Reading FCAT is an assessment tool designed for English native speakers and does not take into consideration the cultural and linguistic gap among ELL and non-ELL students.

The second aspect to consider is the importance of previous schooling for academic achievement in L2. Studies done on bilingual education have found that the most important variable in ELL students' school success in L2 is their previous schooling (Thomas & Collier, 1997). Hence, these recent arrived Hispanic ELL students have already received at least 8 or 9 years of schooling in their native country. Nevertheless, studies have found that there is great educational inequality among Latin American schools (OECD; UNESCO, 2007; Sanchez Zinny, 2013). Therefore, these Hispanic ELL students may present great educational disparities when they start their American schooling experience, something that cannot be leveled in a couple years of attending American schools. Furthermore, the results found when comparing Hispanic ELL Math and Reading FCAT scores and those received by Non-ELL students (Table 7); the standard deviation for the first group was greater than the one for the second group. Thus, these results may show educational inequalities among Latin American countries, as the Reading

FCAT might well be assessing Hispanic ELL students' previous schooling experience in their native country.

Conclusion

Chapter Four examined and analyzed the two questions of this study. For RQ1, "How does the availability of SNS curriculum vary across District and school variables in Florida?", the study used descriptive statistics in order to locate where SNS curriculum is offered at the high school level in Florida. While this particular language program is offered throughout the Sunshine State, there are more high schools that do not offer it. Still, the availability of SNS curriculum tends to be found more in Central and Southeast Florida, as these regions are characterized by a large Hispanic concentration. The study used testing for difference of means and logistic regression to examine the characteristics of districts and schools that offer SNS curriculum in Florida. The results showed that SNS curriculum tends to be offered in large high schools which have lower average FCAT scores, a large Hispanic student and Hispanic teacher population, and are located in counties that tend to vote Democratic.

To answer RQ2, "How does the availability of SNS curriculum and student participation is associated with Hispanic ELL students' academic achievement?", the study used the FCAT scores in Math and Reading high school students received in 2010 in Central and Southeast Florida as a measure of academic achievement. Linear regression was utilized to analyze the possible association between SNS participation and Hispanic ELL academic achievement. The results showed that while Hispanic ELL participation in SNS curriculum was associated with higher Math FCAT scores, participation in SNS curriculum was negatively associated with

Hispanic ELL students' Reading FCAT scores. These results remain unchanged even when student SES and gender were controlled and included in the regression. However, the aggregate results of the Math and Reading FCAT scores did not have an overall negative effect on Hispanic ELL students' FCAT scores. In evaluating these results caution was recommended based on Hispanic ELL students previous schooling and the educational inequality among Latin American national educational systems, but also to the FCAT assessment design, as it is designed for English native speakers and does not take into account the number of years necessary for ELL students to acquire CALP.

The study concluded that Hispanic ELL participation in SNS curriculum may be associated differently, depending on the academic subject. The results supported Cummins' Linguistic Interdependence concept as L1 maintenance may promote academic achievement especially in Math, while it may have not have an overall negative effect on Hispanic ELL students' FCAT scores.

CHAPTER FIVE: CONCLUSION

The increasing number of immigrants from Spanish speaking countries and the high birth rates among Hispanics has made them the largest minority group in the United States. Today, there are approximately 10 million Hispanic students in public schools making up about one-in-five public school students in the United States (Fry & Gonzalez, 2008), and among ELL students almost 80% are Spanish speakers (Loeffer, 2007). As a group, Hispanics tend to have low academic achievement in school (Pew Hispanic Center, 2003; NCES, 2008; Fry, 2010), jeopardizing their chances to make it economically in American society. The purpose of the present study has been to examine a HL maintenance program called Spanish for Native Speakers (SNS) offered in secondary education in Florida and examine how the availability of SNS program and Hispanic ELL participation is associated with students' academic outcomes. Cummins' Linguistic Interdependence theory has been tested on Hispanic secondary students' academic achievement in Florida.

Cummins' Linguistic Interdependence theory postulates that while languages may differ in their phonological and syntactic features, there is a common underlying cognitive/academic proficiency for all languages (1981b, 1989). Hence, knowledge, concepts, and literacy skills learned in one language can be transfer to other languages (Cummins, 1986a; Durgunoglu & Verhoeven, 1998; Durgunoglu, 2002; Javorsky, 2008). By continuing to develop their Spanish language skills, Hispanic students may accelerate the acquisition of academic English and continue to develop content knowledge through language transfer (Cummins, 1979b, 1981b).

This study has aimed to answer two major questions: first, how the availability of SNS program in Florida varies across district and school variables; and second, study whether or not the availability of the SNS program and Hispanic student participation is associated with academic achievement across student, school, and county variables.

Discussion of RQ1 results

To answer RQ1, all high schools throughout the 67 Florida counties during 2009-2010 were mapped, as well as where SNS curriculum is offered. The results showed that SNS program tend to be offered in Central and Southeast Florida, where Hispanics are more likely to be concentrated. Nevertheless, the SNS program was also found in smaller sparsely populated areas and rural areas, where much of the agricultural labor force is made up by Hispanic migrant workers. Still, while the SNS program is offered throughout the state of Florida, there are many more high schools that do not offer this curriculum.

In order to identify the characteristics of schools with and without SNS curriculum, the study examined several different variables. High school average FCAT scores in Reading and Math from 2009 were used to measure academic achievement, the study's independent variable. To measure SES, the study included two variables: Title 1 and FRL. Three teacher variables were included: teacher advanced degrees, teacher age/experience, and percentage of Hispanic teachers in schools. School size and the percentage of Hispanic students in schools were used to characterize the schools and their respective student bodies. Per-capita income and vote share in the 2008 presidential election were used to identify county demographics. The study used Testing for Differences of Means and Logistic Regression to answer RQ1. Testing for Difference

of Means showed that high schools that offered SNS program are characterized by having higher school average FCAT scores, a larger percentage of Hispanic students and Hispanic teachers, a larger percentage of younger teachers, a larger student body, and for being a Title 1 school, located in richer counties that tended to vote Democratic during the presidential elections of 2008. However, when logistic regression was used to study the characteristics of schools and their communities and the probability that a high school in Florida would offer SNS curriculum, not all the previously mentioned school characteristics hold significance.

While higher school average FCAT scores are associated with the availability of SNS (Table 1), once school size is controlled for, this association becomes negative, indicating that larger schools that have lower average FCAT scores are more likely to offer SNS classes. This result is consistent with the fact that SNS is more likely to be offered in high schools with a large Hispanic student concentration, as well as the fact that Hispanic students, especially Hispanic ELL students, tend to not do well in school (Pew Hispanic Center, 2003, 2004; NCES, 2008; Fry, 2010).

Despite the fact that FRL and Title 1 were significant when ethnicity was controlled for, demonstrating that the two poverty variables are important when trying to describe school characteristics and the availability of SNS curriculum, these two poverty variables were not significant once all the variables were included in the regression, indicating that poor schools tend not to offer SNS programs.

The study utilized three teacher variables: teacher age/experience, teacher advanced degrees, and the percentage of Hispanic teachers in high schools. Among these only one, the

percentage of Hispanic teachers in schools, was found to be significantly associated with the availability of SNS in Florida high schools, signaling that high schools that have large Hispanic student populations tend to be more culturally responsive and hire more Hispanic teachers (Hughes & Kwok, 2007).

Although county income was significant when trying to describe the characteristics of Florida high schools that are more likely to offer SNS curriculum, once all the variables were included in the regression, county income was not significant. One possible explanation for this may be that, there may be Hispanic groups that may live in richer counties, such as the case of Cubans in Southeast Florida, while at the same time there are other Hispanic groups, especially recent immigrants, which tend to have lower socioeconomic status and may tend to be concentrated in counties with lower incomes.

However, by using logistic regression to examine the characteristics of high schools and their communities to determine the probability that a high school in Florida may offer SNS curriculum, only five variables were found to be significantly associated with the availability of SNS curriculum: high schools with a lower average FCAT score, schools with a larger student population, large percentage of Hispanic students, large percentage of Hispanic teachers, and counties that have the tendency to vote for Democratic candidates.

Discussion of RQ2 results

The linear regression analysis of Hispanic ELL students' participation in SNS program examined how FCAT scores interacted with Hispanic students who reported speaking Spanish at home and student participation in SNS curriculum. The results showed that Hispanic students

who speak Spanish at home and participate in SNS tend to received better Math FCAT scores than did those who do not take SNS classes, even when controls for student income levels (FRL) and gender were included in the regression (Table 9), indicating that students who participate in SNS score differently in Math. These results demonstrate that participation in SNS classes may have a positive effect on academic achievement as expressed in Math FCAT scores. It shows that maintaining and developing bilingual and biliterate skills may support and foster cognitive development, especially in Math.

When examining Hispanic ELL students' participation in SNS programs and their Reading FCAT scores (Table 10), the results showed that student participation in SNS classes may delay English acquisition as expressed on their reading FCAT scores, when compared with the scores received by Hispanic ELL students that did not participate in SNS curriculum (Table 11). However, these results need to be taken cautiously as they are contingent on Hispanic ELL students' previous schooling experience in their native country, as well as on the assessment design of FCAT. Studies done on educational quality and evaluation of educational systems at the national level in Latin America and the Caribbean, have found educational inequality in these regions (UNESCO, 2007; Sanchez Zinny, 2013). Additionally, international educational assessments such as the Programme for International Student Assessment (PISA)¹ and the

¹ PISA is administered to 15 year olds and measures Math, reading, and science knowledge.

