

UNDERSTANDING THE SOCIOPOLITICAL-HISTORICAL CONTEXT AND ITS
IMPACT ON TEACHERS OF STUDENTS OF MEXICAN BACKGROUND: A
CLOSER LOOK IN A MAINSTREAM AND IN AN ENGLISH LANGUAGE
DEVELOPMENT (ELD) CLASSROOM

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ABSTRACT

A large body of research exists concerning teaching students of Mexican background whose primary language is not English, who I call Potentially Biliterate Students (PBLs) in this study. The focus of the research around these students often addresses bilingual education, academic achievement, the impact of language policy, and segregation, among other areas. Yet inequalities still prevail when educating this group of students. Language policies such as *Proposition 203* and *House Bill 2064* in Arizona, which are not research-based, target this particular population –perpetuating inequalities that have been visible since the Mexican-American War of 1848. This dissertation is informed by sociocultural (Vygotsky, 1978) and sociocultural-historical (Rogoff, 2003) perspectives. Theories of second language (Krashen, 1982; Cummins, 1991; Collier, 1995) and the interplay with mathematics education (Moschkovich, 2002, Khisty, 1995) are also important components that frame my study.

This study took place in two different third-grade classrooms, a mainstream and an English Language Development/Structured English Immersion (ELD/SEI), in an English-only environment. The school is part of a school district in southern Arizona where most students are of Mexican background. I employed ethnographic tools to address my research questions. The data sources of this study come from field notes from participant observations, video-recorded sessions, interviews (video- and/or audio recorded) with both teachers and students, and teachers autobiographies regarding their language and mathematics learning experiences, offering a rich source for analysis of the resources and classroom practices in the teaching-learning environment. This data

allowed me to develop in-depth case studies for both teachers based on the nature of their classrooms.

Through the two case studies presented, I document how the sociopolitical-historical context and the teachers' training and professional development shape their classroom practices, language ideology, attitudes towards the subjects they teach, as well as their perceptions about their students and families; in particular around students of Mexican background. Additional research is needed to connect results similar to this study with the impact on students' outcomes and behavior, as also the impact on participation of the different school members –parents and other community members.

CHAPTER 1

INTRODUCTION

The success of English learner students depends on the support they receive in learning English as well as in learning their academic subjects. Providing this support to students is by no means easy, as teachers of ELs must essentially do double the work (e.g., teaching academic English and science at the same time) and must be checking for understanding often without being able to communicate with students. Most teachers have not been adequately trained to address these complex demands.

– Gándara and Hopkins, 2010, p. 15

This excerpt provides a general introduction to the theme of this study, and addresses the experiences and challenges of teachers of Potentially Biliterate Students (PBLs¹) or English Language Learners (ELLs). Oftentimes teachers feel overwhelmed by

¹ In my study I use the term Potentially Biliterate Students (PBLs) to refer to students whose primary language is not English, commonly referred in the literature as English Language Learners (ELLs). I use this term since ELLs itself does not provide any insights of what these students are capable of. Reyes (2006), Azuara Sanchez (2009), and Garcia and Kleifgen (2010) refer to these students as “Emergent Bilinguals”; however, through their schooling experiences many students in English-only contexts end up losing their first language, switching to English, the mainstream language in the Unites States.

the demands of the curricula they use, standardized testing, and ultimately having to help students become proficient in a language (academic English) that they do not understand.

My interest in this dissertation topic evolved from my own language learning experiences, from my experiences teaching pre-service teachers a 45-hour, state-mandated course to teach ELLs, and more importantly from my participation in different CEMELA (Center for the Mathematics Education of Latinas/os)² research projects related to mathematics and the education of Latinos [of Mexican background], which includes parents, children, and teachers of these students. I came across the following question soon after I moved to the United States while in my master's program with a focus on bilingual/multicultural education and the work I conducted with Mexican and Mexican-American families in predominantly Mexican neighborhood schools: Why after a long history educating PBLs, and after policies were passed at the national level [e.g. Bilingual Education Act of 1968, Equal Educational Opportunities Act (EEOA) of 1974, and No Child Left Behind (NCLB) in 2000] “to better” the education of disadvantaged students, Mexican and Mexican-American students in Arizona continue on a journey that limits their educational opportunities impacting their current and future lives? This

² Center for the Mathematics Education of Latinos (CEMELA) was funded by the National Science Foundation (NSF) under grant ESI-0424983.

question is important and timely since students within this group represent the largest number among Latinos, which is now the largest minority group in the United States. Another important fact is that Mexican and Mexican-American students represent the largest percentage of high school dropouts compared to Whites and other students of different backgrounds (Fuentes, 2006).

Research on the history of Latino Education in the United States (MacDonald, 2004) bilingual/multicultural education (Ovando, Combs, and Collier (2006), culturally relevant theory (Valenzuela, 1999; Valencia and Balack, 2002), and migration and education (Olsen, 2008) have addressed in many ways the challenges these students face, as well as ways in which schools and teachers can support PBLs by changing school structures, curriculum, and pedagogy regardless of educational policy. Research in these areas also provide some insight into how PBLs draw meaning from their schooling experiences, and see themselves in relation to other students who are proficient in English given the racial, class, and political structures in which they are embedded. This research tends to be broad, and as the contexts change, there are limited studies that address the kinds of resources, classroom practices that impact these students, the teachers' ideologies and perceptions of students in classrooms where the primary focus is to address the language as a problem, rather than as a resource (Ruiz, 1984) over content area knowledge.

Differentiated instruction

It is a fact that PBLs across the United States receive, in many ways, different instruction than those students whose primary language is English. Frequently, these

students receive substandard education (Gándara, 2010) with the implementation of instructional models that only create a larger academic gap between them and their peers. The most common models used historically to “help” PBLs to overcome the language barrier are ESL classes and pull-out (which is illegal since the resolution of the *Lau v. Nichols*, 1974). No matter what federal policies state, these practices have not ceased; on the contrary they have become more common in creating an even larger gap between PBLs and students who are proficient in English. The passage of state policies and regulations such as California’s *Proposition 227* (1998) and *Proposition 203* in Arizona (2000) are clear examples of contradiction with federal policy such as *Bilingual Education Act of 1968*, *Lau v. Nichols*, and the *Equal Educational Opportunities Act (EEOA)* of 1974. Students with the potential to become bilingual and excel academically are constantly deprived of a “meaningful” education as stated in *Lau v. Nichols*.

Arizona’s *Proposition 203* clearly states that students who are not proficient in English should be separated from their peers and put together in Structured English Immersion (SEI) classrooms regardless of age and language ability; according to this law students should learn the English language during a period not to exceed one academic year. In addition to *Proposition 203*, since 2006 with the passage of *HB 2064*, schools in Arizona are required to address the language needs of these students by implementing the ELD –four- hour English block- model. This model segregates PBLs from those students proficient in English for four hours to exclusively focus on all of the four language skills (writing, reading, speaking, and listening), allotting very limited time for mathematics and other important subjects.

Why mathematics education and students of Mexican background?

My interest in mathematics education and PBLs increased with the work I did with the Center for the Mathematics Education of Latinos (CEMELA). CEMELA was a center that sought to understand the interplay of mathematics education and language, in addition to understanding the social, cultural, and political issues that impact primarily Latino students. To accomplish this, CEMELA focused its research on teaching and learning practices, parents and other education stakeholders, in addition to research around language policy. My research experiences in this center included visiting and observing classrooms in schools with students of predominantly Mexican background (90% and higher), and observing/facilitating mathematics workshops for parents in these schools. My interest in mathematics and the work around students of Mexican background increased with my participation in the Teacher Study Group (TSG), which addressed the teaching and learning of mathematics and other issues related to teaching PBLs. The TSG was carried at a school with mostly students of Mexican background. As a graduate student with a background different from education, this work allowed me to develop a better understanding of the school system in Arizona, teachers' experiences

with students from different backgrounds than theirs, and more importantly of the impact of language policies in the education of students whose primary language is not English.

In addition to my work with CEMELA, during my graduate training I had the opportunity to teach undergraduate students (pre-service teachers), required courses³ by the Arizona Department of Education (ADE). The experiences I had while teaching these courses have provided me with many opportunities to better understand the issues and strengths around teaching PBLs. These courses address language policy at the state and federal level, theories of first and second language acquisition, and the largest part of them allow pre-service teachers to become better acquainted with a range of strategies through different content areas, addressing the needs of PBLs. Through my interaction with pre-service teachers, I have been better able to understand how their schooling experiences, and rich or limited experiences learning a second language, have shaped the way they think about their future students. This can limit their ability as a teacher, or become a resource leading to students' academic success.

³ The required courses by the Arizona Department of Education (ADE) are Foundations of Structured English Immersion (SEI) and Methods of Structured English Immersion. With the passage of Proposition 203, and the outcomes of the case Flores v. Arizona all teachers and pre-services teachers are required to take 90 hours of training to help ELLs overcome the English barrier.

Scholars have suggested that bilingual education and language development address inequalities among Latinos and students other than White whose first language is not English-PBLs. The same patterns of inequalities are often observed around mathematics education in the United States (Hart, 2003; Martin, 2003). Despite the large amount of research on language acquisition and its interplay with content area, Mexican and Mexican-American students continue having experiences in this matter as restricted privileges, and in the case of mathematics particularly as an irrelevant subject. However, English and mathematics are crucial to succeed presently in the global context. These subjects carry multiple and increasing applications and implications that must be explored in order to improve the educational opportunities for minority children, and for a better society. One way to address the issues at the intersection of PBLs and the teaching and learning of mathematics is by considering a sociocultural perspective while documenting the historical inequalities and exploring the individual practices in particular classrooms.

CEMELA's theoretical framework, which is informed by sociocultural (Vygotsky, 1978) and sociocultural-historical (Rogoff, 2003) perspectives, has been very influential on my work around Mexicans and Mexican-Americans and mathematics education. CEMELA's research work focused its different studies around the intersection of language, culture, and mathematics (See Figure 1.1). This framework is important and appropriate to this study, since I am focusing on the impact of language policy on classrooms where the teachers' backgrounds differ from those of their students.

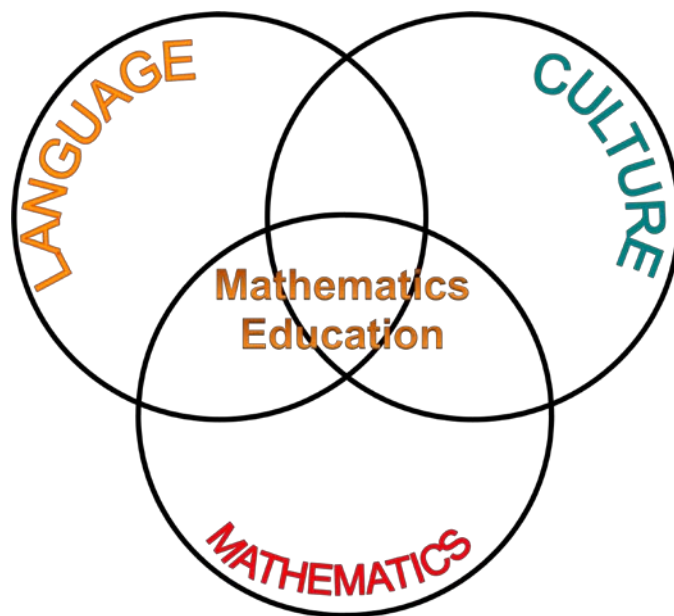


Figure 1.1. CEMELA's Theoretical Framework

Despite the research done around the intersection of the elements that constitute the CEMELA theoretical framework, it is a fact that presently the education of children of diverse background and abilities in the United States is strongly regulated by governmental agencies and policies such as No Child Left Behind (NCLB) and Proposition 203. Both NCLB and Proposition 203 have had an effect in mathematics classrooms that serve students whose primary language is not English, in addition to what has been documented by researchers on the intersection of language and mathematics education.

Mexican-Americans is the fastest growing group in the United States. According to the Census Bureau (2010), Latinos comprise the largest minority group in the United States (Table 1.1). This group accounts for 16.3% of the total U.S. population, and is primarily concentrated in the states of Arizona, California, New Mexico, and Texas. Within this group Mexican-Americans account for 10.3% of the U.S. total population

representing about two thirds (63.1%) of the total Latino population in the country.

Latinos in Arizona are 29.6% of its total population; within Latinos 87.61% are of Mexican Origin. The population of Tucson in 2008 was 39.5% Latino, and 91.3% of this population identified as Mexican American (36.1% of the city's population).

Table 1.1

Latino and Mexican-American Population

	United States (2010)	Arizona (2010)	Tucson (2008)
Latinos	16.3%	29.6%	39.5%
Mexican-Americans	10.3% (63.1% of Latinos)	25.93 (87.61% of Latinos)	36.1% (91.3% of Latinos)

Relevance of Research

Despite all the research around English language teaching and learning and bilingual education, English language education for PBLs in Arizona has reached its peak impacting the educational journey of these students. The implementation of stricter regulations for educating these students is impacting not only their academic achievement, but also what teachers know and do in their classrooms to address students' needs. To date, there are many studies that focus on the general impact of Structured English Immersion (SEI) models implemented by restrictive policies such as *Proposition 227* in California and *Proposition 203* in Arizona, but very few studies address the ELD four-hour English block model, that segregates students based on language proficiency, and provide limited access to core content areas (Rios-Aguilar, González-Canche, and

Moll, 2010). My study is an attempt to add to the work in this area of research to inform about the practices that take place in two different classrooms with students of the same background but with different language proficiency. In addition, this study informs on the role of the teachers' learning experiences in their attitudes and ideologies and how these impact the practices in their classrooms.