Trends in International Mathematics and Science Study (TIMSS)² indicate that there is a great educational gap between developed countries and Latin American and the Caribbean countries. Furthermore, there is great disparity in resources destined to education among Latin American countries, leading to educational inequalities among them. Both tests are criterion reference tests like the FCAT, and their purpose is to compare students' educational outcomes among participating countries around the world (OECD). Thus, if we focus on the results found when comparing average FCAT scores among Hispanic ELL students and Non-ELL students, the standard deviation is greater for Hispanic ELL students when compared with that of the Non-ELL (table 7). Hence, these results may well show the impact of educational inequality among Hispanic ELL students' schooling experiences in their native country.

While FCAT is a criterion referencing assessment in mathematics, reading, science, and writing, designed for English native speakers and tested by experts in educational assessment field, it does not take into consideration the time it takes ELL students to acquire CALP in order to do well in such a language context reduced and culturally dependent test such as the FCAT.

Thus, the RQ2 results showed that L1 maintenance and development at the high school level may enhance and promote academic achievement especially in Math, a content subject not so much dependent on language proficiencies but more dependent on logical thinking skills. However, Reading FCAT scores were lower for those Hispanic ELL students that participated in

² TIMSS is administered to 4th and 8th graders internationally and measures Math and science knowledge (Sanchez Zinny, 2013).

SNS program at least one semester throughout their entire high school experience. These results were examined in light of Hispanic ELL students' educational inequalities in their previous schooling in their native country, as well as by the type of assessment design of a criterion reference instrument such as the FCAT.

RQ1: Relationship of Data to Theoretical Framework

This study aimed to determine the location of SNS curriculum in Florida high schools and the characteristics of districts and high schools that tend to offer this language program. The main objective of this was to lay down the basis for studying how Hispanic ELL participation in SNS curriculum is associated with academic achievement, while at the same time testing Cummins' Linguistic Interdependence theory.

The results of this study highlight the importance of Hispanic residential patterns in the likelihood of a high school offering SNS program. Thus, this study found that high schools with a large student body, a large Hispanic student and Hispanic teacher composition have a higher probability of offering this particular language program. These results are coherent with Cummins' Linguistic Interdependence theory, especially in the need to address the linguistic demands of student populations that live and learn in bilingual environments.

RQ2: Relationship of Data to Theoretical Framework

The results show how the process of maintaining and developing HL, in this case Spanish, foster increased cognitive development in Math, a content area highly dependent on logic and abstract thinking and less dependent on language. On the other hand, the results of this

study indicate that participation in SNS did have a slight negative effect on L2 reading acquisition, as expressed in lower FCAT Reading scores. While reading proficiency is cognitively dependent, it is also highly dependent on linguistic and cultural factors as well.

These results are consistent with previous studies that have established that it takes from one to two years for ELL students to develop BICS, but students that have received academic schooling in their L1 in their country of origin before coming to the United States take 5 to 7 years to develop CALP) (Thomas & Collier, 1997). If it is taken into consideration that ELL students in high school must learn English academic proficiencies in a few years, depending on the grade level they had in their previous school abroad, it is no wonder that these students don't perform very well in standardized tests that are highly linguistically dependent, such as the FCAT Reading Exam. Additionally, studies have highlighted the importance of previous schooling in the learning of L2 and academic achievement (Thomas & Collier, 1997, 2002). Thus, high school ELL students' academic schooling in their native countries may have an important effect on their academic performance in American high schools (Thomas & Collier, 1997, 2002). Nevertheless, the results showed that Hispanic ELL student participation in SNS programs do not negatively affect students' overall FCAT scores.

RQ1: Relationship of Data to Literature

The availability of SNS curriculum in Florida high schools showed that this program is offered mostly in Central and Southeast Florida. In the past decade, Central Florida has received a great influx of Hispanics, especially Puerto Ricans who have moved directly from the island to Florida. Puerto Ricans have become the second largest Hispanic group in Florida, and in 2010

one-in-five Hispanics in Florida was Puerto Rican (Duany, 2012; Rojas, 2011 Duany & Matos Rodríguez (2006).). It may be argued that the increased Puerto Rican immigration has had an effect in the curriculum offered in Central Florida high schools, as many of these students are ELL students. Thus, the fact that a heritage language maintenance program like SNS is offered in Central Florida high schools may be a byproduct of the increased number of Puerto Rican students and from other Hispanic countries coming to settle in Central Florida.

Southeast Florida is the other center of Hispanic concentration where it is more likely that SNS programs are offered in high schools. This region has been characterized by a large Cuban immigration since the 1960s, but also for other Hispanic immigrant groups coming from Central and South America. Still, the data of this study indicate that there are more second-generation Hispanics that report speaking Spanish at home than the number of first-generation that do so (Appendix E: Table 3), many of them are also ELL students (Appendix E: Table 6). Therefore, it may be argued that SNS is offered in high schools in these two Florida regions because the need and the demand are present in these locations.

When school characteristics and the availability of SNS curriculum are examined, it was found that a combination of specific schools and community characteristics describe the probability that a Florida high school may offer SNS curriculum. Among these are that larger high schools with a larger percentage of Hispanic students are more likely to offer this language program. These findings are consistent with the literature on school size and Hispanic residential patterns. Hispanics tend to settle in large cities or in their suburbs and reside in certain neighborhoods (Passel & Cohn, 2008; NCES, 2003), putting pressure in the corresponding high

schools to address their needs. Moreover, these large schools tend to have more funding to offer a more diversified curriculum and resources (Cotton, 1996; Muir, 2001) such as SNS curriculum.

Hispanic residential patterns may also impact schools in terms of SES, educational outcomes, and political views. This study results indicate that these same large schools tend to be Title 1 and/or FRL when ethnicity was controlled for. These findings are consistent with studies done on Hispanics and their socioeconomic standing in American society. Though Hispanics represented less than 16.3% of the U.S. population in 2010, Hispanics made up about 28.2% of those living in poverty with 37.3% (6.1 million) of Hispanic children living in poverty (Lopez & Cohn, 2011).

The concentration of poverty in certain neighborhoods may have a negative effect in the educational outcomes of their corresponding schools, and results of this study found that high schools with lower FCAT scores were more likely to offer SNS curriculum. Therefore, the results of this study are consistent with previous studies on the impact of poverty on academic achievement, (Lacour & Tissington, 2011; Metz, 1988; Chubb & Moe, 1990; Sirin, 2005).

Residential patterns may also have an impact on political decisions, as the study shows that counties which tended to vote for Democratic candidates are more likely to offer SNS curriculum. Hispanics tend to be more affiliated with the Democratic Party rather than with the Republican Party (Pew Hispanic Center, 2011); therefore, it may be argued that they express their views and concerns of the educational needs of immigrant students and their educational outcomes through their participation at the local level of the curriculum decision-making process in Democratic-leaning counties (Knight, Ready & Barboza, 2007; Resnick & Bryant, 2008).

The study utilized three teacher variables and among these only one, the percentage of Hispanic teachers in schools, was found to be significantly associated with the availability of SNS in Florida high schools. Several researchers and policy makers have indicated that it is important to recruit and retain minority teachers, as they may well serve as positive role models and promote academic achievement among minority students (Chu Clewell & Villegas, 1998; National Commission on Teaching and America's Future 1996; Joint Center for Political Studies 1989; Graham, P.A., 1987). Hence, the results of the present study support the literature on the importance of minority teacher presence in schools with minority students, as their presence in high schools may serve as cultural role models enhancing bilingualism (Cummins, 1986b).

The other two teacher variables considered being important aspects of teacher quality; teacher age/experience and teacher advanced degrees were not associated with the availability of SNS in Florida high schools. Some researchers and policy makers view teacher experience and educational attainment as crucial to improve student academic achievement (Darling-Hammond, 1999; Greenberg, Rhodes, Ye, & Stancavage, 2004). Especially with "No Child Left behind Act" which demands that those teaching core academic subjects should have full state certification, a minimum of a bachelor's degree in the content area, and enough content knowledge and pedagogical abilities (Greenberg, Rhodes, Ye, & Stancavage). Nevertheless, the review of the research is inconclusive and provides contradictory results (Goldhaber, 2004; Wenglinsky, 2002). However, the demographic composition of school teachers is changing as older teachers are retiring and being replaced by younger ones (NCES, 2011). These younger teachers tend to have less teaching experience and fewer advanced degrees than the previous cohorts of school

teachers (Feistritzer, 2011). Among ethnic minorities, Hispanic teachers are the ones that are entering the teaching profession in greater numbers than any other minority group. Hispanic teachers tend to be younger, and have fewer advanced degrees compared to other ethnic groups. (Feistritzer; NCES, 2011). Furthermore, more than 53% of Hispanic teachers tend to enter the teaching profession through alternative options, a much higher rate than any other ethnic/racial group, which may explain in part their educational attainment rate (Feistritzer; Boser, 2011). When community type is examined, Hispanic teachers tend to teach in cities rather than in the suburbs (Feistritzer, NCES, 2011). Thus, the changing teacher demographics in the United States may explain in part the findings of the present study on teacher quality features and the availability of SNS curriculum in Florida high schools.

RQ2: Relationship of Data to Literature

The results of the present study are consistent with studies done on L1 maintenance and academic achievement of ELL students. For example, in her study on L1 maintenance and English academic achievement, Shibata (2004) concluded that instruction in L1 does not negatively affect English language learning and proficiency, and that students' bilingual and or biliterate skills may support higher academic scores in Math and other content areas. Previous studies done on bilingual programs and the academic achievement of ELL students have found out that providing instruction in students' L1 does not affect the acquisition of English, as well as that ELL students who were gradually transitioned to English during a period of four years were able to achieve and sustain higher scores in Math and in other content areas than ELL students who were transition into English-only education (Ramirez, Yuen & Ramey, 1991; Thomas &

Collier, 2002). Other studies done on the relationship between L1 (non-English) proficiency, English proficiency, and academic achievement have found that L1 proficiency did not affect English test scores and GPA, and L1 proficiency had a positive effect on standardized tests in English, Math, and History (Yeung, Marsh & Suliman, 2000).

Among meta-analysis studies done on the importance of primary language instruction and the academic achievement of ELL Students, the results have not been conclusive in support of Bilingual Education and L1 maintenance. For example, Baker and de Kanter (1981) compared transitional bilingual education program to three other language programs: English as a second language (ESL), submersion, and structured immersion (SI) programs. The results of the study concluded that there was weak evidence to support bilingual education, as expressed in continuing the education of ELL students in their L1. On the other hand, Willig (1985) carried out meta-analyses on the value of Bilingual Education on selected studies. Although the selected studies had several methodological deficiencies, statistical control was applied to them. The results showed a positive effect of bilingual education and academic achievement in English reading and Math.

In 1996 Rossell and Baker conducted a meta-analysis on the effectiveness of Bilingual Education. They included studies as far back as possible until 1995 at various grade levels. The study concluded that there was no evidence that educating ELL students in their L1, such as it is done in bilingual education programs, were more effective than English-only practices for teaching ELL students. Still, this study had methodological deficiencies, such as mislabeling programs and the criteria used for selecting the studies was inconsistent (Cummins, 1999;

Greene, 1997). In 1998 Greene reworked the data analyzed by Rossel and Baker and because the effect size was positive, concluded that bilingual education had a positive effect on English reading, Math and Spanish reading.

More recent meta-analysis studies on the effectiveness of Bilingual Education have concluded that educating ELL students in their L1 while they learn English has a positive effect on ELL students' academic achievement (Rolstad, Mahoney & Glass, 2005; Slavin & Cheung, 2005). Using electronic databases to search for comparative studies on the use of native language instruction and English-only approaches, Francis, Leseaux and August (2006) concluded that bilingual education does not interfere with the academic achievement in English or in L1 maintenance.

Therefore, the results of the present study support previous research on this topic, indicating there is a positive association between L1 maintenance such as Hispanic ELL students' participation in SNS curriculum in high school and academic achievement as expressed in Math FCAT scores. It is important to take note that Hispanic ELL students in high school must attend ESL classes, and that their participation in SNS is voluntary and in no way replaces their ESL classes. Additionally, SNS curriculum is a language arts program focused mainly in the development and maintenance of Spanish; therefore, SNS curriculum does not include the teaching of Math or any other content area except Spanish and Hispanic culture.

However, while L1 maintenance may not have a positive association with L2 Reading development, it does not at the same time negatively affect ELL students' overall FCAT scores. Therefore, these results support Cummins's Language Interdependence Hypothesis as Hispanic

ELL students tend to benefit from SNS curriculum while they learn English, and maintaining L1 does not affect negatively school success as expressed in the overall FCAT scores. Most importantly, these results allude to the possibility of cognitive development occurring at deeper levels, and that L1 maintenance may be expressed more readily in abstract thought such as in Mathematical proficiency.

RQ1: Implications for Practice and Policy

Several studies have indicated that among all school and education variables, teachers are the most important in the academic success of students (Darling-Hammond, 1999, 2000). Therefore, the results of this study show that SNS curriculum tends to be offered in high schools with a large Hispanic student population as well as a large Hispanic teacher composition. These findings suggest school districts and high schools with large Hispanic student bodies are becoming much more responsive to minority needs by hiring teachers that can serve as role models and who support better communication between schools and parents (Walqui, 2000). At the same time, the results showed that schools with large concentration of Hispanic students tend to have teachers with less advanced degrees and experience when compared to those schools that did not offer SNS curriculum. This is troublesome, as teacher preparation and experience, especially at the high school level, is an important factor that will determine the quality of education students receive in U.S. public education (Harris & Sass, 2007). Thus, while it is important to hire minority teachers in schools with minority student concentrations, it is also very important that minority teachers are well prepared to teach Hispanic students. This is especially important as Hispanic teachers tend to enter the teacher workforce through

nontraditional channels (Feistritzer, 2011; NCES, 2011). Therefore, it is essential that the hiring of Hispanic teachers adhere to professional standards rather than to fulfilling the need for minority teachers in schools with high concentration of minority students.

In the case of SNS program, it is not enough to be a Spanish native speaker in order to teach Spanish language maintenance, and/or to have a specialization in Spanish, as SNS students have varying levels of bilingualism and demand greater knowledge and expertise in language development methodology and practice (Lewelling & Peyton, 1999; Valdes, 1997b). Therefore, it is important that FLDOE develop a teaching certification in Spanish for Native Speakers. While SNS teacher development courses are being offered in other parts of the country such as those offered at Hunter College's Department of Curriculum and Teaching, Hunter College High School, California State University at Long Beach, New Mexico State University, Illinois State University, and the University of Illinois at Chicago, Florida SNS teachers may not have the opportunity and or the resources to attend these SNS professional training courses. Therefore, Florida universities need to develop the theoretical, cultural, linguistic, and methodological courses necessary to prepare this younger generation of minority teachers to educate the increasing numbers of Hispanic students. Additionally, the Florida Foreign Language Association (FFLA), the American Council on the Teaching of Foreign Languages, and individual County Public Schools may well sponsored Summer Institutes and online workshops in SNS teaching methodologies, socioemotional issues involved in the teaching of SNS, and selection and development of teaching materials. In this way, Florida SNS teachers may have the

opportunity to develop professionally and be able to offer better and improved learning environments to SNS students in Florida schools.

FLDOE does not have an established curriculum for SNS program, allowing each school and teacher to develop the curriculum as they may deem necessary. While local control in curriculum may offer advantages such as catering the curriculum to local needs and resources, it makes it difficult to conduct SNS program evaluations in order to improve the quality of the curriculum and teaching practices for better educational outcomes and student satisfaction. Therefore, FLDOE in conjunction with school districts may well prepare curriculum guidelines for teaching SNS program, and conduct periodical program evaluations to better serve the needs of Hispanic students.

RQ2: Implications for Practice and Policy

The focus of the present study has been to examine a particular language arts program in Florida called Spanish for Native Speakers (SNS) and how it may be associated with Hispanic ELL students' academic achievement. The results showed that L1 maintenance and development at the high school level may enhance and promote academic achievement especially in Math, as expressed by higher Math FCAT scores. While the present study has focused on Hispanic ELL students, it has only included their last four years in school. Hence, it may be argued that while these same students may still need more years in order to achieved CALP, their cognitive development continues and is readily expressed through Math skills, a content subject not so much dependent on language proficiencies but more dependent on logical thinking skills. This fact is important, especially considering that the labor market requires and will demand in the

future individuals with advanced Math and Science knowledge and skills. STEM careers tend to pay higher wages than service careers. Therefore it may be argued that by schools fostering and promoting a L1 maintenance curriculum such as SNS, they are not only promoting English language development and academic achievement, but more important in the long run, they are opening career opportunities that demand greater logical and reasoning skills such as Mathematics, and that pay higher wages. This in part may aid immigrant students to better assimilate into American society, not only culturally but also economically.

RQ1: Recommendations for Future Research

Although the present study focused only on the availability of SNS curriculum in the state of Florida, future studies may well further this subject by examining the motivation that Hispanic students, their parents, teachers, and the community may have for maintaining and participating in SNS programs, and how it might affect the quality of family relationships and community involvement. It would be especially interesting to explore the motivation second-generation Hispanics that report speaking Spanish at home have in participating in SNS curriculum, as the results of this study found out that there were more second-generation than first-generation of Hispanic students participating in SNS curriculum. Previous studies done on L1 maintenance and second-generation have had inconsistent results, as some have found that second-generation immigrants tend to prefer to speak in English (Portes & Hao, 1998; Ramirez, 2000; Pease-Alvarez, 2002), while other studies have found that second-generation immigrants are much more interested in maintaining and developing their L1 than first-generation immigrants (Lee, 2005; Pease-Alvarez, 2002; Portes & Shauffler, 1994).