Research Questions

In this study I used an ethnographic approach to document the resources that influence the practices in two different third-grade classrooms in an English-only context set by current state policies. The goal of my study is to understand what impacts the teachers' classroom practices in a school with a large percentage of ELLs, and where officials are implementing a new model/approach to help students become proficient in English. In one classroom, students were already proficient in the target language – English, but some of them were still monitored for their language skills. In the other classroom students were segregated because they had not passed the Arizona English Language Learner Assessment (AZELLA) proficiency test [described in Chapter 2]. In addition, I seek to understand the relationship between the teachers' learning experiences and their attitudes and ideologies towards the teaching of mathematics and language. The following three questions guided this study:

1. What types of support do teachers in two different classrooms in an English-only context, mainstream and SEI/ELD, receive, and what additional resources do they look for to address the needs of their students for English language development and learning of mathematics?

2. What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful for students of Mexican Background in Particular?
3. How do the teachers' learning experiences around mathematics and language learning inform their classroom practices towards these areas?
4. What are the teachers' perceptions of their students and families and how do they compare themselves in relation to their student's backgrounds?

Organization of the Study

This dissertation is organized into 8 chapters. In this chapter (Chapter 1) I provide an introduction addressing the rationale, relevance of this research, and the research questions that guided the study. In chapters 2 and 3, I present a theoretical framework and review of the literature relevant to this study that has influenced my work around PBLs/ELLs and their teachers. In particular, Chapter 2 reviews the literature of the education of Mexicans and Mexican-Americans in the United States from a historical perspective following the Mexican American War of 1846, while in Chapter 3 the focus is second language acquisition theory, mathematics education and ELLs, and mathematics education and social class.

In Chapter 4, I describe the methods. I provide the context in which the study was carried out, reflection of the researcher, data collection and procedures, and data analysis. Data collection includes the use of ethnographic tools; the sources of this study come from field notes, video-recorded classroom sessions, participant observations, interviews (video- and/or audio-recorded) with both teachers and students, and teachers'

autobiographies regarding learning language and mathematics. In chapter 5, I provide a detailed description of the classrooms' ecology (teachers, students, and classroom settings and daily routines) in which this data were collected, addressing in this chapter my first question. In chapter 6, I analyze the major teachers' classroom practices that I observed in both the mainstream and the ELD/SEI classrooms based on their learning experiences and their impact in their beliefs and attitudes towards language and mathematics. In chapter 7, I address the teachers' perceptions of their students and families, and differentiated treatment towards their students, who are of Mexican background. Finally, Chapter 8 I summarize and discuss my findings. In this chapter I also address the implications for the education of PBLs/ELLs and for further research.

CHAPTER 2
UNDERSTANDING THE EDUCATION OF PBLs OF MEXICAN BACKGROUND IN
THE UNITED STATES

In this chapter I review the literature relevant to the education of PBLs focusing mostly on students of Mexican background as it is relevant for this study in which nearly one hundred percent of the students in the two classrooms are from this heritage. The emphasis of this review is on language policies at the federal and state level, bilingual education and other programs that address the needs of PBLs, and segregation of students based on their background and English abilities.

For several decades researchers in the United States have focused their work on issues of language and racial discrimination among non-White groups. Because of the sizeable population of Latinos in the American Southwest, this group of Mexican and Mexican-Americans are often target for education research. The education of language-minority children is one of the most controversial and significant issues raised by the new immigration influx in the United States (Del Valle, 2003), however, in the past, Mexican students were not immigrants to the Southwestern territory. For more than 150 years, these students continue to face similar issues of language and ethnic discrimination. It is through their history since the Mexican-American War that the education of Mexicans and Mexican-Americans in the United States can be better understood.

As an initial consideration, it is important to mention that there is no official language in the United States; there is no language provision in its Constitution. However, the anti-immigrant feeling in the United States has led to some states declaring

English their official language (Ager, 2001). Arizona is not the exception. This fact has impacted the ways in which PBLs are educated in this state. The many events in the history of education of this “minority” group in the Southwestern United States help explain many of the current issues related to their educational opportunities. Within the history of education of Mexicans and Mexican-Americans in the Southwestern states, language policy has prevailed as one of the main components in the agenda of those in power to influence the education of students whose first language is not English. Ager (2001) states the following in regard to immigrants of Latino background and language policy and planning:

The future role of Spanish is thus possibly the main issue for language policy and planning in the united states, despite the presence of large numbers of immigrants of other languages...The host community is generally so opposed to any desire to integrate with Spanish speakers that considerable efforts are undertaken to ensure that Spanish is and remains a marginalized language” (p.111).

Del Valle (2003) argues that “Arizona, home to significant numbers of Latinos and Native Americans still struggling to save their native languages, became a battleground between nativism and diversity” (p.63). She finds this phenomenon somewhat interesting since Arizona was originally part of Mexico and holds a rich history of linguistic diversity and is home to established Mexican-American and Native-American communities.

English-Only Rules: A Period for Language Assimilation (1850s-1950s)

The history of Mexicans and Mexican-Americans in the United States starts with the annexation of the Texas territory in 1845 and the Treaty of Guadalupe Hidalgo in 1848 in which, Mexico ceded almost half of its territory –California, Arizona, New Mexico, and portions of Nevada, Utah, and Colorado land (Leibowitz, 1971). People living in this territory became citizens of the United States automatically, strangers in their own land. Crawford (2004) states that the Treaty of 1848 guaranteed to the new Spanish speaking citizens the same rights as those given to the existing citizens in the country, including the right to their properties. However, language rights were not explicitly stated, but rather strongly implied. These rights have been rarely respected. For Mexicans/Mexican-Americans, the southwestern states hold a rich history of hostility and discrimination since the end of the Mexican-American War, a history that may explain language patterns within the context of education.

Arizona was part of the New Mexico territory until 1863 and the new citizens had a different, better experience from those in California and Texas. There were no language provisions in the laws of 1863 and 1869; nevertheless, the public schools had a predominantly Spanish character. By the 1870s the legislation of this territory was written in Spanish and later translated into English. Records from New Mexico school authorities from 1874 show that only 5 percent of schools provided instruction in English, while 69 percent of instruction was in Spanish. Other school records show that the instruction was in both Spanish and English (Leibowitz, 1971; Crawford, 2004).

Leibowitz (1971) addresses that in 1884 New Mexico passed a new law recognizing Spanish as the language of instruction in its schools.

Of the four southwestern Border States, Arizona had the least historical information regarding education from the Mexican American War to the mid-20th century. However, Sheridan (1986) documented the experiences of Mexican and Mexican American children in Tucson during the period of 1854-1941. For instance, he introduces in a critical manner, the history of Mexicans and Mexican-Americans in Tucson within the public school system by the end of the 19th century and early 20th century. He states in his narrative that,

No institution revealed the complexity of this subordination better than the public school system... Mexicans helped pioneer both public and private education in southern Arizona... But times changed. By the end of the nineteenth century, the public schools were firmly in the hands of Anglo administrators and Anglo school boards. Despite a sincere desire to educate Mexican children, these authorities were never able to develop a school system that offered equal educational opportunities to Mexicans, Blacks, and Native Americans, as well as Anglos, Much of the problem was due to the harsh realities of poverty and discrimination outside the classrooms. But the problem was aggravated by the cultural stereotypes of school personnel themselves, stereotypes which made it even more difficult for Mexican students to succeed in the public schools (p.217).

The participation of Mexican educators compared to Anglo educators in the public schools was minimal. These discrepancies, which still prevail, continued since the end of the 19th century. In addition to the complex process of subordination of the Mexican population, Sheridan describes how Mexican students were segregated in inferior classrooms for not being able to speak English when first attending school. With the Americanization wave speaking a language other than English was prohibited in the classrooms. In his narrative, some students were severely punished and humiliated for speaking Spanish not only in the classrooms, but also in the playground. He argues that in spite of the good intentions and desire to educate the entire student population that included Mexican, Native American, Black, as well as White children, the school authorities were never able to provide equal facilities for all children. Mexican children represented the majority at the beginning of the 20th century.

While law segregated Black children, segregation for Mexicans was *de facto* since most of them lived in the barrios, apart from the Anglos; therefore, they attended the barrio schools. Moreover, the *de facto* segregation of Mexican students was typically meted out based on no other factor than if a student had a Spanish surname. These students were placed in the famous, or infamous, “1C” Americanization English courses mandated by Arizona law. The “1C” English classes, which were the first taste of public education for a large number of Mexican children of different ages, lasted from 1919 until 1965 (Sheridan, 1986).

Nationally, assimilation or “Americanization” efforts started in 1889, when Wisconsin and Illinois adopted the English-only rule, promoted by the American

Protective Association (APA) in both public and private schools (Crawford 2004; Ovando, 2003). The term Americanization commonly refers to the process that immigrants to the United States go through to become assimilated into American society, assuming that they should learn English and acquire the “American culture”, traditions, and lifestyle. The process also assumes that immigrants should abandon their mother tongues and their cultural practices. When not achieved voluntarily, Americanization must be coerced (Combs, 2005). Ovando (2003) describes Americanization classes as a way to prepare immigrants for assimilation into mainstream society. In 1906, Congress passed the first language law, the so called Nationality Act of 1906, requiring all immigrants to speak English in order to become naturalized Americans (Baker, 2001; Crawford, 2004; Ovando, 2003).

After War World I, in 1917, enforcement of the English-only rule was even more rigorous; it hit its highest point with the anti-German sentiment. In 1919, the Americanization Department of the United States Bureau of Education suggested and sponsored bills that recommended that all schools, private and public, be conducted solely in English. The same year, fifteen more states operated under this legislation. In Texas for example, the legislature made it a criminal offense to teach in any other language, and children were punished for speaking Spanish even during the children’s recess time (Crawford, 2004). By 1923, the English-only rule was enacted in 34 states, including the rest of the southwestern states; bilingual education, or the use of languages other than English, was dismantled throughout the country (Castellanos, 1983; Crawford, 2004; Kloss, 1977; Ovando, 2003).

In a recent study Combs (2003) found that programs such as the “1C” sprawled across areas with a large Mexican population, mostly mining communities in Arizona. She reports that the narratives of most of her participants account for negative experiences. She also found that regardless of those negative experiences, some became teachers or were able to succeed in life. Although the “1C” programs ended in Arizona with the signing of the Elementary and Secondary Education Act in 1965, similar practices were still prevalent until the mid 1970s.

Phrases such as “strangers in their own land” (Crawford, 2004) and “mistreated in their own home” (Gloria, Castellanos, & Kamimura, 2006) have been common when referring to Mexican Americans in the southwest. The following quote from Superintendent Rose in his 1920-1921 report depicts his arrogance and feelings towards students of Mexican origin:

One phase of the foreign problem in Tucson is that these foreigners live in communities – districts where they can live their whole lives and not feel the need of knowing English, because they have in these communities their own establishments as far as commercial life is concerned. One can readily see that the children hear no English spoken in their homes nor while at play. Only in the school room do they speak and hear English. The supervisor and teachers of these children have been persistent in their efforts to get English into the homes and to awaken in the parents and interest to learn English and to assimilate the high ideas and customs of this country (Sheridan, 1986, pp. 225-226).

This quote by the superintendent about Mexicans and Mexican Americans rhetorically answers the question “Why don’t they learn English?” However, this question is sometimes posed with genuine interest and concern (Tse, 2001). Montoya (2001) states that in order to understand the complex ways in which Mexicans and Mexican American children have been educated throughout the Southwest, it is important to remember that they were racially classified as White up to the 1970s, although there have been many occasions in which politicians refer to Mexicans as Indian.

Desegregation Efforts within the Language Assimilation Period (1930s-1950s)

De facto segregation was common in the Southwestern states; however, a few desegregation cases were filed in Texas and California during the first half of the 20th century. With no success, the case of *Independent School District v. Salvatierra* (1930-1931) was the first in Texas regarding illegal segregation on the basis of race. In Del Rio, Texas, Jesus Salvatierra and other parents of Mexican origin, argued that their children were provided neither the same facilities nor equal academic resources as White students were provided (MacDonald, 2004), even though racially Mexican American Students were considered White. The district’s judge ruled that the school district segregated Mexican American students on the basis of race, but the state’s highest courts overturned this later with the argument that it was not intentional; children needed to learn English and the school district stated that it was based on educational needs. The case was also taken to the U.S. Supreme Court, but was dismissed as it was outside the court’s jurisdiction (Alvarez, 1986; Montoya, 2001).