This study was a quantitative one and was not able to capture student and teacher perception on the quality of SNS curriculum and how L1 maintenance affects student school performance. Thus, future studies may well benefit from conducting a qualitative study to examine in more depth the expectations and perceptions teachers, students, and parents' may have on SNS curriculum offered in high schools in Florida. Additionally, future studies may examine how teacher-student relationships impact student motivation to do well in school. Of particular importance would be to explore in what way(s) Hispanic teachers serve as cultural role models and how their participation and desire to improve communication between the school and Hispanic parents may affect parent involvement in school and their children's education.

Although the results of this study suggest that SNS curriculum is offered in most Florida high schools, there are more high schools that do not offer it. Thus, the opportunity to develop and maintain Spanish in high school is contingent on location. Additionally, the results of this study suggest that participation in SNS program is associated with student academic achievement in Math. Although Hispanics tend to be concentrated in Central and Southeast Florida where most schools offer the SNS program, Hispanic students living in other areas in Florida do not have the chance to participate in this particular curriculum and benefit from it. Taking into consideration that the results also suggest that there is a higher probability that SNS curriculum is offered in high schools located in counties that tend to vote Democratic, location becomes intrinsically dependent on the political views on the education of minority students of stakeholders involved in the decision making process. Therefore, future studies may examine stakeholders' involvement in the decision making process of curriculum at the county, school,

and classroom level, in order to find out what are the driving forces making possible or not the availability of SNS curriculum in the state of Florida.

RQ2: Recommendations for Future Research

While the findings of this study indicate an association between L1 maintenance and academic achievement in Math, as expressed by higher Math FCAT scores, future studies may well include other content subjects such as Biology, Chemistry, Computer, Physics, and Calculus. In doing so, Cummins' Linguistic Interdependence theory should be examined in more detail, especially among ELL students in high school.

The present study included all Hispanic ELL students that reported Speaking Spanish at home, and compared the FCAT scores received by those who had ever participated in SNS program throughout their entire high school experience, with those that had not participated. Nevertheless, this study did not identify or grouped them by the number of semesters these students had actually been in the program. Therefore, future studies may examine in more detail student participation and academic achievement and measure the differences in academic achievement based on number of semesters enrolled in SNS.

Although the literature on L2 development indicates that previous schooling is very important in the development of CALP and academic achievement (Thomas & Collier, 2002), more research needs to be done on the quality of previous schooling Hispanic ELL students received in their native country and how it affects their academic achievement in American schools. Studies done on educational quality and evaluation of educational systems at the national level in Latin America and the Caribbean have found that there is some disparity in the

quality of education students receive in Latin America and the Caribbean (UNESCO, 2007). Therefore, by examining how previous schooling may impact L2 acquisition and academic achievement in STEM subject areas, it may be better to identify the mechanisms that are supporting or sabotaging immigrant high school students' school success.

Whereas the present study focused mainly on the possible association between L1 maintenance and academic achievement at the high school level as expressed by a state standardized test such as the FCAT, future studies may well further this correlation by carrying out longitudinal studies to examine how student participation in SNS is associated with educational attainment, including high school graduation, college enrollment and college graduation, and job prospects and social mobility. The present study only examines Hispanic ELL students' last four years in high school, but future studies may benefit by approaching this subject in a longitudinal manner and examine how L1 maintenance and development in school may have an affect their career choices and job prospects.

Summary and Conclusion

The purpose of this study was to test Cummins' Language Interdependence theory by studying how the availability and student participation in SNS, a heritage language maintenance program in Florida, is associated with students' educational outcomes. Two major questions have driven the present study: how the availability of SNS program in Florida high schools vary across district and school variables; and examine whether or not the availability of SNS programs and Hispanic student participation is associated with student, school, and county variables.

The results of this study were found to be aligned with Cummins' Language Interdependence theory, as Hispanic ELL students may benefit from participating in SNS curriculum while at the same time continuing to learn English. The most important attribute of these results was the association found between L1 maintenance and development, as well as academic skills in Math. The study argues for the possibility of cognitive development occurring at deeper levels due to L1 maintenance, and expressed through abstract and logical thought such as Mathematical proficiency. Although participation in SNS curriculum may delay English acquisition as expressed in Hispanic ELL students' lower FCAT Reading scores, students' overall academic achievement in their FCAT scores was not affected.

While SNS curriculum is offered throughout the state of Florida, the program lacks an established curriculum and standards making it more difficult to evaluate. This is especially important as the quality of the curriculum and teaching practices may support Hispanic student L1 maintenance and development, but also students' academic achievement in American public schools. Hence, it is argued that FLDOE establishes a SNS curriculum as well as a teaching certificate in SNS, in order to improve the teaching of Spanish for Native Speakers, and carry out periodical program evaluations to improve the quality of SNS program and Hispanic students educational outcomes. Additionally, it is argued that Florida teaching colleges need to develop foundational courses on theory, sociocultural linguistics, and methodology to train teachers in L1 maintenance and development embedded in bilingual contexts, as well as SNS Summer Institutes and online SNS workshops could be sponsored by the Florida Foreign Language Association (FFLA), the American Council on the Teaching of Foreign Languages, and individual County

Public Schools. In doing so, Florida may attract and prepare a well-qualified teaching force that can educate the new generation of bilingual students.

The availability of SNS curriculum in Florida high schools may be an important step towards the preparation of bilingual and biliterate American citizens and their role in a global economic and cultural society. Future research on this subject could be approached in a longitudinal manner in order to further study the relationship of SNS student participation and other measures of educational outcomes, such as school graduation, college enrollment and graduation, career choices, and type of job attained. Additionally, the present study is a correlation one and its purpose has been to explore this subject and try to describe the correlation between student, school, and county variables associated with the availability and student participation of SNS program in Florida high schools. Therefore, these results may not be interpreted as casual, and as such future studies may approach this subject as an experimental one including quantitative and qualitative components, in order to find out more about school administrators, teachers, students, and community groups about their motivation to maintain L1 and their perceptions about SNS curriculum, as well as the need to have it widely available in Florida high schools.

APPENDIX A: COPYRIGHT REQUEST AND PERMISSION LETTER

Orlando, October 22, 2012

Dr. James Cummins
Ontario Institute for Studies in Education
University of Toronto
252 Bloor Street West
Toronto, Ontario M5S 1V6
CANADA

Dear Dr. Cummins:

I am completing a doctoral dissertation at the University of Central Florida entitled "Study on Spanish for Native Speakers Curriculum and Academic Achievement in Florida." I would like your permission to reprint in my dissertation the following images:

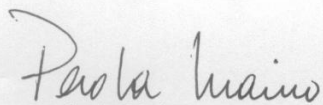
Separate Underlying Proficiency (SUP)
Common Underlying Proficiency (CUP)
Illustration of Dr. Jim Cummins' Grid (4 nQuadfrants)

The images to be reproduced are attached.

The requested permission extends to any future revisions and editions of my thesis/dissertation, including non-exclusive world rights in all languages. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own or your university owns the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you for your attention in this matter.

Sincerely,



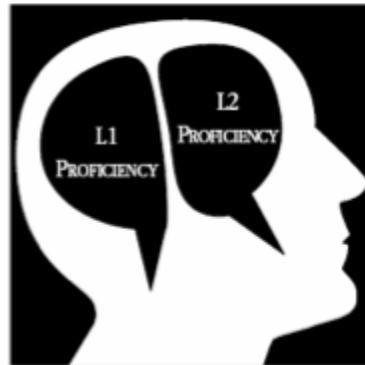
Paola A. Maino
Doctoral Student Ed.D
University Of Central Florida

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By: Jim Cummins Date: 19 November 2012