In spite of the fact that California did not include Mexican-Americans in the Education Code that states that Negroes, Mongolians, and Indians were prohibited from admission to the regular public schools, they were the most segregated group by the 1920s (Montoya, 2001). The case of *Alvarez v. Lemon Grove School District (1931)*, also known as the Lemon Grove Incident, became the nation's first successful desegregation case. The case was filed after parents of children of Mexican origin, who attended grammar school, became aware that their children were sent to a separate building, a wooden two- room structure called the "caballeriza" (barn). Parents sought guidance from a Mexican diplomat who arranged for lawyers to represent them. They chose Roberto Alvarez as the plaintiff in the class action suit. Ultimately, Judge Chambers ruled against the Lemon Grove School district and ordered them to reinstate all children in the regular school. He declared that the separation of the Mexican children was an obvious act of segregation and, moreover, the Mexican children legally were entitled to the same school as Anglo children (Alvarez, 1986; Madrid, 2008, Montoya, 2001).

The case of *Mendez v. Westminster (1946-1947)* in California became the first desegregation case taken to federal court. In this class action lawsuit stemming from Orange County, Gonzalo Mendez and a group of Mexican American World War II veterans fought so that their children might attend the same school as White students. They claimed that their children, along with 5,000 other children of Mexican descent, were forced to attend "Mexican schools" in the Westminster and surrounding school districts. The Ninth Circuit U.S. Court of Appeals ruled that school districts could not segregate on the basis of national origin. Segregation was a violation of the state law and

denial of equal protection under the Fourteenth Amendment. This case brought an end to *de jure* segregation in California Schools (MacDonald, 2004; Montoya, 2001).

Another pivotal case in the fight towards desegregation was *Delgado v. Bastrop Independent School District (1948)*. In this case Minerva Delgado and 20 other Mexican American parents, sponsored and funded by the League of United Latin American Citizens (LULAC), filed a case against the Bastrop Independent School District and three other districts, arguing that Mexican American children were segregated from White children without specific provision of law. In addition, the plaintiffs accused these districts of depriving children of equal facilities, services, and education. Judge Ben Rice ruled in favor of the plaintiffs; however, the court did not allow separate classes for first-grade Mexican American children with English deficiencies based on standardized tests (MacDonald, 2004).

MacDonald (2004) argues that Mexican Americans in the southwest initiated school desegregation cases decades earlier than the landmark case *Brown v. Board of Education (1954)*, which outlawed segregated schools as inconsistent with the equal protection guaranteed in the Constitution. However, (Crawford, 2004) argues that *de facto* and *de jure* segregation of Mexican and Mexican American children remained prevalent in schools in the southwestern states for years.

Federal Policy: A period of Efforts for a more Meaningful Education (1960s-1980s)

A decade later after *Brown v. the Board of Education (1954)*, the civil rights movement led to the 1964 Civil Rights Act and the Elementary and Secondary Education Act, which passed in 1965. These acts brought changes to the education of minority

groups by prohibiting discrimination on basis of color, race, or creed in federally funded programs, addressing the academic needs of poor children (Baker & Jones, 1998; Castellanos, 1983; Crawford, 2004; Gwendolyn, 1997; Ovando, 2003). According to Gwendolyn (1997) support for bilingual education programs was not visible until 1968, when Congress passed the Bilingual Education Act of 1968. This legislation became part of Title VII of the Elementary and Secondary Education Act that provided additional funding to school districts interested in creating programs to meet the “special educational needs” of English language learners (ELLs) (Castellanos, 1983; Crawford, 2004). Title VII did not require bilingual education (Crawford, 2004), but the English-only legislation that still prevailed in some states was destabilized to some extent with the passage of this law (Baker, 2001).

Despite the changes in the national educational system, Mexican students in Arizona continued their journey in segregated classrooms. In his narrative, Sheridan (1986) details a desegregation case from 1974 in which Black and Mexican plaintiffs sued with no success the Tucson School District Number One for discrimination against non-Anglo children. However, court cases began to develop that required services be provided for ELLs. *Lau v. Nichols* (1974) for instance, a major case that involved Chinese children was considered the second most important event in the rebirth of bilingual education. The decision of this case ruled in favor of approximately 1,800 Chinese children from San Francisco, CA, who alleged discrimination by being provided instruction in a language they did not understand. The Supreme Court stated that by

accepting federal funds, the San Francisco School District violated Sections 601 and 602 of Title VI of the Civil Right Act of 1964. The Supreme Court –Justice Douglas– wrote:

There is no equality of treatment merely by providing students with the same facilities, textbooks, teachers, and curriculum; for students who so not understand English are effectively foreclosed for any meaningful education.

There were not specific remedies imposed on the San Francisco School District; the options given were to teach English to children of Chinese descent and children from other minority groups, or to give them instruction in their native languages. There was much resistance to the implementation of programs to help ELLs, but the *Lau Regulations* of 1980 helped the continuance of the Lau decision (Crawford, 2004). Dual language programs and other approaches were the outcome in the instruction of minority children in the San Francisco School District.

Another important piece of legislation that Congress passed in 1974 is the Equal Education Opportunities Act (EEOA). This piece of legislation extended the scope of the Lau decision to all public school districts. The U.S. Office for Civil rights (OCR) put additional pressure on school districts to implement some kind of meaningful instruction for ELLs. The next year, in 1975, it issued the *Lau Remedies*, providing specific guidelines to help non-complying school districts to take affirmative steps to rectify their educational deficiencies (Ovando et al., 2006).

Another case that involved Mexican American children was *Castaneda v. Pickard* (1981). In this case, in a class action suit, Mexican American parents and their

children filed against the Raymondville Independent School District in Texas. The plaintiffs alleged that the school district engaged in practices of racial discrimination, violating the civil rights of English language learners (ELLs) under the Fourteenth Amendment and the Equal Education Opportunities Act of 1974 (EEOA). The legacy of this case was the “Castaneda, three-part-test” that determined school district compliance with the EEOA by assessing whether their programs for language minority students were (1) based on a sound educational theory, (2) implemented with adequate resources and personnel, and (3) evaluated and proven effective (Ovando, 2003).

Anti-Bilingual Sentiment and English-Only Policies Period (1980s-Present)

With the decision of the *Lau v. Nichols* case and the passage of EEOA, English language learners in the United States had a better experience in their education for approximately twenty years (Ovando, 2003). Different bilingual programs and other approaches were established across the country to overcome language barriers. Bilingual or ESL instruction reached its peak in the 1970s, but controversy continued around this approach.

The period of “dismiss”, 1980s-to present as Ovando (2003) calls it, started with the Reagan Administration. An anti-bilingual sentiment flourished again and this administration was particularly supportive of it. President Reagan’s words appeared in the *New York Times* in March 1981

It is obviously wrong and against the American concept to have a bilingual education program that is now openly, admittedly dedicated to preserving their native language and never getting them adequate in

English so they can go out into the job market and participate (Crawford, 1999; Ovando, 2003).

The support by members of his administration was obvious. In 1985 William Bennett the Secretary of Education expressed an ambiguous view of bilingual instruction, asserting that instruction in two languages had failed. In his opinion, the detriment and exclusion of the English language was the result of including other languages in the curriculum (Escamilla, 1989). During Reagan's first administration bilingual education funding was reduced by thirty-three million dollars (Gwendolyn, 1997), only about twenty five percent of the funds from Title VII were provided for English-only special alternative instructional programs, called Structured or Sheltered English Instruction (Baker, 2001; Escamilla, 1989; Ovando, 2003).

By the end of the Reagan Administration the *Lau Regulations* developed by the Commission on Civil Rights were withdrawn since they did not have the strength of law. This action allowed local politicians to create their own language policies (Baker, 1998). Colorado and California, for example, repealed their bilingual statutes in 1984 and 1987 respectively, and Texas and Illinois revised theirs in 1983 (Escamilla, 1989).

The sink-or-swim or submersion method was the approach to educate PBLs in schools across the U.S. within the restricted period –1880s-1960s (Ovando, 2003) and beyond. Without any doubt, presently the education of children of diverse backgrounds and abilities in the United States is strongly regulated by governmental agencies and policies. No Child Left Behind (NCLB) is a clear example of top-down control. Darling-Hammond states that “the broad goal of NCLB is to raise the achievement levels of all

students, especially underperforming groups, and to close the achievement gap that parallels race and class distinctions.” However, the complex 600-page law has had a negative impact on states, districts, schools, and students in ways its authors never envisioned. Despite all research done around educating Mexican and Mexican-Americans addressing language and desegregation, Arizona continues adopting policies targeting this population.

Current Policy Landscape for Potentially Biliterate Students (PBLs) in Arizona

Within the last two decades, the implementation of language policies in schools across the United States has impacted tremendously the way in which immigrant students or PBLs are educated. English immersion programs or English-only instruction, are more frequently implemented based on the mistaken impression that forcing students to learn in a new language, in mostly segregated classrooms, would result in faster acquisition of the target language and consequently better school performance (Gándara, 2010).

These language policies in schools are the result of *language ideologies*.

Cummins (2000) has the following to say regarding this topic:

Language ideologies represent statements of identity. They range along a continuum from coercive to collaborative in nature. In the former case, they are articulated as an expression of discursive power by dominant groups with the intent of eradicating, or at least curtailing, manifestations of linguistic diversity. The transformation of these ideologies into language policies, as illustrated in California by Proposition 227 and its predecessor proposition 187, carries material consequences for all of those

who do not speak the dominant language at home. Students are denied rights to instruction through their home language (a language that they understand), and the possibilities for children to develop bilingualism and biliteracy are dramatically reduced (p. ix).

Arizona has much in common with California, regarding its efforts to educate English language learners, because of its large Latino/Mexican immigrant population. The patterns in language policy or anti-immigrant initiatives are clearly evident. It has been stated that what happens in California in this regard, is more likely to happen in Arizona but to a stronger degree. Examples of this are the passage of Proposition 227 in 1998 in California and Proposition 203 in 2000 in Arizona, impacting severely language instruction in public schools. In 1994, California voters passed Proposition 187, known as the “Save Our State” initiative, an anti-immigrant initiative that required applicants for public benefits such as welfare, medical attention, education, etc. to prove their eligibility with documentation to show legal residency in the state of California (Alarcon, 1994). Years later, in 2004, Arizona voters passed Proposition 200, a ballot measure seen as a copy of California’s Proposition 187. A key provision, as Crawford (2004) states, would have removed the children of undocumented parents from public schools. The difference between the passages of these two ballots until now, is, that the California proposition was found unconstitutional in 1997 for denying federally mandated benefits to immigrants; meanwhile Proposition 200 faces a legal challenge.

The shape of the political context in Arizona with regards to educating PBLs has been altered since 1992 by *Flores v. State of Arizona*. In this cases Miriam Flores, on

behalf of the parents and students in the Nogales Unified School District, filed suit alleging that the state of Arizona was violating the Equal Education Opportunities Act of 1974 (EEOA), section 1703, which states that

No state shall deny equal educational opportunity to an individual on account of his or her race, color, sex, or national origin, by the failure by an educational agency to take appropriate action to overcome language barriers that impede equal participation by its students in its instructional programs.

The primary claim in this case was that the state of Arizona failed to provide adequate resources for ELLs. “The major complains of the suit were that ELLs were taught by under-qualified teachers, that the state lacked adequate processes of identifying and monitoring ELLs, and lacked adequate funding for appropriate educational programs for these students” (Mahoney, MacSwan, Thompson, Combs, Gabaldon, & McGrarty, 2005, p.32). 17 years later, in 2009, the court ruled in favor of the schools stating that the state of Arizona had in fact satisfied their obligation to meet the needs of PBLs. The ruling has since been appealed, and to date, there is no final decision made on the case.

The English-only movement succeeded in the states of California and Arizona by passing initiatives that restricted bilingual education. California voters approved Proposition 227 in 1998 eliminating the state’s bilingual education programs, and requiring that all instruction be conducted in English only. Two years later, on November 7 of 2000, the state of Arizona passed a similar initiative, Proposition 203, titled “English for the Children” but with more restrictions. Ron Unz, the initiator of both Propositions

227 and 203, argued that children were staying too long in dual language programs and the English language proficiency was not achieved quickly enough (Ovando, 2003). Two years after Proposition 203 passed in Arizona, a similar anti-bilingual legislation, *Question 2*, passed in the state of Massachusetts. The same year, in November, 2002 Colorado was the first state rejecting the English-only rule, *Proposition 31*. Both *Question 2* and *Proposition 31* were supported by Ron Unz.

The contexts of bilingual education in Arizona have been shaped by Proposition 203 (Stritikus and Garcia, 2005) which are reflected in schools with large PBLs population. It is obvious that bilingual education programs in Arizona were the target of this proposition; by looking at the population and socio-political and –cultural context, one can assume that there is also a target population – Mexican and Mexican Americans. It is not difficult to see that *Proposition 203* is a copy of *Proposition 227*; Crawford (2000) argues that Ron Unz’s plans were to “tighten the screws with Proposition 203”.

The many flaws found in this proposition have impacted the entire school community – teachers, children, and parents. Over the past 10 years, several scholars in education have focused and continue their work on the impact of these propositions on teachers (pre-service and in-service), children, and parents.