Dr. JAMES CUMMINS

**THE SEPARATE
UNDERLYING PROFICIENCY
(SUP) MODEL OF
BILINGUAL PROFICIENCY**



**THE COMMON
UNDERLYING PROFICIENCY
(CUP) MODEL OF
BILINGUAL PROFICIENCY**

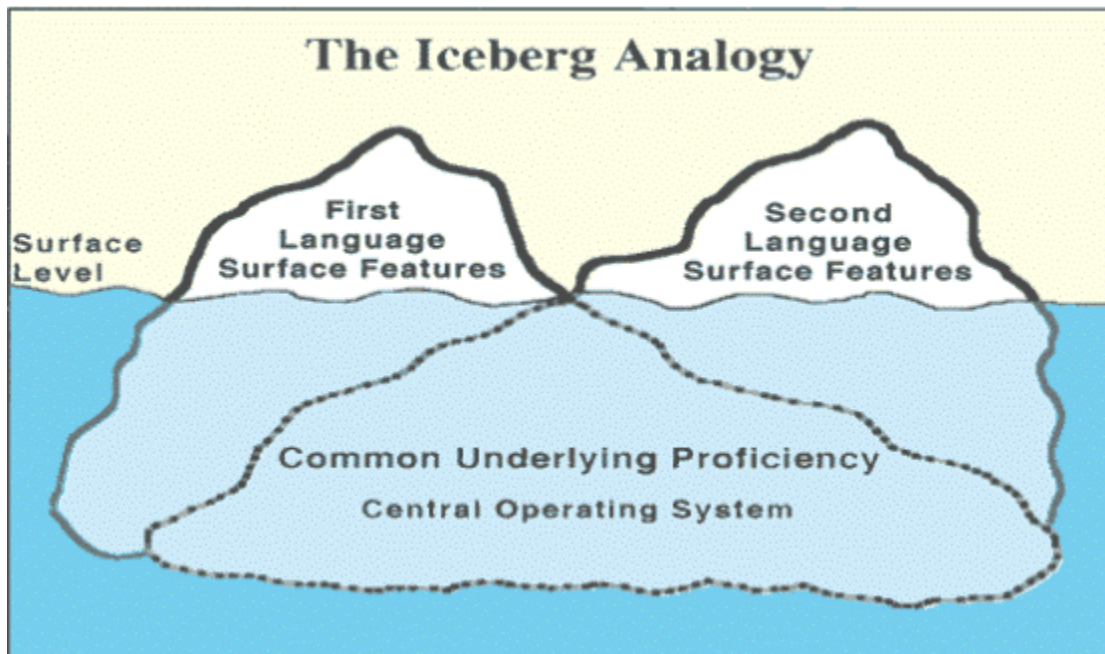
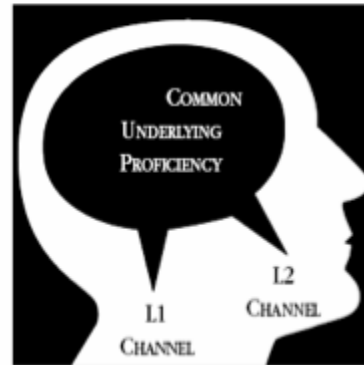


Illustration of Dr. Jim Cummins' Grid (4 Quadrants)

| Cognitively Undemanding (BICS) | |
|--|--|
| <ul style="list-style-type: none"> Initial levels ESL?T.P.R. Following Directions Face-to-Face Conversation Getting Absence Excuse Buying popcorn Oral Presentations Content Classes (Art,Music) | <ul style="list-style-type: none"> Telephone Conversation Note on the Refrigerator Written Directions, Instructions (No diagrams or illustrations) |
| Context Embedded | Context Reduced |
| A | C |
| <ul style="list-style-type: none"> Demonstrations, Experiments A-V Assisted Lessons Basic Math Computations Plane Geometry Projects and Activities Health Instruction Social Studies Science Experiments | <ul style="list-style-type: none"> Standardized Tests CTBS, SAT 9, CAP Reading / Writing Math Concepts and Applications Explanations of New Abstract Concepts Lecture with few Illustrations Social Science Texts Mainstream English Texts Most Content Classes |
| B | D |
| Cognitively Demanding (CALP) | |

APPENDIX B: FLDOE DATA REQUEST

Unit Record Data Request Packet

1 Project Information

A. Requester: Paola Maino

B. Organization: University of Central Florida

C. Research Project Title: The Role of Spanish for Native Speaker curriculum in supporting academic achievement for Hispanic Immigrants.

D. Packet submission date: 3/01/2011

E. Is this a funded project? No

F. If so, what is the amount of the award? N/A

2 Project Description

A. What is the purpose of the research?

The main objective of this study is document the availability of Spanish for Native Speakers curriculum across Florida high schools and to provide evidence on the relationship between academic achievement of ELL students and their participation in Spanish for Native Speakers classes. Immigrant students who traditionally lag in their academic achievement are an important group to study for several policy relevant reasons but research on specific interventions that target assimilation and academic achievement of this group has been limited. There are various theoretical reasons why continuing to learn in one's own native language may ease the transition process of adapting to a new culture and to become a bilingual student. Studies done on bilingualism has shown the positive effects of being able to communicate in two or more languages has on cognitive abilities (Peal & Lambert, 1962; Samuels & Griffore, 1979) including literacy and academic achievement (Cummins, 1979, 1981, 1985, 2001; Cummins & Swain, 1986; Eldesky, 1986; Krashen & Biber, 1988; Merino & Lyon, 1990; Melendez, 1990; Robson, 1982). Also, studies done on bilingualism have shown that being bilingual improves verbal and spatial abilities (Diaz, 1983), and divergent thinking (Landry, 1974; Kharkhurin, 2009). Research done on the effects of bilingualism and social aspects indicate that being bilingual enhances metalinguistic awareness and

provides access to a larger communication network (Cummins, 1981; 1984). Additionally, maintaining a HL while building English proficiency is crucial for the well-being, cohesion and the strength of families and communities (Wong Fillmore, 2000), as well as it enhances self-esteem (Rumbaut, R., 1994) and fosters a sense of identity (Huang, 1992). This study adds to this literature by evaluating a particular intervention in the curriculum which has been offered in some selected school districts; specifically, the availability and participation of ELL students in Spanish for Native Speakers classes.

B. List the research questions to be answered by the proposed project.

1. Document the availability of Spanish for Native Speaker curriculum across Florida and how this is related to Hispanic Immigrant populations and the characteristics of the school.
2. Document evidence (if any) that Spanish for Native Speaker curriculum has an impact on general academic achievement outcomes for Hispanic immigrant students.

C. Complete the following sentence, duplicating it as necessary to define all of the cohorts you are requesting.

| |
|---|
| <p>1. 2009- 2010 High School Students in all of Florida.</p> <p>1.a - 2009- 2010 Freshmen back until their 8th grade.</p> <p>I am requesting a cohort of <i>(K12 students)</i> in <i>(grade levels 9)</i> beginning with the academic year <i>(2009- 2010)</i> and tracking backward to the <i>(academic year 2008- 2009)</i>.</p> <p>1.b - 2009- 2010 Sophomores back until their 8th grade.</p> <p>I am requesting a cohort of <i>(K12 students)</i> in <i>(grade levels 10)</i> beginning with the academic year <i>(2009- 2010)</i> and tracking backward to the <i>(academic year 2007- 2008)</i>.</p> <p>1.c 2009- 2010 Juniors back until their 8th grade.</p> <p>I am requesting a cohort of <i>(K12 students)</i> in <i>(grade levels 11)</i> beginning with the academic year <i>(2009- 2010)</i> and tracking backward to the <i>(academic year 2007- 2008)</i>.</p> |
|---|

1.d 2009- 2010 Seniors back until their 8th grade.

I am requesting a cohort of *(K12 students)* in *(grade levels 12)* beginning with the academic year *(2009- 2010)* and tracking backward to the *(academic year 2005- 2004)*.

2. Following three cohorts through High School. (2006/07 through 2008/09 cohorts)

2. a 2008- 2009 Seniors back until their 8th grade.

I am requesting a cohort of *(K12 students)* in *(grade levels 12)* beginning with the academic year *(2008- 2009)* and tracking backward to the *(academic year 2004- 2005)*.

2. b 2007- 2008 Seniors back until their 8th grade.

I am requesting a cohort of *(K12 students)* in *(grade levels 12)* beginning with the academic year *(2007- 2008)* and tracking backward to the *(academic year 2003- 2004)*.

2. c 2006- 2007 Seniors back until their 8th grade.

I am requesting a cohort of *(K12 students)* in *(grade levels 12)* beginning with the academic year *(2006- 2007)* and tracking backward to the *(academic year 2002- 2003)*.

D. List any specific characteristics required for your cohort.

a. I am requesting a transcript data for a cross section of *all high school students in Florida* in the academic year of 2009-2010 to detect the availability of Spanish for Native Speaker (SNS) classes and to relate the availability if this type of class to the characteristics of the student body. For this group I am only interested in the classes during the 2009-2010 academic year and their demographics. In particular I need to know if the student is Hispanic, language spoken at home and what country the student was born in to identify immigrant Hispanics. Data on the school staff and student body

are also relevant as these are likely to determine to a large extent the feasibility and availability of SNS curriculum. This data on schools, transcript classes and basic demographics is needed at the state level.

b. I am requesting *panels* of transcript data tracking three cohorts of seniors (2009-2010/2008-2009/2007-2008) back to their eighth grade if available. This is needed to first robustly model academic achievement as a function of the curricular choices made by students and their characteristics. Secondly a large number of observations are needed to have enough data on Hispanic Immigrants to be able to make statistical inference feasible among this group.

For this data, I am requesting a subset of counties in Florida. These counties correspond to Central Florida. List of Central Florida Counties Requested:

1. Marion
2. Sumter
3. Lake
4. Seminole
5. Orange
6. Osceola
7. Polk
8. Hardee
9. Highlands

D. Does your research require a comparison group? Describe how this comparison group is to be defined.

No it does not. Both groups are contained in the cohorts requested.

F. Matched Dataset:

I will not provide FLDOE with any datasets to be matched.

G. Provide a statement of why published data and reports readily available on the DOE's website are not sufficient to answer the research questions posed.

To the best of my knowledge, there are currently no comprehensive studies on the role of Spanish for Native Speakers curriculum and its effects on academic achievement. Thus this research proposal would provide evidence which is currently not available.

H. Describe the methodology planned for this analysis.

The first question I wish to confront is to study the availability of Spanish for Native Speakers (SNS) curriculum. This is a function of both student needs and also district wide support for Hispanic immigrants. I wish to document the relationship between student and district demographics to the availability of these courses that directly benefit immigrants. This is accomplished by a simple logistic regression model for the binary variable indicating if the curriculum is available or not.