The focus of *Proposition 203* is entirely on language and instruction, the first problem I find in it is with the definition of *bilingual education*. Proposition 203 defines this way: “Bilingual education/native language instruction means a language acquisition process for students/pupils in which much or all instruction, textbooks, or teaching materials are in the child’s native language other than English” (A.R.S., 15-751). Soltero

(2004) states that bilingual education, or dual language education, as she calls it does not have a clear-cut definition; a more reasonable definition of this term is the one Ovando and Collier (1985) quoted from the U.S. Office of Education (1971):

[Bilingual education is]...the use of two languages, one of which is English, as mediums of instruction for the same pupil population in a well-organized program which encompasses all or part of the curriculum and includes the study of the history and culture associated with the mother tongue. A complete program develops and maintains the children's self-esteem and a legitimate pride in both cultures. p. 2.

Ovando et al (2006) state that "bilingual education is neither a single uniform program nor a consistent 'methodology' for teaching language minority students. Rather, it is an approach that encompasses a variety of program models, each of which may promote a variety of distinct goals." It is not a program that addresses mostly the child's native language over English as stated by this Proposition.

Another ambiguity in this proposition is the use of the child's native language for instruction. When defining "Sheltered English Immersion" or "Structured English Immersion" Proposition 203 stipulates that "Although teachers may use a minimal amount of the child's native language when necessary, no subject matter shall be taught in any other language than English, and children in this program learn to read and write solely in English (A.R.S., 15-751)." The new law replaced bilingual education with "Structured English Immersion" (SEI) classes in which instruction is only in English

even though teachers are allowed to use a minimal amount of the child's native language for clarification (Combs et al., 2005).

The waivers system is also a flaw given the circumstances in which resources are made available to parents. Despite the fact that students might qualify for waivers to be enrolled in bilingual or ESL programs if their parents present a written request, these requests can be rejected without any justification. This initiative deliberately ignores a significant amount of available research done around bilingual education and second language acquisition during the last four decades (Combs et al., 2005). The research done around the implementation of Proposition 203 shows that there are substantial discrepancies between the existing research in second language acquisition and the statements supporting this initiative. This is a fact that teachers and children are facing with the implementation of the SEI or English Language Development (ELD) programs.

After the period of one school year, ELL students are expected to become proficient in academic English, both in oral conversation and written form, with the expectation to be transferred to "English language mainstream classes" (A.R.S., 15-752; Combs, et al., 2005). The question then is: How likely is it that a child can acquire English (a second language) within one year of schooling? In contrast, there is large body of research that suggests that it requires learners of a second language approximately 7 to 10 years to acquire academic language (Collier, 1995). Not even social language can be developed within one year of schooling (Collier, 1995; Guerrero, 2004). Guerrero (2004) argues that proponents of Proposition 203 fail to see, or perhaps ignore, the many significant individual characteristics that can influence the rate at which

English Language learners acquire the English skills for school. Guerrero stresses age differences since the proponents of these propositions claim that, “Scientific studies have all shown that young children acquire language extremely rapidly, and this is confirmed by almost all the anecdotal evidence which one encounters” (p.175). He also argues that the difference between the structure and level of proficiency of the first language is key in developing a second language. Children of immigrant parents and children whose first language is not English are those with the greatest challenges in their educational process. It has been shown that if the child’s native language and prior background knowledge is not used at all as a means for instruction; it makes it more difficult for him/her to succeed in school (Echevarria and Graves, 2007, Krashen, 1992).

The AZELLA: Arizona Language State Assessment

There are a variety of tests across the country to determine whether a student is an ELL or not. Arizona with its anti-bilingual policy is not an exception and has adopted measurements that inaccurately determine the proficiency of a student based on a ‘one question’ survey. The Arizona English Language Learner Assessment (AZELLA) test is used to determine proficiency in the English Language. This test is given to students at the start of the school year, after their parents have completed the Primary Home

Language Other Than English (PHLOTE) survey. This survey indicates that a language other than English is spoken at home by the child. This tool stratifies students, and places them into self-contained classrooms for the entire school day. Consequently, students are grouped by language ability, with no regard to other abilities. The AZELLA test emerged from the Stanford English Language Development (SELP⁴) test, and was adopted by the Arizona Board of Education for statewide use in fall of 2006, with the goal to identify and classify ELLs for the SEI or ELD program.

In 2006, the state of Arizona passed House Bill (HB) 2064, whose goal was to isolate ELLs from students whose first language is English, and restricting them from access to more fluent English speakers. With the passage of this bill, Arizona implemented stricter English-only regulations for educating ELLs (Gandara et al,2010). This bill established a task force charged with creating research-based programs for the SEI model (Arizona Department of Education, 2008).

The Task Force created the English Language Development (ELD) program, a new model for SEI, requiring a minimum of four hours a day of English for the first year

⁴ SELP (Stanford English Language Development) test was developed to meet the requirements of federal legislation (No Child Left Behind –NCLB) and state legislation (Arizona Proposition 203 in 2000). The NCLB federal legislation required that every state develop their own set of English language development standards and an aligned English language proficiency test

in which the student is classified as ELL (Gandara et al, 2010). During this four hours of isolation, PBLs receive instruction to develop all four skills of language (writing, reading, listening, and speaking), without including content subject areas. In addition:

Students are to be grouped with other students of the same proficiency level, and the Task Force has specified the number of minutes to be spent in each element of language and literacy instruction with different allotments at each level of proficiency. Thus, EL students in Arizona are segregated into classrooms with no exposure to English-dominant peers for 80% of the school day (4 hours), and the instruction they receive focuses on learning English over learning subject matter (e.g. math, science, social studies) (Gandara et al, 2010, p.27).

Thus, the introduction of the four-hour English block with only one year to gain proficiency in English brought dire consequences to content instruction. Initiatives and bills such as Proposition 203 and HB 2064, lead students who fail to pass the AZELLA test after one year in an SEI classroom or ELD program, to continue in the SEI classroom until they become proficient according to the test, which in some cases may take up to 2, 3, or more years. Clark (2009) who addressed the Arizona Task Force states that,

The English Language is the main content of SEI instruction. Academic content plays a supporting, but subordinate role. The dominant focus is language itself: its rules, uses, forms, and application to daily school and non-school situations and topics. The operant principle is that students

must have a strong understanding of the English language before they can be expected to learn grade-level content.

Proposition 203 is an example of mechanisms that subtract and devalue the linguistic resources of Latino/a families who have or want to have Spanish as an additional language. As mentioned, *Proposition 203* restricts not only bilingual programs but also English as a second Language (ESL) programs. With this proposition, bilingual teachers who are knowledgeable of their students' native language are deprived of the possibility of using this language as a resource (Ruiz, 1984) for the children's linguistic development. Gándara (2010), who has conducted research in Mexican communities in California, argues that with laws such as *Proposition 203*, Latino students are often triple segregated—by ethnicity, poverty, and language. She also affirms that in schools where these kinds of segregation are present, students are provided with a much weaker quality of education than schools that do not segregate students.

The broad goal of Proposition 203 and HB 2064 was fluency in English by students with *limited proficiency* in the language, yet at the symbolic level, the goals were very different according to Lawton (2007):

Proposition 203 tapped into nascent concerns about high levels of illegal immigration into the state from Mexico, the cost of educating immigrant children, including those born as U.S. citizens to illegal immigrants, and the political initiative referred to as “reconquista” – the notion that immigrant Hispanics are in the process of reclaiming territory that is rightfully theirs (p.5).

Beside policies such as Proposition 203 and HB 2064 that have a direct impact in the education and lives of PBLs, the educational context of Arizona is, and has been, historically shaped by measures or policies that target immigrant families/students, regardless of their status in this country or state. Moreover, since the passage of Proposition 203 in November of 2000, the state legislature passed different measures addressing language, education, and immigration. One of the few policies that will help us understand the sociopolitical context for education in Arizona is the passage of *Proposition 103*, making English the official language. As I mentioned earlier in this chapter, there is no official language in the U.S. since there is no provision for it in its Constitution. However, in November of 2006 by passing this proposition, and following the six years after Proposition 203 had passed, Arizonan voters made it more evident that their call is for *assimilation* by involving governmental institutions rather than for promoting diversity.

A few years later, Arizona voters passed two measures –Senate Bill (SB) 1070 and House Bill (HB) 2281– targeting Mexicans and Mexican-Americans. With the passage of SB 1070 on April 23, 2010, known as one of the toughest anti-immigrant legislation in the U.S. in generations, the proponents of this legislation aimed to identify and send back to their countries immigrant families with no legal documents to reside in the U.S. The law required police officers to stop and detain people if they suspect that they were illegal, verifying this with federal officials. If some of the main clauses of this law would have not been eliminated by a federal judge ruling after President Obama sued the state of Arizona, this law would have also make it a crime for failing to carry valid

immigration papers. Consequently, SB 1070 created tension among Latino/Mexican-families, who in most cases are concentrated in certain areas in cities such as Phoenix, Tucson, and their suburban areas. Many families with school children felt threatened and decided to leave Arizona. During Spring and Summer of 2010, it was very common to see pick-up trucks and cars stuffed with furniture and goods heading south to Mexico or other states in the U.S. in order to find a better life, and a more welcoming environment for their families. However, those who remain with the support of tens of thousands of other people across the country have formed marches to show their indignation for such severe measure.

A month later, in May of 2010 legislators passed HB 2281 which became effective in January of 2011. This legislation bans schools from teaching classes at any grade level –K-12 – designated for particular ethnic groups. According to the law, these classes promote the overthrow of the U.S government, promote resentment toward a race of class of people, and advocate ethnic solidarity instead of the treatment of pupils as individuals. Like SB 1070, aimed toward a particular population, proponents of HB 2281 aim to end Mexican-American Studies from the Tucson Unified School District (TUSD). One of the goals of the Mexican-American Studies Department is to advocate for, and provide culturally relevant curriculum to grades K-12, a curriculum that is centered within the pursuit of social justice.

The research discussed in this chapter provided me, in part, with the theoretical constructs that guided my study. I argue that it is important to look back at the educational experiences of students of Mexican background in order to understand some

of the practices in classrooms, such those in which this study took place. In the following chapter –three– I review the literature around second language acquisition theory, the intersection of second language acquisition theory and mathematics, and mathematics education of Latinos and social class.

CHAPTER 3

REVIEW OF THE LITERATURE

Becoming bilingual/biliterate is a very complex natural process that includes linguistic processes, social and cultural processes, and of course cognitive and academic development demands (Collier, 1995; Ovando, Combs, and Collier, 2006). For many children whose primary language is other than English and is the language for communication at home and community, there are innumerable barriers they encounter in school when learning content (e.g. mathematics, science, and social studies) in a language they do not understand. Many children become bilingual within a wide spectrum of bilingualism, and in some cases children transition to English, which become the primary language for communication depending on the programs or models implemented in schools. Classroom practices when implementing new programs or models often times reflect the teachers' experiences and training as part of their language ideologies and attitudes towards the subjects they teach.

Mathematics, as one of the core subjects in education, is frequently studied in relation to PBLs or ELLs. For instance, Moschkovich (1999) has addressed the needs of Latino students and Khisty (1995) has focused her work around issues of equity, both scholars addressing language as key in the education of this group of students –Latinos.

In addition to the historical and current socio-political context reviewed in Chapter 2, I look for other areas of literature to frame my work. In this chapter, I compile different theoretical perspectives (including second language acquisition theory), the intersection of second language acquisition and mathematics education, mathematics

education of Latinas/os and social class, and finally I shortly address literature around teachers' attitudes towards mathematics. These different areas of research allowed me to frame my dissertation and better understand the teachers' practices in a context that historically has been shaped by language policies, which have a direct impact on students whose primary language is other than English, with a potential to become biliterate.

Second Language Acquisition Theory

The main theoretical constructs of my research study are informed by a socio-cultural learning theory in which language acquisition and cognitive development are conceived of as cultural processes (Vygotsky, 1978). In this section of the chapter, as it is central to my research, I focus on language acquisition for school.

Language Acquisition for School

There is extensive research on second language acquisition theories that support the effectiveness or failure of the different language program models, and yet subtractive models are widely implemented across the country. Collier (1995) compiles this research within the following themes: *linguistic processes, social and cultural processes, cognitive processes*, as well as *academic development* (Figure 3.1) in which second language program models that promote academic success for PBLs are included. She proposes the following model of language acquisition for school arguing that these dimensions (sociocultural, linguistic, cognitive and academic) are interrelated, giving equal importance to each of them.