The second question requires more detailed data and modeling. The question I wish to answer is, what is the relationship between taking SNS curriculum on later academic outcomes such as FCAT scores, GPA, graduation rates and college going rates. To do this, I would model academic achievement through a regression where student demographics and past curricular choices are used as explanatory variables. To address the endogeneity of the curricular choices, I will use the availability of SNS classes interacted with immigrant status as a measure of the average effect of SNS curriculum on academic outcomes.

Specifically, the model used in this study has FCAT scores or GPA as academic achievement on the left hand side and school characteristics, student demographics (including ELL-Hispanic status) and a variable which indicates if the person has participated in SNS class or if this class is available depending on the regression model. This can be written for any student in a school k as the following regression equation:

$$A_{ik} = \alpha_1 + \alpha_2 X_i + \alpha_3 X_k + \beta SNS_{ik} + \varepsilon_{ik}$$

Some of the assumptions needed to assign a causal relationship are strong. It is assumed that immigrants do not choose their location as a function of the availability of SNS curriculum. The availability of SNS is assumed to be uncorrelated with the benefits students would receive from it as if it were determined by a political process where immigrants do not participate. Although there are limitations, I believe it is informative even if it is interpreted only as a correlation as this is a big policy topic and there is relatively little evidence on it so far.

evaluating a particular intervention in the curriculum which has been offered in some selected school districts. Specifically, we are interested in the availability and participation of ELL students in Spanish for Native Speakers (SNS) classes.

The specific objectives of this study are to document if there is evidence that Spanish for Native Speaker curriculum has an impact on general academic achievement outcomes for Hispanic immigrant students. The qualitative aspects of this study will also help point towards future research avenues which may better identify the impact of dual language approach to educating English Language Learners (ELL) in general.

5 Data element crosswalk

In this section, I list the variables required for my analysis. I organize this list by business view category within the student business subject; because variables in different business view categories sometimes have the same names. The list is attached in the end of this document.

[Attached at the end of this document.]

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VI. Security and Access Agreement

The information available through the Integrated Education Data Systems (IEDS) is, by federal and state law, confidential and shall be used only for the authorized purposes. Under no circumstances shall records and reports be released by the IEDS to any party unless such release is in strict accordance with the provisions, and to the entities identified in, the Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. § 1232g; 34 C.F.R Part 99; and chapter 119 and section 1002.22, Florida Statutes. The party receiving data acknowledges its separate obligations in accordance with the requirements of these provisions by establishing duties of confidentiality, privacy, and nondisclosure.

The information released by the party receiving data provided by the IEDS will be used for the purpose of generating aggregate statistics that will be used to evaluate educational programs or needs in Florida. Deliberate or accidental misuse of information may result in loss of access, disciplinary action, or dismissal or prosecution under the scope of all applicable federal and state laws and regulations.

IEDS REQUESTOR/USER REQUIREMENTS

All persons who gain access to information from the IEDS in any form must adhere to the provisions below. Requestors/Users are required to initial below each section.

The Requestor and/or User shall:

1. Be responsible for the information obtained and must use it only for authorized purposes;
2. Only use individual records or anything that could generate personally identifiable information for the validation of queries/programming;
3. Destroy unit record data that have been provided from the IEDS on or before the date assigned by the IEDS and provide certification to the IEDS staff that such records have been destroyed;
4. Prior to publication or release, provide any documents generated as a result of using data received from the IEDS to FDOE for review and verification that the intended purpose has been adhered to;
5. Store each file sent by FDOE and in possession of the user that contains unit record data, and each hard copy of such information, in a secure location, such as a locked desk or file cabinet, except when in use for the purposes for which it was provided. Automated records shall be stored in secured computer facilities with strict Automated Data Processing ("ADP") controls;
6. Retain only one copy and one backup copy of the data provided. In the event the destruction of data is required, user must provide written confirmation that all copies are properly destroyed;
7. Notify FDOE within 30 days when access to unit record data has been transferred from the requestor or user to other personnel, and provide a

notarized statement that the transferee agrees to the terms and conditions herein.

Initial:
__P.M./C.N.__

The Requestor and/or User may not, and must ensure that no other individuals:

1. Share unit record data with any other individual or organization without the express written consent of FDOE;
2. Use data for any other purpose other than analysis and evaluation;
3. Allow any unauthorized use of information provided or generated;
4. Use the results of information provided/generated in an effort to determine the identity of any student or employee for whom data is included in the IEDS;
5. Use the data to make a decision about the rights, benefits, or privileges of those individuals identified through the matching process;
6. Publicly disseminate reports containing identifiable data or aggregate cell sizes of less than 10 individuals. (Reports must mask these cells so that results are not revealed.)

Initial:
___P.M./C.N.---

Requestor Information:

Name of Requestor: __PAOLA A. MAINO_____

Title: __Doctoral Candidate Ed.D Curriculum & Instruction_____

Institution/Division: _University of Central Florida_____

Physical Address: _955 Oak Chase Dr., Orlando, FL 32828_____

Phone Number: __407- 277- 6909_____

SunCom Number: _____

Email Address: ___paola_maino@yahoo.com_____

I understand and agree to the terms, conditions, and responsibilities set out in this Agreement.

Signature of Requestor Paola A. Maino Date 2/24/2011

Seal of Notary:

Form of Identification:

Personally known

Identification provided

Type of Identification:

To be completed if information is different than that of the Requestor:

Data User/Analyst/Researcher: (Person using the data)

User Information:

Name of User: __Christopher Neilson_____

Title: _Doctoral Candidate _____

Institution/Division: Yale University, Department of Economics

Physical Address:

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New Haven, CT 06511

Phone Number: 203- 645- 4646

Email Address: christopher.neilson@yale.edu

I understand and agree to the terms, conditions, and responsibilities set out in this Agreement.

Signature of Researcher: _____ **Date** _____

(if applicable)

Seal of Notary:

Form of Identification:

_____ Personally known

_____ Identification provided

Type of Identification:

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|---------------------|-----------------------|--------------------------------|------------------------|------------------------------|---|---|
| Student | Business Facets | | | | | |
| Student Demographic | STUDENT_DEMOGRAPHIC_V | COUNTRY_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | COUNTRY_CD_BORNED_IN | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | DISABLED_IND | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | GENDER_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | LANGUAGE_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | LANGUAGE_HAVE_PARENTS_SPEAKING | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | QUALIFYING_ARRIVAL_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | RACIAL_ETHNIC_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | STUDENT_BIRTH_MONTH | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |
| | | STUDENT_BIRTH_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Identify characteristics of students to related to the availability of SNS curriculum. Q2. Detailed student demographics are needed to properly model student achievement |

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|----------------|--------------------------------|------------------------------|------------------------|------------------------------|---|--|
| Student | Business Facets | | | | | |
| | STUDENT_UNIVERSITY_APPL_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | ADMISSION_FINAL_ACTION | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | ADMISSION_HIGH_SCHOOL_GPA | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | ADMISSION_REGISTERED_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | APPL_TERM | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | APPL_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | ENGLISH_AS_SECOND_LANG_UNITS | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1. Cross validation variable for ESL students. Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | HIGH_SCHOOL_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| | | INSTITUTION_ID_ATTENDED | 2005-2006 to 2009-2010 | 9th to 12th | Q 2 | Q2. Applying to college is an outcome in the framework explained in the methodology section. |
| Active Student | COMMUNITY_COLLEGE_ENROLLMENT_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Applying to community college is an outcome in the framework explained in the methodology section. |
| | | CITIZENSHIP_TYPE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and I2. Information on citizenship is useful for characterizing immigrant hispanics. In particular, students who are US citizens will be different in many aspects to those who are not citizens. These differences are important among hispanic populations. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Applying to community college is an outcome in the framework explained in the methodology section. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Applying to community college is an outcome in the framework explained in the methodology section. |
| | | INCARCERATION_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is also an outcome variable which measures assimilation to society. |
| | | ENROLLMENT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Applying to community college is an outcome in the framework explained in the methodology section. |
| | | COURSE_ENROLLMENT_IND | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Applying to community college is an outcome in the framework explained in the methodology section. |