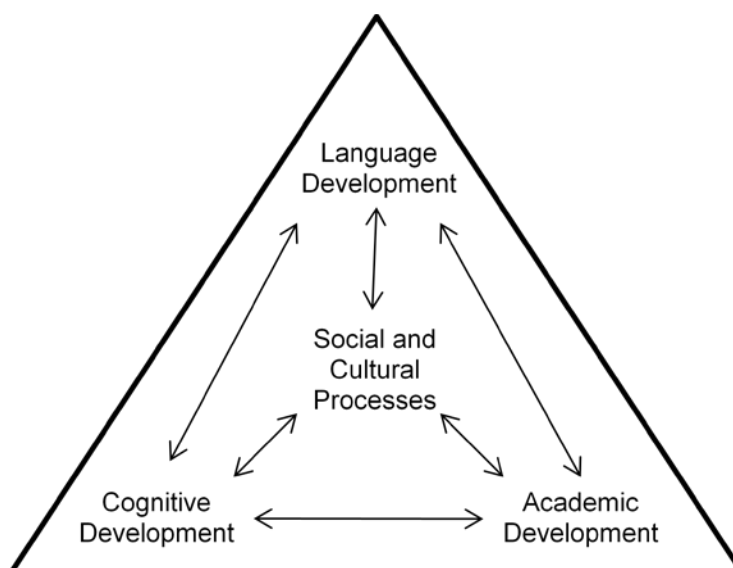


Figure 3.1. Language acquisition for school

Linguistic Processes

The first dimension addresses the *linguistic processes* that refer to the subconscious, natural and universal aspects of language development without substantial influence from educators. These processes occur inside the learner's head (Collier, 1995). Within the linguistic processes, there are included the two types of language proficiency, *basic interpersonal communication skills (BICS)* and *cognitive academic language proficiency (CALP)* (Collier, 1995). On one hand, BICS is related to the students' social skills, everyday and/or playground language, and takes from 1 to 3 or more years to acquire it. This kind of language is a phase in the language process that happens in familiar, interactive, and uncomplicated contexts. CALP, on the other hand, may take several years (7-10) to be acquired. Echevarria and Graves (2007) state that CALP is the phase for acquiring language that is more conceptual, and most likely, but not necessary acquired in school. These types of language proficiency can be explained by considering

the language demands of each dimension, and their situational contexts as shown in the following illustration by Cummins' grid (4 quadrants).

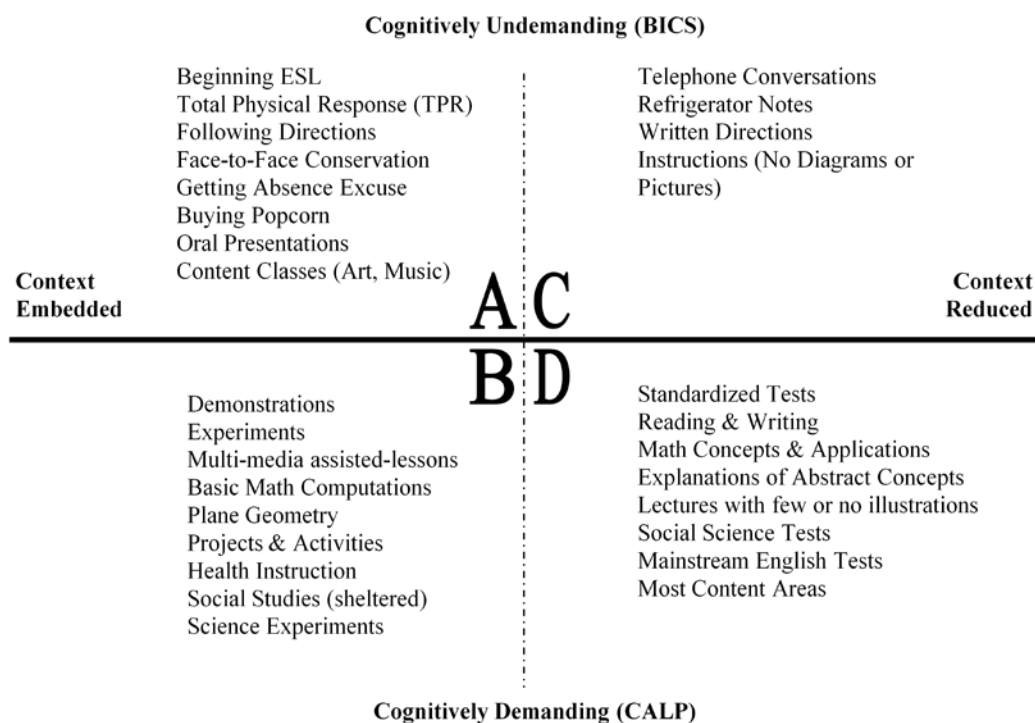


Figure 3.2. Cummins 4 quadrants

All of the activities above the solid black line (including in quadrants A and C) fall into the category that Dr. Cummins calls BICS. The activities in quadrant A are context rich. In quadrant A there are plenty of context clues to help with understanding. In quadrant C there are fewer or no context clues to help. However none of the activities in either A or C are cognitively demanding.

(Source jillrobbins.com/gwu/cummins_quad.jpg).

While the activities in this illustration address the cognitive demands, it is important to look at the context of the role of first language. Collier (1995) argues that

academic development in the first language has a positive effect on second language schooling. Two theories that support this are the *common underlying proficiency* or *interdependence of languages* and the *threshold hypothesis*. According to Cummings (1991), common underlying proficiency or interdependence of languages makes it possible to transfer academic skills, literacy development, concept formation, subject knowledge and learning strategies between languages. Crawford (2004) states that Cummins also asserts that skills in different languages occupy the same part of the brain, while differing at the surface, they reinforce each other at the base, as shown in the following illustration (Figure 3.3),

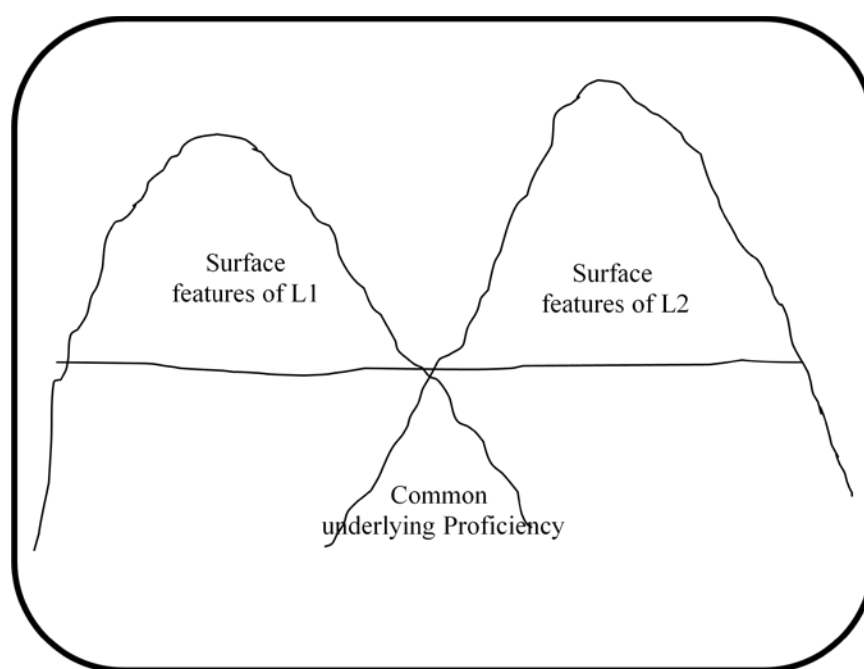


Figure 3.3. “Dual Iceberg” representation of bilingual proficiency

The theory of threshold hypothesis indicates that for the positive effects of bilingualism to be realized and for “cognitive deficits” to be avoided, children must have

a certain degree of CALP, and reach a threshold level of proficiency in their first language to support academic achievement in the second language. However, Cummins' theories of Threshold Hypothesis, and the distinction between BICS and CALP, have been criticized by other scholars. MacSwan (2000) for instance, suggest that these theories are rooted in the deficit theory of *semilingualism*, referring to a children's lack of full competency in their first and the target language impacting their academic performance, linguistic structure, and leading sometimes to language loss (Ovando, Combs, and Collier, 2006; Crawford, 2004).

Another theory associated with the linguistic processes is the one named by Krashen as *silent period*. With frequency, regardless of literacy development in PBLs first language, teachers of these students are impatient for oral production during the first months. This theory explains that PBLs normally exhibit this six months or longer after they have entered school, and then suddenly they start speaking in English.

Social and Cultural Processes

There is a belief that greater exposure to English for PBLs will activate their natural second language acquisition process. Collier (1995) argues that this does not happen unless these students have a quality interaction of at least 2-3 hours per day with their native English speakers in school. *Social and cultural processes* are important factors that impact positively or negatively on language acquisition. The *affective filter* theory explains that a number of psychological and attitudinal factors such as motivation, self-confidence, and anxiety may, and usually prevent the functioning of what Chomsky calls the language acquisition device (LAD), the part of the brain responsible for

acquiring language (Krashen, 1992). Another theory related to the socio-cultural processes in second language acquisition is *bicultural ambivalence*. Cummins argues that students show this by rejecting the culture of their first language, and having a real sense of confusion about the second language and culture. Thus, the quality of implementation of good programs for PBLs may result on positive cultural identity.

Delgado-Gaitán (1990) argues that an important part of the solution for PBLs success in school is *empowerment*, which symbolizes the struggles embodied in minority groups gaining access to meaningful education and general success in life (Ovando, Combs, and Collier (2006). Based on the term of “empowerment pedagogy” proposed by Cummins, in his analysis of U.S. societal patterns from a language-minority perspective, Ovando, Combs, and Collier (2006) state that “*empowerment pedagogy creates an interactive, experiential classroom in which critical thinking skills are developed; cooperative learning is used for interactive , small group problem solving; and process writing is developed.*” Crawford 2004 states:

Cummins has come to believe that language of instruction is probably not the most significant variable for English learners. He suggest that “sociocultural determinants of minority students’ school failure are more fundamental than linguistic factors.” Bilingual instruction is merely one feature of the “educational intervention” that is necessary. To be effective, he argues, schooling must “counteract the power relations that exist within the broader society.” That is, it must remove the racial and linguistic stigmas of being a minority child. “Power and status relations between

minority and majority groups exert a major influence on school performance, he explains. The lower the status of a “dominated group” the lower the academic achievement (p.198).

Cognitive Processes

A third component of second language acquisition is cognitive development. This component is determined by the *cognitive processes* controlled by the brain that are within our conscious grasp, meaning that these processes can be mediated by the learner and influenced by the teacher and the classroom setting, and differing from linguistic processes (Collier, 1995). Ovando, Combs, and Collier (2006) assert that several scholars give a more central role to the conscious cognitive processes in second language acquisition. Collier (1995) and Ovando, Combs, and Collier (2006) quote Wong Fillmore (1991a) as she describes some of the cognitive processes to be central in second-language acquisition:

What learners must do with linguistic data is discover the system of rules that speakers of the language are following, synthesize this knowledge into a grammar, and then make it their own by internalizing it.... Learners apply a host of cognitive strategies and skills to deal with the task at hand: They have to make use of associative skills, memory, social knowledge, and inferential skills in trying to figure out what people are talking about. They use whatever analytical skills they have to figure out relationships between forms, function and meanings. They have to make use of memory, pattern recognition, induction, categorization, generalization,

inference, and the like to figure out the structural principals by which the forms of the language can be combined, and meanings modified by changes and deletions (pp.56-57).

What happens inside the learners head for second-language acquisition is explained by Chamot and O'Malley (1994) through three different learning strategies: Metacognitive, cognitive, and social/affective. Metacognitive strategies, as they state, is related to planning for learning, and PBLs monitor their own comprehension and production, and evaluate their own results. An example of this kind of conscious strategy is explained by the *monitor hypothesis*. Krashen (1992) makes a distinction between *learning* and *acquisition*; he argues that acquisition leads to proficiency or fluency, while learning has to do more with accuracy. He talks about an internal editor or monitor that self-corrects as we use language. This would not happen if a person/child does not know the rules of grammar, therefore not correcting him/herself in a timely manner.

In cognitive strategies, as PBLs use manipulative materials, they learn mentally by making images or elaborating, or physically by grouping items to be learned or by writing notes. Finally, social/affective strategies are related to the interaction of PBLs with another person to assist learning. Within social affective strategies, is possible to make connections with the input hypothesis, if learning is assisted by another person. Krashen (1992) states that we acquire language when we understand messages or receive comprehensible input, that is, "what" is said or read is the important aspect. This

hypothesis claims that PBLs move from “i” to “i+1” by understanding input containing “i+1” where “i” represents the last rule acquired, and “i+1” the next rule to be acquired.

Academic Development

Several second language program models, approaches, and educational practices have been developed and implemented throughout the history of Education of PBLs in the U.S. to address *academic development* (fourth component of the model of language acquisition for school). Some of these programs that are created and developed according to the needs of PBLs are *ESL Pullout or traditional ESL, ESL Content or Sheltered [English Content] Instruction (SI), Structured English Immersion (SEI)*, and bilingual education programs such as *Transitional or Early-Exit Bilingual Education, Maintenance or Late-Exit or Developmental Bilingual Education, and Bilingual Immersion, Two-Way Bilingual, or Dual-Language Education*. Scholars in the area of second language acquisition also make a distinction between programs as subtractive or additive second language models. With the implementation of subtractive models, PBLs tend to lose their native language; whereas the benefit of additive language program models is to become proficient in two languages, adding value to educational experiences (Soltero, 2004). From those mention above, except for the last one – bilingual immersion, two-way bilingual or dual-language education – all are subtractive language program models.

ESL pullout is the most widely implemented of all program models (Ovando, Combs, & Collier, 2006) in the education of PBLs. While students are literally pulled out of mainstream classes for a period of time on a daily basis for small group tutoring, in ESL content or sheltered instruction, the academic objectives are covered in the students’

regular mainstream classroom. In a structured English immersion program there is no use of the PBLs native language, and students are instructed with specialized ESL classes tailored to levels of English proficiency. In SEI classes, PBLs are expected to learn English and the academic subjects at the same pace and level as students whose primary language is English (Soltero, 2004).

While in transitional or early-exit, maintenance or late-exit/developmental bilingual education programs the use of PBLs is used along with the target language – English– they are considered subtractive. These programs provide extensive instruction in the native language as well as in English, but once children attain certain level of proficiency in the English language, they are transitioned in monolingual English classes. In the early-exit programs, the transition to the target language last from 1-3 years, while in late-exit the transition to English takes from 4-6 years (Ovando, Combs, & Collier 2006). On the other hand, in bilingual immersion, two-way bilingual, or dual-language education program models, PBLs receive extensive instruction in their native language as well as English. Unlike students in transitional programs, in these programs English language learners keep receiving instruction in both languages after they become proficient in English, usually during K-12. The amount of use of PBLs native language in these models varies from 50 to 90%. Although bilingual immersion, two-way bilingual, or dual language education programs are not the most popular in the U.S., they are growing in number and in the diversity of languages taught (Ovando, Combs, & Collier, 2006).

Despite all research on programs models or approaches that have proved to provide assistance for language acquisition, *submersion* or “sink or swim” which was the approach to in the early 20th century, is still a common practice in schools. This approach was outlawed by the Supreme Court as a violation of minority children’s civil rights in the case of *Lau v. Nichols*, and provides no structured support to PBLs for second language learning, and assumes that if students do not learn English fast enough they will fall behind academically.

The Intersection of Second Language Acquisition Theories and Mathematics

A number of studies have contributed to the body of research on the intersection of second language learning and mathematics (Coggins et al, 2007), addressing PBLs of Latino background (Kitchen and Civil, 2011; Tellez, Moschkovich, and Civil, 2011). Within the context of my research, it is important to understand the intersection between second language acquisition and mathematics, often viewed as a universal language (Robitaille and Travers, 1992), particularly in environments such as the one generated by English-only policies.

Ron (1999) argues that the trend toward mathematics reform has addressed the importance of language in mathematics classrooms. In addition, he argues that in mathematics reform classrooms, children are encouraged to reflect and provide [or verbalize] their mathematics solutions. He states that recently the acknowledgement of the important role of language in mathematics education has been addressed. In this regard, Moschkovich (2002) states that if Mathematics reforms are to include ELLs, research needs to address the connection between language and mathematics, learning

should occur from a perspective that combines both the language and mathematics perspectives, bilingualism, and classroom discourse.

Garrison and Mora (1999) propose The Language-Concept Connection framework⁵. They state that “in linguistically diverse classrooms, teachers must also consider the linguistic complexity of the language used in instruction and the language proficiency of the students in order to provide comprehensible input” (p. 36). This is important and relevant to this research, because in order to help students to move through different levels in their concept and language development, teachers need to know their students’ abilities, so they may implement or develop practices that address the students’ particular needs. The basic principle is summarized as follows: “*To teach an unknown concept, use the known language; to teach unknown language, use a known concept*” (p.37) which they represent as in the following diagram:

⁵ It is important to note that The Language-Concept Connection framework is not limited to the subject of mathematics.

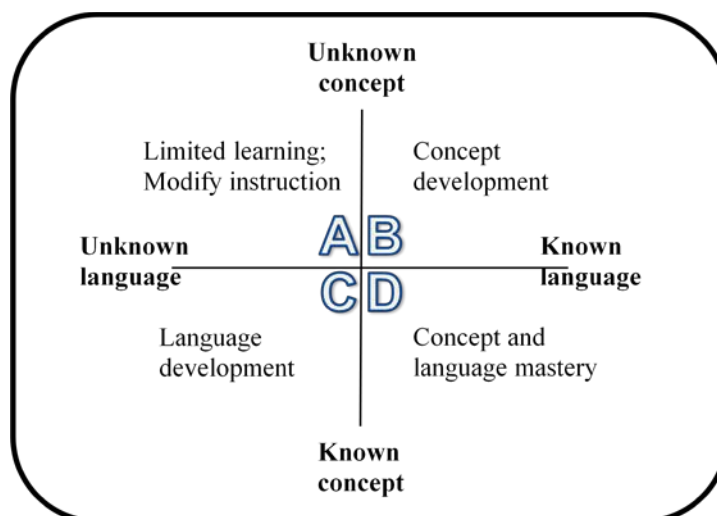


Figure 3.4. The language-concept diagram

In domain A, students have very low or no language proficiency in the language of instruction and limited knowledge of concepts. These students have limited opportunities for learning, thus teachers have to modify their instruction to make it comprehensible for students. In domain B, if PBLs are familiar with the language of instruction, it is easy for students to learn new concepts using appropriate strategies. Conversely, when students know the concept but not the language (domain C), is easy for them to develop language. In the last domain (D), if students are familiar with the language and concepts, they are ready for the next conceptual and linguistic level. Garrison and Mora (1999) provide some concrete examples using the following strategies to develop language and concepts in mathematics classrooms: teaching vocabulary, using manipulatives, building context, working in groups, developing written responses, and using graphical and symbolic representations.

To address the use of primary language in mathematics, Khisty (1995) argues that the use of children's first language may be very necessary to clarify terms that are

confusing as a result of the language mismatch. She goes further to explain that particularly when Spanish is used at home by parents or other adults, children tend to develop certain understandings of concepts that are not necessarily academic. This is particularly important in mathematics, since many words hold different meanings in the mathematical register as compared to natural language. For instance, Secada (1991) argues that mathematics is a language with a register of words, expressions, and meanings that differ from those in everyday language. Based on this premise, Hernandez (1999) concludes that Latinos do not need mathematics different from that taught in mainstream classrooms, but rather effective instruction based on how children learn with understanding.

Coggins, Kravin, Dávila Coates and Dreux Carrol (2007) provide concrete examples of research around second language acquisition theories in the context of mathematics. Based on Cummins theory of Basic Interpersonal Communication Skills (BICS), the authors address the importance of this kind of language in mathematics classrooms. Although this kind of language may be fully acquired within 2 years and is less cognitively demanding, it should be encouraged among PBLs, or for basic communication with the teacher. This will help the students follow directions, change topics during conversation, and to catch the listeners' attention. Mathematics on the other hand, as an academic discipline, is comprised of concepts that are mostly discussed with proficiency in academic language

Another concept commonly used within second language acquisition is addressed by Coggins et al. (2007), and known as "scaffolding", a technique based on Vigotsky's

(1978) theory of social interaction, and used as a powerful tool in mathematics classrooms. Scaffolding happens when a more capable or knowledgeable adult or peer guides a child thoughtfully in his or her learning process. The learning and problem solving that happens here is at a level of difficulty beyond what a learner can do by him/herself, which in Vygotsky's words, is the zone of proximal development. Theories such as the silent period, bicultural ambivalence, and the affective filter may be observable in mathematics classrooms with frequency; however they are or may not be directly related to the pedagogical practices. For instance, the relationship between language proficiency and mathematics achievement has been documented by researchers such as De Avila and Duncan (1981), who found that the low achievement in mathematics of Latino ELL can be attributed to low levels of English proficiency (Garrison and Mora, 1999). A lack of understanding about the role of language in mathematics instruction has led either to unreasonable high expectations for ELLs achievement in situations in which they receive no linguistic support, or to lowered expectations that deny equal access to mathematical skills and reasoning (Secada, 1992). Since Mathematics uses universal symbols, there is the misconception that it is "culture free" when it relates to ELLs who have some background knowledge in mathematics in their first language (e.g. Spanish). This may also be a factor in the low levels of achievement among Latino students (Garrison and Kerper Mora, 1999; California Department of Education, 1990). The assumption that mathematics lacks culture frequently leads to blaming immigrant students, who are also PBLs, for their mathematics failures and low achievement (Jilk, 2007). Losey (1995) states that language learners are

often tracked into low-level mathematics courses or grades. Jilk (2007) states that mathematics is not culture free, based on the understanding of culture as a set of local, instantiated practices that are dynamic and improvisational in nature.

Garrison and Mora (1999) argue that the dilemma faced by the mathematics teacher of ELLs is the following: How mathematics should be taught to make a meaningful and powerful curriculum accessible to ELLs? An example of this dilemma is address by Pourdavood, Carignan, King, Web, & Glover (2005), who document two important challenges teachers faced when working with students whose language differed from theirs. The first challenge was to find strategies they could use to help students to learn mathematics with understanding, since the mathematics curriculum addressed the mastery of computational skills. The second one was the issue of language, where communication was very limited between the teachers and the students. Despite the fact that it was mathematics, if the students did not understand the problem, then they would not be able to solve it. This is a common problem that teachers face in many schools across the United States; sometimes it is related to their experiences, training, or the limited resources provided by schools to give ELLs a more meaningful education. Moschkovich (1999) argues that a more comprehensive empirical research base is needed to guide classroom mathematics instruction for Latino students who are learning English.

Mathematics Education of Latinas/os and Social Class

Socio-economic status (SES) has been largely researched as having an impact in schooling when educating minority students. The discussions around this research have addressed why schools have not been successful in educating students in poverty,

however, oftentimes research does not include the implications that external factors play in the educational experiences of these students.

Cultural deficit theory, developed decades ago, posits that children in poverty are not prepared by their parents or caregivers to succeed in school (Banks, 1988). This theory addresses that the role of the school is to teach students in poverty, values, modals, behavior and school skills by rote memorization, because students do not receive these through their parents. Also, their failure in school and standardized tests is due to their culture and home environments. Gorsky (2008) states that even though cultural deficit theory is seen as “blaming the victim” it is argued that this practice still permeates in the minds of teachers. Gorsky argues that teachers’ deficit perspectives of students in poverty do not allow them to see their students’ strengths. Gutiérrez (2008) states that by not placing Latinos students’ achievement within the broader socio-political frame, there is risk of placing the burden on children, reproducing lowered expectations and deficit models. Gonzalez (1995) and Moschkovich (1999) for instance argue that Latino students often have been characterized by deficit models.

In regards to the teachers’ expectations of their students, it has been documented that the expectations of teachers for their students often becomes true. Merton (1968) named this theory as *self-fulfilling prophecy*. For instance, Nieto (2000) states that when educators perceive their students as destined to fail, there is a large probability that students will fail. She adds that students frequently perform based on the teachers’ expectations. This term has often been used in relation to the education of Mexican-American students. Losey (1995) suggests studying classroom interactions, because it is

the medium by which teachers express their expectations for students through a differential treatment of students often based on race, ethnicity, and socioeconomic status. In addressing differential treatment, he found that a frequently cited study was published by the U.S. Commission on Civil Rights in 1973. This study was part of a larger study examining inequalities in Mexican-American education and the societal position of this group. This suggests that historically Mexican and Mexican-American students have often been educated under practices that lead to self-fulfilling prophecies of students because their parents do not care about their children's education consequently having low expectations. Low expectations based on historical deficit thinking, often mediate the treatment of school teachers over students other than White (García & Guerra, 2004; Valencia & Black, 2002).

That Mexican Americans do not value education (Valencia and Black, 2002) has been widely documented not to be true, Delgado-Gaytan (1992) and Moll et al (1992) for instance, found that Mexican American parents have great expectations for their children's academic performance. They have also addressed the multiple ways in which these parents support their children not only at home, but at school. The lack of teachers' knowledge of their students' backgrounds and what they bring with them often leads to different treatment and prejudicial practices, frequently towards students in poverty. These prejudicial practices or perceptions may also generate a lack of high expectations of their students and make teachers believe they are powerless to teach such students (Gorsky, 2008).

Cogan, Schmidt, & Wiley (2001) argue that prejudices are often structural and created through mechanisms like tracking. While students tracked in “low ability” classes are often emphasized with rote memorization strategies, students in “high ability” classes tend to be developing inquiry skills, connections for further study, and problem solving (NCTM, 1998). Schmidt & Cogan (2009) argue that curriculum needs to be sensitive to important differences in instructional content coverage, otherwise students’ failure and achievement gaps can be misattributed to individual background factors that do not belong to the school’s control. In this regard, in a study with students of Mexican background particularly, Valenzuela (1999) argues that subtractive schooling ignores the social and cultural resources these students possess. However, mathematics education among Latinos, particularly ELLs persist as a problem in American schools

Grounded on the particular historical and socio-political context that constitutes and influences the language and mathematics experiences of Latino ELL students, I will address some of the inequalities these students face in schools in regard to their mathematics education. Some of these experiences account as restricted privileges, curricular gatekeepers, and irrelevant subject to their lives (Apple, 1992; Gutstein, 2003; Stinson, 2004). Despite the growing body of research focused on instructional practices that engage Latinos in learning mathematics with understanding (Civil, 2000; DeAvila, 1988; Gutstein, Lipman, Hernandez & de los Reyes, 1997; Flores, 1997; Gutiérrez, 2002; Khisty, 1995, 1997; Moschkovich, 1999, 2005), several indicators point to the unequal and limited educational opportunities these students face, which contradict the goals of a more democratic society. Moschkovich (2002) argues that in spite of the increasing U.S.