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|----------------|---------------------------|------------------------------|------------------------|------------------------------|---|---|
| Student | Business Facets | | | | | |
| Active Student | ENTRY_V | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. | |
| | LEP_STUDENT_INFORMATION_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | ENROLLMENT_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | ENROLLMENT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | LEP_INFO_BASIS_OF_ENTRY | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | LEP_INFO_BASIS_OF_EXIT | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |
| | | LEP_INFO_CLASSIFICATION_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. This variable is very important as it helps identify new arrivals to the country and district. This will be used together with other demographics to determine the immigrant hispanic group under study. |

| Data Element | | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question |
|-----------------------|---------------------------------|--------------------------------|------------------------|------------------------|------------------------------|---|
| Student | Business Facets | | | | | |
| | | LEP_INFO_ENTRY_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | LEP_INFO_EXIT_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | LEP_INFO_EXTENSION_INSTR_IND | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | LEP_INFO_RECLASSIFICATION_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | LEP_INFO_REEVALUATION_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | LEP_RECLASSIFICATION_EXIT_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| | | SURVEY_PERIOD_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. LEP and other demographics are important to characterist the students and to identify the Hispanic immigrant group under study. |
| Student Course | HIGH_SCHOOL_TRANSCRIPT_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | INSTRUCTIONAL_INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | ENROLLMENT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | ENROLLMENT INSTITUTION ID. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | ACADEMIC_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | PK 12 TERM CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | COURSE_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | COURSE SEQUENCE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | NON-STANDARD COURSE NUMBE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|-----------------|---------------------------|----------------------------|------------------------|--|---|---|
| Student | Business Facets | | | | | |
| | PROJECT_SUPPORT_SERVICE_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | ENROLLMENT_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | ENROLLMENT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | K20_PROJECT_SUPPORT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | PROJECT_SUPPORT_SERVICE_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | | PROJECT_TYPE_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1. | Q1. Provision of SNS curriculum can be related to the provision of other services in general. |
| | STUDENT_ATTENDANCE_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | ENROLLMENT_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | ENROLLMENT_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | ABSENT_DAYS_NBR | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | PRESENT_DAYS_NBR | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| | | ENTRY_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. |
| WITHDRAWAL_DATE | 2005-2006 to 2009-2010 | 9th to 12th | Q2. | Q2. Attendance is an outcome related to behavior and assimilation. | | |

| Data Element | | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question |
|--------------|---------------------------|-------------------------------|------------------------|------------------------|------------------------------|---|
| Student | Business Facets | | | | | |
| | | GRADUATING SUBJECT AREA CD. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | GRADE EARNED. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| | | GRADE_LVL_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q1 and Q2. Curriculum is a fundamental part of the investigation proposed. Detailed information on the curricular choices is needed to related these to later outcomes. |
| Student Test | PK12_EVALUATION_TEST_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | GRADE_LVL_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_EVALUATION_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | TEST_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | | | | | |
| | PK12_EVALUATION_SUBTEST_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | INSTITUTION_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | GRADE_LVL_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_EVALUATION_YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | TEST_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_SUBTEST_SCORE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_SUBTEST_NPR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_SUBTEST_CURRICULUM_GROUP | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|---------------|------------------------------|--------------------------|------------------------|------------------------------|---|------------------------------|
| Student | Business Facets | | | | | |
| | | PK12_SUBTEST_CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| | | PK12_SUBTEST_STANINE | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. This is an outcome. |
| Student Award | STUDENT_COMPLETION_PROGRAM_V | K20_EDW_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | EDUC AWR ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | EDUC AWR NAME | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | PROGRAM ID. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | PROGR CD | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | PROGR TITLE. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | STUDENT AWR GRANTED ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | STUDENT PROGR FRACTION | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | STUDENT_COMPLETION_AWARD_V. | K20 EDW ID. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | INSTITUTION ID. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | STUDENT AWR GRANTED ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | EDUC AWR NAME. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | STUDENT AWR GRANTED TERM | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | STUDENT AWR GRANTED YEAR | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |

| Data Element | | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question |
|--------------------------------|------------------------|--------------------------------|------------------------|------------------------|------------------------------|---|
| Student Business Facets | | | | | | |
| | ACADEMIC_AWARD_LEVEL_V | K20 EDW ID. | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | ACADEMIC_AWARD_LEVEL_RANK | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| | | ACADEMIC_AWARD_LEVEL_ID | 2005-2006 to 2009-2010 | 9th to 12th | Q 1 and Q2 | Q2. Graduation is an outcome |
| Educational Curriculum | | | | | | |
| Educational Curriculum | PROGRAM_SUBJECT_V | PROGRAM_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_TYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | PROGRAM_V | SUBJECT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_TYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | SUBJECT_V | VOCATIONAL_PROGRAM_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| Course | COURSE_SUBJECT_V | SMA_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PARENT_SUBJECT_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | DISTRICT_ACADEMIC_AREA_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | CC_CLUSTER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | COURSE_V | CC_SUFFIX | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | CIP_CODE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | CIP_STANDARD_YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | COURSE_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| Course | COURSE_SUBJECT_V | COURSE_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | COURSE_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SUBJECT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | COURSE_V | SUBJECT_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | COURSE_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | COURSE_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | COURSE_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| Course | COURSE_V | DISTRICT_ABBREV_COURSE_TITLE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | DISTRICT_GRAD_SUBJECT_AREA_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | EFFECTIVE_ACADEMIC_YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | GRADE_LEVEL_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| Course | COURSE_V | MOST_RECENT_USED_ACADEMIC_YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | YEAR_TYPE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| Educational Institution | | | | | | |
| Educational Institution | EDUC_INSTITUTION_V | COUNTRY_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |

| Data Element | | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question |
|--------------------------------|--------------------------|-------------------------------|-----------------|------------------------|---|---|
| Student Business Facets | | | | | | |
| | | DISTRICT_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | FOREIGN_IND | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_CITY | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_E_MAIL | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_FAX | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_PHONE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_SHORT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_ZIP_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | OPEID_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | POST_SECONDARY_INSTITUTION_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PUBLIC_IND | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | STATE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | EDUC_INST_DETAIL_BY_YR_V | EDUC_INSTITUTION_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | GRADE_LVL_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_SHORT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INST_DETL_GRADUATION_RATE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | PROGRAM_LENGTH_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | SCHOOL_TYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | EDUC_INST_DROPOUT_RATE_V | SCHOOL_TYPE_DESC | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | GENDER_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INSTITUTION_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | | INST_DROPOUT_RATE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| | District | RACIAL_ETHNIC_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. |
| YEAR | | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools with SNS curriculum and their characteristics. | |
| Educational Staff | | | | | | |
| Employee Demographic | EMPLOYEE_DEMOGRAPHIC_V | EMPLOYEE_BIRTH_MONTH | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EMPLOYEE_BIRTH_YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EMPLOYEE_EDW_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |

| Data Element | | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question |
|-----------------|------------------------|---------------------------|-----------------|------------------------|------------------------------|---|
| Student | Business Facets | | | | | |
| | | GENDER_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_RESIDENT_ALIEN_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | RACIAL_ETHNIC_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | EMPLOYEE_AWARD_LEVEL_V | ACADEMIC_AWARD_LEVEL_ID | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | ACADEMIC_AWARD_LEVEL_RANK | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EMPLOYEE_EDW_ID | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REPORTED_TERM_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REPORTED_YEAR | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | YEAR_TYPE_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | EMPLOYEE_AWARD_V | EDUC_AWR_K20_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EDUC_AWR_NAME | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EMPLOYEE_EDW_ID | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REPORTED_TERM_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REPORTED_YEAR | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | YEAR_TYPE_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| Certified Staff | CERTIFICATE_V | CERTIFICATE_STATUS | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | CERTIFICATE_TYPE_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | CERTIFICATION_SUBJECT_CD | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EFFECTIVE_DATE | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EMPLOYEE_EDW_ID | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | EXPIRATION_DATE | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | ISSUE_DATE | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REQUIREMENT_ID | 2009-2010 | 9th to 12th | Q. 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |

| Data Element | | Years requested | Grade Levels requested | Related Research Question(s) | Explain how this element relates to the Research Question | |
|-------------------|-------------------|--------------------------------|------------------------|---|---|---|
| Student | Business Facets | | | | | |
| Educational Staff | COURSE_OFFERING_V | REQUIREMENT_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | REQUIREMENT_SUBTYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | COURSE_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | COURSE_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | COURSE_OFFERING_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | COURSE_OFFERING_PROGRAM_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | DISTRICT_PERIOD_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | DISTRICT_SURVEY_PERIOD_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | END_DATE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | INSTRUCTION_DELIVERY_METHOD_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_STANDARD_COLLEGE_CSE_NBR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_STANDARD_COURSE_LEVEL | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_STANDARD_COURSE_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_STANDARD_COURSE_PREFIX_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | NON_STANDARD_COURSE_SUFFIX | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | OFFERING_INSTITUTION_ID | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | PK12_TERM_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | PROGRAM_NAME | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | SCHEDULED_HOURS | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| | | SECTION_INSTRUCTION_TYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. |
| SECTION_NUMBER | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. | | |
| START_DATE | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. | | |
| TERM_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. | | |
| YEAR | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. | | |
| | YEAR_TYPE_CD | 2009-2010 | 9th to 12th | Q 1 | Q1. Identify schools teachers which might be related to the availability of SNS curriculum and their characteristics. | |

APPENDIX C: FLDOE APPROVAL LETTER

June 6, 2011

Paola and Christopher,

Thank you for your interest in using data from the Florida PK-20 Education Data Warehouse (EDW) for your research project. Your project titled The Role of Spanish for Native Speaker curriculum in supporting academic achievement for Hispanic Immigrants has been approved. Lori Rodriguez, Bureau Chief for Student Achievement through Language Acquisition, has chosen to sponsor your request on behalf of the Department. Please remain in contact with your Program Office sponsor during the course of your study. She will work with you to ensure the program/policy context is accurate. She can be reached at Lori.Rodriguez@fldoe.org.

Your request is currently in the workload queue to begin processing at the earliest time possible. Approval of the request is the first step in a multi-step process. On average, approved requests take 5-6 months to fulfill. However, this duration can vary by individual proposal depending upon data permissions required, datasets requested, and the number of proposals currently approved.