ELL Latino population, there has been little research addressing the needs of these students in mathematics classrooms. There is a vast amount of research about the inequities in mathematics education. The lack of opportunities as a result of poverty, for instance, has been highlighted as one of the factors that impact or has a direct impact on students' achievement. Data from the U.S. Census (2006) shows that Latinos/as are at a rate of two and a half times more likely to be poor than White students. Ortiz-Franco (1999) points out the importance for mathematics educators, teachers, and researchers to be knowledgeable about the relationship between mathematics achievement and poverty or economic indicators among the various student populations. Despite the large amount of research on the relationship between income level and mathematics achievement among the majority white student population, no comparable research is available on Latino students.. The NCTM (1998) reports that beside poverty in families, school funding has substantial and direct impact on students' achievement. Ortiz-Franco (1999) recommends to mathematics educators, teachers, parents, and community leaders to form a coalition to bring about a more equitable distribution of resources to schools attended by students of Latina/o background.

Policy makers frequently ignore the extensive research around mathematics teaching and learning, and learning environments that are beneficial for ELLs or bilingual students, as in the case of Proposition 203 (Gutierrez, 2002b; Moschkovich, 2005). This work addresses mostly teaching and learning, and the creation of better learning environments. Therefore, it is important to look at the research done around bilingual

education and mathematics learning to understand best practices in environments that serve Latino students.

However, there have been efforts for a more inclusive mathematics education, despite current policy, to ensure that students learn to think critically, to ask questions, to be long-term learners and curious individuals, to be caring, to realize they are valuable citizens, and need to make educated decisions in life (Nieto, 1999). Gutstein (2006) argues that students need to learn to read and write their world through mathematics, which means that students need to learn to use mathematics as a resource to understand their context, and learn that this mathematics discourses can help on their transformation, including the environment in which they live. The use of culturally relevant pedagogy is a concept that has shown to improve mathematical knowledge (Gutstein et al, 1997). This concept has been very significant in educational research as well as in pedagogical development and brings more inclusive, just, and equitable education in U.S. schools. For instance, Khisty (1995) explains in her work with elementary mathematics teachers and students whose primary language is Spanish how an assumption that bilingual instruction supports a cultural connection between students and mathematical content is superficial. This assumption ignores the fact that students construct meanings of language within social contexts.

Attitudes in Mathematics Education

Attitudes towards mathematics is a concept that has a relatively long history in educational research (McLeod, 1992). However most of the studies documented by McLeod address studies conducted with students. McLeod (1992) defines attitudes as the

“affective responses that involve positive or negative feelings of moderate intensity and reasonable stability” (p.581). A working definition provided by Philipp (2007) is: “manners of acting, feeling, or thinking that show one’s disposition or opinion” (p. 259). He states that attitudes are more cognitive and more stable than emotions. This concept (attitudes) is commonly associated with beliefs in research related to mathematics teaching and learning (Ernest, 1989; Goldin, 2002; Macnab & Payne, 2003; Pajares, 1992; 1999; Thompson, 1992; Tuft, 2006). Capraro (2001) argues that teachers’ attitudes and beliefs are crucial components in changing how mathematics should be taught in schools. According to Ernest (1989) who addresses attitudes as part of a cognitive domain, there is recognition of the importance of attitudes to mathematics and the teaching of it. Goldin (2002) in agreement with Ernest argues that research in mathematics education has tended to focus primarily on the cognitive domains of an individual and far less on the affective ones. He argues that such concentration on cognitive structures may be related to the popular myth that in mathematics emotions do not play an essential role because it is a purely intellectual endeavor.

Teachers’ attitudes towards mathematics are in a grand part related to their lived experiences (McLeod, 1992). Hence, these experiences will define whether teachers like or dislike mathematics, whether they think it is important or not, their degree of understanding, their emotional response to it, what is the best way in which children learn, the way they view the teacher-student relationship, etc. (Ernest, 1989; Macnab & Payne, 2003; McLeod, 1992). Similarly, in their study with Scottish primary school student teachers, Macnab and Payne (2003) found that in general the following words are

associated with their experiences with mathematics (experiences during primary and secondary school and at the time the study was conducted): fun, useful, interesting, routine, difficult, boring, and exiting. In the same study some other words that often appeared when describing their attitudes when working with mathematics were: worried, stimulated, unenthusiastic, confident, determined, discouraged, indifferent, frustrated, ashamed, motivated and annoyed. All these words are directly related to the affective domains of an individual. In the case of teachers these emotions may affect their actions and views about mathematics. It is almost certain that a teacher's response to the question: "Is there a subject you like to teach the most?" will address emotions, attitudes, and beliefs.

Ernest (1989) argues that attitudes toward mathematics and its teaching and learning are important contributors to teachers' make-up and approaches since they may influence the child's attitudes towards mathematics and its learning. He believes that there is a relationship between teachers and students' attitudes and affirms in accordance with Phillip (2007) that research shows a correlation between teacher attitude and student achievement in mathematics. Phillip (2007) provides some evidence of this relationship, attitudes (including feelings of anxiety) and student achievement, with meta-analysis of more than 100 studies conducted with students.

In summary, the research discussed in this chapter provided me with the theoretical constructs that guided my dissertation. The work around bilingual education and second language acquisition and learning has been very influential in my training.

The complexity of learning subject matter content while acquiring language has been documented from different perspectives. The cognitive, linguistic, socio-cultural processes, as well as the academic achievement have been widely addressed at the intersection of language and mathematics, and yet the achievement gap among Latino students persists compared to Whites and other students with different backgrounds. In the following chapter (4), I review in detail the methods employed for data collection and analysis, research site, description of participants, and a reflection on the researcher.

CHAPTER 4

METHODS

The primary goal of my study is to identify the classroom practices and what influenced these practices in two different third-grade classrooms where close to 100% of the population is of Mexican heritage, in a English-only context where use of English and immigration have been the predominant topics. In addition I am exploring the teachers' own experiences regarding language and mathematics and how these experiences have impacted their teaching practices regarding language and mathematics particularly. In this chapter, I describe the methods I employed in my research study, dividing it in three sections. In the first section, I review the research context –setting, participants, and researcher role; the second addresses data collection procedures; and in the third and last section I describe the data analysis that demonstrates my results presented in chapters 6 and 7.

My overall goal with this research study is to contribute to the body of work done around PBLs, and pedagogy around English language development and mathematics in an English-only environment. The research questions that guided my study are:

1. What types of support do teachers in two different classrooms in an English-only context, mainstream and SEI/ELD, receive, and what additional resources do they look for to address the needs of their students for English language development and learning of mathematics?

2. What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful for students of Mexican Background in Particular?
3. How do the teachers' learning experiences around mathematics and language learning inform their classroom practices towards these areas?
4. What are the teachers' perceptions of their students and families and how do they compare themselves in relation to their student's backgrounds?

These questions were the basis to document and discuss my findings of both Ms. Bowsher's and in Ms. Heath's classrooms, with an analysis of their experiences as learners of a second language and mathematics in different contexts and circumstances of their students.

Research Context

The Setting

My study took place in two different third-grade classrooms in Saguaro Elementary School⁶ located in a large school district in Southern Arizona. Except for one

⁶ All names used in this dissertation are pseudonyms.

student, all are of Mexican background. In one classroom all students are proficient in English while in the other one all students are classified ELLs according to the Arizona English Language Learner Assessment (AZELLA) test. Latinos represent more than 90% of the student population at Saguaros Elementary School, all of them of Mexican background. The ELL population accounts for approximately 60%, including those students who have passed the AZELLA test, but are still being monitored. The district enrolls a large number of Mexican-American students from preK-12. Table 4.1 shows the percentages of the different ethnic groups in Saguaros Elementary School and the two-third grade classrooms in which this study was conducted. There are more than two third-grade classrooms in this school. However, no more specific data is provided to protect the confidentiality of the school, teachers, and children participating in this research study.

Table 4.1

Students' ELL demographics (by ethnicity)

	Latino	White/ Anglo	Native- American	African- American	Asian- American	Total	Total ELL Population
Saguaro Elementary School	93%	3%	2.5%	1.5%	0%	100%	Approx. 60%
Non-ELL 3 rd Grade Classroom	96%	4%	0%	0%	0%	100%	0%
ELL 3 rd Grade Classroom	100%	0%	0%	0%	0%	100%	100%

Saguaro Elementary School is located in a working-class neighborhood in which most residents are of Mexican origin, and native to this area or immigrants. Most students in the school qualify for free or reduced lunch⁷.

Case Studies

The data for this study comes from two third-grade classrooms, focusing on the teachers' classroom practices and the teachers' experiences around mathematics and language learning. I chose these two classrooms deliberately with the implications of focusing on students of Mexican background and their language classroom environments. With this work, I join the efforts of scholars addressing the practices that take place in English-only environments, in addition to the work of those who address the need for a school system and other public institutions to provide equal opportunities to both teachers and students, like the ones in these classrooms.

The selection of one of the case studies –Ms. Bowsher mainstream classroom– was influenced by the Teacher Study Group (TSG) conducted by CEMELA. Ms. Bowsher participated in this TSG for about two years. This was the first criterion for selection of the classroom since she was an SEI/ELD teacher by the end of the TSG,

⁷ Free or reduced lunch is an indicator of poverty.

previous to my study; however she was a regular mainstream classroom teacher during the length of my study. Ms. Heath –the SEI/ELD teacher– on the other hand did not participate in the TSG nor was she a research participant previous to my dissertation research. Based on the characteristics of the teachers and their background and my interest around language policy and PBLs I saw an opportunity for a comparative study between the two-third grade classrooms – SEI/ELD & mainstream– looking at practices and how these practices have been influenced by the teachers’ experiences.

Table 4.2.

Teachers’ background

	Country of Birth	Years of Teaching Experience	Higher level of Education	First Language	Years assigned to SEL/ELD
Ms. Heath - SEI/ELD classroom	USA	6	Master’s (In progress)	English	1
Ms. Bowsher- Mainstream classroom	Asian Country	6	Master’s	Asian Language ⁸	1

⁸ Even though Korean was the teacher’s primary language, she does not speak it anymore. English became her first language.

The teachers in this study are the unit of analysis given the nature of the classrooms even though I interviewed a few students to complement my data. In chapter five, I provide a more comprehensive description of the classroom ecologies – teacher, students, and daily routines in the classroom settings. It is important to mention that the first step before contacting parents and visiting the classroom, I formally contacted the school district and the school principal to obtain their approval to conduct this study.

Early in the academic year, I informally visited Ms. Heath classroom and introduced myself to her explaining my participation in the TSG where I met Ms. Bowsher, explaining also my interests for considering her classroom as part of my dissertation. Once I explained to both teachers the purpose of my study, and they agreed to be part of it, I introduced myself to the students explaining to them my presence in the classroom for the next few months. I started to visit both classrooms to become better acquainted with the teachers and their students, so they will feel more comfortable when I am conducting my research. Both teachers made it possible for me to explain my project to a few of the parents. About a month later, after classes started, they sent a request to parents for a meeting to introduce my study and participation in their classrooms with the students. This was very important for me in order to get consent from all parents to video-record, interview some of their children, collect some of their work if necessary, take pictures of them in the classroom, and observe during classroom instruction.

To recruit the students I sent a letter to their parents in both Spanish and English with a consent form attached explaining the study and implications for the children as well as the implications for them. This consent form addressed the video- and/or audio-

recording during classroom instruction and the different sources for data collection in the environment in which they learn English and mathematics, among other academic subjects. After the initial contact letter, I made phone calls to most parents to restate the purpose of the study and clarify any questions or concerns they would have, since the approval of these parents to observe their children's lives (observing them in the classroom, videotaping classroom instruction, and interviewing some of them) as well as observing and interviewing the teacher implied an ethical responsibility. In the writing of my dissertation, in my analysis, and conclusion, I have made every effort to portray the teachers' practices and learning experiences truthfully and respectfully. It is my goal to honor the views and experiences of my participants.

Researcher Role

The more I got to know students in my study, the more I related to their lives. Similarly, I was born in a small mining city in Sonora, Mexico (about 30 miles south of the Arizona border) – an area from where many of the students' families come. I come from a very poor and a large family. I came to the United States to get a graduate degree seven years ago. I attended public schools from elementary through high school, and a private university where I obtained a diploma in public accounting. I learnt English about 4 years before I started my graduate studies in a totally different area – Education. Today English and Spanish mingle throughout my day.

I could go on and write more about the many ways in which my mother/family was the biggest support to relate to the lives of many of the students in these classrooms where my study took place. Many students have three or four siblings, some of their

parents may have more than one jobs or may not have a job, some of their mothers are single, some students may live with relatives or their grandparents, attend more than one school, etc. However, there are two big differences between many of these students and me. First, my family or I were not immigrants when growing up or lived in a state that is not friendly or do not welcome Latino or Mexican families in many ways, a state implementing laws that threaten the stability and limits what these families and students can do and cannot. Second, I was not a second language learner in critical stages of my education. I did not have the limitation of learning content in a language that I did not understand, a limitation that most students, and even a teacher in the classrooms where my study is taking place have gone or are going through due to *Proposition 203* and *HB 2064*.

My experiences learning English have varied. I had very good and very stressful experiences. It has been around 11 years since I started to learn/acquire English in a more meaningful way, I was already an adult.

As a graduate, Latino (Mexican) student pursuing a career in education, I have a compromise and feel committed to help students like the ones in the classrooms where my study took place. Throughout my years in graduate school I have learned about the different challenges these students face in Arizona and other states in the United States. Stereotyping, overt and covert marginalization, lower level of education, etc. are a few of these challenges that often are part of messages supported by the larger context.