You will be contacted once your request has been assigned to a programmer. The EDW Customer Relations Manager (Tammy Duncan at Tammy.Duncan@fldoe.org) will work with you to assure that the data request is completed accurately. In the meantime, if you have any questions or concerns please feel free to contact her.

If you indicated in your data request that you have a dataset you would like IEDS to match please follow the formatting and submission instructions attached to this e-mail. Files submitted that do not meet these requirements will be returned without processing.

We look forward to working with you to fulfill your data request.

Nancy Copa

Director of ARM Contracts and Grants
Division of Accountability, Research, and Measurement
Florida Department of Education
325 West Gaines Street, Suite 844
Tallahassee, Florida 32399-0400
Phone: (850) 245-0457

APPENDIX D: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

From : **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To : Paola A. Maino
Date : November 19, 2012

Dear Researcher:

On 11/19/2012 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review: Not Human Research Determination

Project Title: STUDY ON SPANISH FOR NATIVE SPEAKERS
CURRICULUM AND ACADEMIC ACHIEVEMENT IN FLORIDA

Investigator: Paola A Maino

IRB ID: SBE-12-08880

Funding Agency:
Grant Title:

Research ID:

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

A handwritten signature in black ink that reads 'Joanne Muratori'.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by: Signature applied by Joanne Muratori, IRB Coordinator on 11/19/2012 12:04:32 PM EST

APPENDIX E: RQ1 DESCRIPTIVE STATISTICS

Table 1: Descriptive statistics of School and County level variables

| School level variables | | | | | | |
|-------------------------------------|------------|-------------|---------------|------------------|------------|------------|
| Variable | Obs | Mean | Median | Std. Dev. | Min | Max |
| Course_SNS | 1198 | 37% | 0% | 0.483395 | 0 | 100% |
| School av. FCAT score | 1117 | 285.2628 | 287 | 33.2326 | 170.9101 | 389 |
| Is Title 1 | 1200 | 48% | 0% | 0.499872 | 0 | 1 |
| Percent_FRL | 1132 | 48% | 49% | 0.272672 | 0% | 100% |
| Percent_Hispanic students | 1132 | 22% | 13% | 0.25194 | 0% | 100% |
| Percent_Hispanic_Teacher | 1031 | .09% | 4% | 0.131571 | 0% | 100% |
| Average_Teacher Age | 1031 | 47.5 | 48 | 4.660857 | 27 | 67 |
| Teacher Advanced Degrees | 1012 | 33% | 33% | 0.147757 | 0% | 100% |
| School size 2009 | 1087 | 788 | 274 | 909.5088 | 1 | 4,186 |
| County level variables | | | | | | |
| County Income | 1113 | 25,694.78 | 25,490 | 4,627.465 | 13,657 | 37,046 |
| County Democratic Vote Share | 1113 | 48.8796 | 49 | 11.28872 | 17 | 69 |

Table 2: Table of Correlations of School Variables at 5% significance level

| | Course SNS | Is Title 1 | School Average FCAT score | County income | Teacher Advanced Degrees | Percent Hispanic students | Percent FRS | County Democratic Vote Share | Average Teacher Age | Percent Hispanic teacher | School size 2009 |
|------------------------------|------------|------------|---------------------------|---------------|--------------------------|---------------------------|-------------|------------------------------|---------------------|--------------------------|------------------|
| Course_SNS | 1 | | | | | | | | | | |
| Is Title 1 | 0.2050* | 1 | | | | | | | | | |
| School Average FCAT score | 0.2112 | 0,0238 | 1 | | | | | | | | |
| County income | 0.0898* | -0.1194* | 0.0885* | 1 | | | | | | | |
| Teacher Advanced Degrees | 0,0535 | -0,0458 | 0.1263* | 0,0552 | 1 | | | | | | |
| % Hispanic students | 0.2710* | 0,0055 | 0,0058 | -0,0026 | 0,0178 | 1 | | | | | |
| Percent FRL | -0,0174 | 0.4541* | -0.2992* | -0.1379* | -0.0641* | 0.3681* | 1 | | | | |
| County Democratic Vote Share | 0.3421* | 0.0392* | -0.0529* | 0.2439* | 0,0739 | 0.2422* | 0.0546* | 1 | | | |
| Average Teacher Age | -0.1053* | -0,0536 | -0,0407 | -0,0106 | 0.3354* | -0,0378 | 0,0054 | -0.0939* | 1 | | |
| % Hispanic teachers | 0.4118* | 0.1139* | 0.1465* | -0.0672* | 0,0384 | 0.6366* | 0.0640* | 0.1015* | -0.1663* | 1 | |
| School size 2009 | 0.4783* | 0.1479* | 0.5124* | 0.1121* | 0,0279 | 0.2054* | -0,0477 | 0,0074 | -0,0465 | 0.2338* | 1 |

APPENDIX F: RQ2 DESCRIPTIVE STATISTICS

Table 1: Hispanic students in Central and Southeast Florida high schools

| | | Freq. | Percent | Cum. |
|----------|-------|---------|---------|--------|
| Hispanic | 0 | 179,090 | 65.00 | 65.00 |
| | 1 | 96,413 | 35.00 | 100.00 |
| | Total | 275,503 | 100.00 | |

Table 2: 1st Generation Hispanic students in Central and Southeast Florida high schools

| Central/SE Florida High School Students | | | | |
|---|-------|---------|---------|--------|
| | | Freq. | Percent | Cum. |
| 1 st Generation Hispanic student | 0 | 245,364 | 89.06 | 89.06 |
| | 1 | 30,139 | 10.94 | 100.00 |
| | Total | 275,503 | 100.00 | |

Table 3: Speak Spanish at home in Central and Southeast Florida 2006-2009

| Central/SE Florida High School Students | | | | |
|---|-------|---------|---------|--------|
| | | Freq. | Percent | Cum. |
| Speak Spanish at Home | 0 | 201,639 | 73.19 | 73.19 |
| | 1 | 73,864 | 26.81 | 100.00 |
| | Total | 275,503 | 100.00 | |

Table 4: ELL students in Central and Southeast Florida

| Central/SE Florida High School Students | | | | |
|---|-------|---------|---------|--------|
| | | Freq. | Percent | Cum. |
| | 0 | 215,892 | 78.36 | 78.36 |
| ELL student | 1 | 59,661 | 21.64 | 100.00 |
| | Total | 275,503 | 100.00 | |

Table 5: Hispanic ELL students in Central and Southeast Florida 2006-2009

| | | Freq. | Percent | Cum. |
|-------------|-------|--------|---------|--------|
| | 0 | 53,147 | 55.12 | 55.12 |
| ELL student | 1 | 43,266 | 44.88 | 100.00 |
| | Total | 96,413 | 100.00 | |

Table 6: Speak Spanish at home and is ELL student

| Speak Spanish at Home | | | | |
|-----------------------|-------|--------|---------|--------|
| | | Freq. | Percent | Cum. |
| | 0 | 32,263 | 43.68 | 43.68 |
| ELL student | 1 | 41,601 | 56.32 | 100.00 |
| | Total | 73,864 | 100.00 | |

Table 7: SNS students are ELL

| SNS | | | | |
|-------------|-------|--------|---------|--------|
| | | Freq. | Percent | Cum. |
| | 0 | 15,590 | 43.39 | 43.39 |
| ELL student | 1 | 20,338 | 56.61 | 100.00 |
| | Total | 35,928 | 100.00 | |

Table 8: Central and Southeast FRL

| Central/SE Florida High School Students | | | | |
|---|-------|---------|---------|--------|
| | | Freq. | Percent | Cum. |
| | 0 | 117,904 | 42.80 | 42.80 |
| FRL | 1 | 157,599 | 57.20 | 100.00 |
| | Total | 275,503 | 100.00 | |

Table 9: Speak Spanish at home and FRL

| Speak Spanish at home | FRL | | Total |
|-----------------------|------------------|------------------|-------------------|
| | 0 | 1 | |
| 0 | 101,242 46.63 | 115,856 53.37 | 217,098 100.00 |
| 1 | 25,288 19.25 | 106,052 80.75 | 131,340 100.00 |
| Total | 126,530 36.31 | 221,908 63.69 | 348,438 100.00 |

Table 10: Central and Southeast ELL student and FRL

| ELL student | FRL | | Total |
|-------------|------------------|------------------|-------------------|
| | 0 | 1 | |
| 0 | 102,964 50.46 | 101,074 49.54 | 204,023 100.00 |
| 1 | 8,466 14.90 | 48,334 85.10 | 56,800 100.00 |
| Total | 111,415 42.72 | 149,408 57.28 | 260,823 100.00 |

Table 11: Spanish Speaker and SNS participation at some point in high school

| Speak Spanish at home | SNS | | Total |
|-----------------------|------------------|-----------------|-------------------|
| | 0 | 1 | |
| 0 | 185,890 97.64 | 4,484 2.36 | 190,374 100.00 |
| 1 | 39,871 56.60 | 30,578 43.40 | 70,449 100.00 |
| Total | 225,761 86.56 | 35,062 13.44 | 260,823 100.00 |

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