This study is influenced by my learning experiences and my beliefs. It also has been largely influenced by my work in collaboration as part of the research team of Dr.

Marta Civil, principal investigator of CEMELA, by my participation in the Early Literacy Language Development (ELLD) project with Dr. Iliana Reyes, as well as the experiences teaching undergraduate courses under the supervision of Dr. Mary Carol Combs, all three members of my dissertation committee.

Observation Procedure and Data Collection

As mentioned, prior to data collection I participated as facilitator in the Teacher Study Group (TSG) conducted by CEMELA at Saguaros Elementary School. For two academic years (2008-2009 and 2009-2010), one of the participants in my study –Ms. Bowsher– was an active participant attending almost every weekly or biweekly session of the TSG, as well as a retreat at the end of each semester. While in the TSG, in the second year (2009-2010) Ms. Bowsher volunteered to be the teacher for the third grade classroom implementing the ELD model, which opened an opportunity for me to explore the impact of the implementation of the model in recent immigrant students placed in her classroom.

With the goal of continuing with my study in the academic year 2010-2011 following a few ELLs who did not pass the AZELLA test, I started data collection, observing and interviewing students, after AIMS testing in May of 2010, close to the end of classes. Once classes started in August, I visited the classroom in Saguaros Elementary where the target students would be placed to continue following observing and interviewing them. Surprisingly three of the four students I recruited were no longer attending Saguaros Elementary School. According to their teacher, it seemed that the recent passage of SB 1070 was the reason why the parents of these children opted to

move back to Mexico or to another state where they did not feel threatened by anti-immigration policies. This fact made me rethink and change the focus of my study choosing two different classrooms instead of a few students. Soon after, I recruited Ms. Heath, the new SEI/ELD teacher.

Once I recruited Ms. Heath, I started with data collection in mid-September of 2010 and continue in both classrooms until mid-March of 2011. As mentioned earlier I chose Ms. Bowsher's and Ms. Heath's classrooms given that they had been assigned to be the ELD/SEI teacher and that close to 100% of their students are of Mexican heritage.

Learning mathematics and other subject areas while acquiring language is a very complex, nonlinear process influenced by several factors at the macro, micro, an individual level. To understand some of this phenomenon I documented the teachers' everyday routines and practices in the classroom. I made use of qualitative and ethnographic tools for data collection and used several sources of data as I sought to triangulate it separated for each classroom. The primary sources for data to help me answer my research questions were: field notes from participant observations in the classroom, video and/or audio recordings, semi-structured teachers' and students' interviews, teachers' autobiographies (which became verbatim transcripts), and artifacts and pictures of both teachers and students to supplement my data. In addition to the main subjects, I also conducted and interviewed the school principal.

Even though I visited both classrooms at least twice every week only one day was designated for data collection. The second and sometimes a third day presence in the

classroom were to support the teachers in their daily teaching activities. This decision was based on the fact that neither Ms. Bowsher nor Ms. Heath had teacher's aides. Both teachers were extremely welcoming and I wanted to compensate for letting me enter their classrooms to carry out my study. They took advantage of my presence in their classrooms and oftentimes showed their gratitude for becoming part of their classrooms. During the first month of data collection I visited the two classrooms at least twice a week, observing and as a participant in their teaching activities. During this time I only wrote descriptive field notes since I wanted to develop rapport with the new recruited teacher and the students in both classrooms. Once I felt there was enough rapport with both teachers and students I started audio- and video-recording the different activities in the classroom if they were comfortable with me doing so.

Field Notes from Participant Observations in the Classrooms

I took detailed field notes once or twice in a 14 days period during the length of my study with the goal of to document the practices in form of strategies, language use, interactions, etc., during instruction in math and other subjects. These field notes document an average of fourteen visits in both classrooms over a six-month period. During these visits I recorded notes on paper from observations in the classroom and from informal conversations I had with both teachers, including at times, conversations I had with students. These notes would assist me later when transcribing them with much more detail. At the end of the data collection I had a total of 13 field notes from Ms. Bowsher's mainstream classroom, 5 of them correspond to mathematics instruction and the rest to instruction or activities in other subjects (social studies, read aloud, centers,

etc.). In the case of Ms. Heath's SEI/ELD classroom, I ended up with a total of 15 field notes, 7 from mathematics instruction and 8 from other subjects.

Video and Audio Recordings

To facilitate the micro-analysis I video recorded mathematics as well as other subjects in the two classrooms every other week from the end of September to mid March, I was able to collect enough recordings from both classrooms for the research. The purpose of this source was to document the classroom practices in form of a strategies, language use, etc. . By the end of data collection I had eleven video recordings in Ms. Bowsher classroom, and twelve in Ms. Heath classroom accumulating approximately eighteen hours in each classroom. Of these hours of video, about a third corresponds to mathematics instruction and the rest to other subject areas. As needed, only selected video clips were transcribed during analysis.

Semi-Structured Teachers' Interviews

My study was also informed by semi-structured interviews with both teachers. The interviews were conducted towards the mid part of my data collection with the purpose of to document details of the teachers background, likes and dislikes around teaching different subjects and PBLs, training, their perceptions of their students and families of Mexican background, and the support they receive from the context in which they work for teaching PBLs and mathematics particularly. . Despite the fact that I had a set of guiding questions, conversation often raised different questions based on the purpose of the study.. The length of the interviews varied from 30 to 40 minutes. Both

interviews took place in the teachers' classroom during the 40 minutes period their students were in specials (music, art, library, or physical education

Mathematics and Language Learning/Acquisition Autobiographies

In addition to the interview, I conducted autobiographies with both teachers in an interview format. The purpose of these autobiographies was to gain a better understanding of the participants' experiences as learners of a second language and mathematics, and how these experiences have impacted their teaching experiences. For both autobiographies, I made sure the teachers addressed their experiences throughout their different stages of their education and everyday lives. I also asked them to address their training experiences regarding mathematics and PBLs or ELLs of Mexican background particularly. These autobiographies were conducted towards the end of data collection (February and March) and lasted between 15 and 25 minutes each. They also took place in the teachers' classrooms while students were in specials.

Semi-Structured Students' Interviews

To supplement my data I interviewed four students from each classroom who were randomly selected. I combined three interviews that addressed the students' background and home activities (e.g. what they do in their free time), their English learning experiences and use of it inside and outside the classroom, and their experiences with mathematics inside and outside the classroom as well. Except for two interviews that were conducted in pairs in school, most of them took place in their homes after classes or on the weekend since I did not want to take them out of regular classes. All interviews were conducted in English even though students were given a choice of doing them in

Spanish if they felt more comfortable with this language. Most interviews lasted between 30 and 50 minutes. These data supported or reinforced my findings regarding classroom practices and the teachers' attitudes and ideologies.

Semi-Structured Principal's Interview

In addition to the teachers' and students' interviews, to supplement my data, I decided to interview the school principal at the beginning of my study to gain a better understanding of the school statistics, policy views and school policies regarding ELLs, as well as the mathematics curriculum. The interview took place in the principal's office and lasted about 45 minutes.

All interviews (teachers' students', and principal's) including the language and mathematics autobiography were video- or audio-recorded and then transcribed verbatim to facilitate the analysis.

Teacher Background Profile

Both teachers completed the teacher background profile form at the beginning of the study. This form included background information regarding years of teaching experience and education addressing particularly mathematics.

Artifacts and Pictures of Teachers and Students

With their permission, to supplement and document the validity of the teaching activities, I took pictures and collected artifacts (worksheets, writing samples and other examples of students' work), either copies or originals. There were no specific criteria for taking pictures and collection of artifacts. However, I attempted to capture a variety of

different activities that occurred in the classroom that may or may not be address in the interviews.

As mentioned, the multiple methods of data collection allowed triangulation of patterns that emerged across events and interactions in the settings. The following chart summarizes the process of data collection:

Table 4.3

Data collection summary

	Purpose/To document	Frequency	Total/ Length
Field notes from Classroom Observations	Practices (Strategies, language use, interactions, etc) during math and other subjects	Once or twice in a 15 days period from mid-Sept. to Mid-Mar.	13 – mainstream classroom (5 – math instruction, 8 –other subjects instruction) 15 – SEI/ELD classroom 7 – math instruction, 8 – other subjects instruction)
Video-recording of instruction	Practices (Strategies, language use, interactions, etc) during math and other subjects	Once every other week from mid-Sept. to Mid-Mar.	18 hours average in each classroom (Approx 1/3 of math instruction and 2/3 of other subjects instruction)
Semi-structured teachers' interviews	Teachers' background, training, and attitudes (math, other subjects, students and their families)	Once towards mid part of data collection	1 / Between 30 and 40 min.
Teachers' Second language	Experiences as learners of Mathematics and	Once for each subject (mathematics and	1 / Between 15 and 25 min. each

acquisition and mathematics autobiographies	Second Language as well as the impact of these experiences	language acquisition)	
Semi-structured students' Interviews	Student's backgrounds, learning experiences around language and math inside and outside school	Once towards the end of data collection (Feb. and Mar)	8 Interviews / Between 30 and 50 min.
Semi-structured Principal's interview	School statistics, policies regarding ELLs, and curricula	Once at the beginning of the study	1 / 45 min.
Tacher Background Profile	Years of teaching experience, education and mathematics courses taken	Once at the beginning of the study	1 / five min.
Artifacts and Pictures	To capture and reinforce during data analysis	Throughout the length of my study	Several

Data Analysis

I analyzed my data using the case studies approach, which has been prevalent throughout the field of education (Merriam, 1998) for nearly 50 years. This approach complements a socio-cultural perspective since it combines a “close analysis of fine details of behavior and meaning in everyday interaction with analysis of the wider societal context – the field of broader social influences” (Ericson, 1986, p. 120). My analysis explored a comprehensive and dynamic picture of the classroom environments (Mosckovich & Brenner, 2000) with the focus on teachers.

To date since the passage of *Proposition 227* and *Proposition 203*, several studies have address the impact of these policies in instructional practices and the students' primary language use in different classrooms settings (Gándara, 2000; Gutiérrez, Boquedano-López, & Asato, 2000; Combs et al, 2005). However, there are limited studies that addressed the teachers' own experiences and the impact of these experiences on teaching practices at the same time. In this study I also address the teachers' attitudes, and ideologies towards mathematics and languages respectively in addition to their perceptions of students and families which in this case are of Mexican background

All the qualitative data collected during the length of the study, including field notes and transcriptions of the interviews, are the basis for grounded theory analysis (Charmaz, 2001, Glaser, & Strauss, 1967). The use of grounded theory allowed me to inductively build an understanding of the practices and the experiences of the teachers as important, rather than imposing predetermined conceptual categories that may limit the data to which I attend.

The process was an inductive analysis that explored comprehensive and dynamic pictures of the teachers, in particular their classroom environments. In using grounded theory techniques, I engaged in review of data for emerging themes, created codes and formed conceptual categories. After searching the videos for relevant clips of instruction or interaction, I took notes and sometimes transcribe relevant clips using TRANSANA, a support tool software for coding and organization of qualitative data drawn from videos. All materials, including field notes and interviews were transcribed following the Gumperz & Berenz (1996) conventions.

I also examined transcripts from interviews and video observations, first using open-, and then focused-coding methods (Emerson, Fretz & Shaw, 1995). During the open coding, I identified themes that emerged from the data and used this information to develop better questions to ask, and topics to pursue during subsequent interviews. In the more focused coding I isolated core themes (See table 4.4 and Table 4.5) that helped me identify patterns or connections in the ways the participants construct meaning from their experiences.

Table 4.4

Coding scheme of teachers' resources

Domain	Definition	Example (s)
School Curricula and programs	Curricula that teachers implement to address the needs of their students for English language development and mathematics instruction.	Book series
Training and Professional Development	Opportunities of professional development and training taken by teachers to address the needs of their students for English language development and mathematics instruction	Training about how to implement a program designated for a particular population.
Participant Structure	From whom do teachers draw information or use as resources to better their classroom practices	Collaboration with other teachers, families, etc

Table 4.5

Coding scheme of classroom practices

Domain	Definition	Example (s)
Teaching Strategies	Techniques, approaches, activities, and assignments that teachers implement to help	Grouping configurations, modeling, providing visual aids, promoting

	students process new information and apply prior learning, facilitating understanding and making content more accessible to them (Reiss, 2008)	scaffolding techniques, etc
Differentiated Treatment	Techniques, approaches, activities, and assignments that teachers implement in their classroom to address the needs of particular students, PBLs of Mexican background in this case	Explicit discipline strategies.

My field notes and transcripts of interviews and selected clips were the primary data sources for the case studies. As photographs of the participants in the classroom setting and collected student work or artifacts become a secondary source that supplemented primary data.

In summary, this chapter describes the process of my dissertation. I used case studies to explore and document major resources for the teachers, classroom practices for teaching mathematics and English language development and the influence of the teachers' experiences in their practices in relation to English language development and mathematics. To guide the reader, I started this chapter providing a context –school and classrooms setting, description of participants, and the role of the researcher. Data collection and analysis conclude this chapter, setting the background for chapters 6, and 7 in which I address the findings of this study.

In the following chapter –5– I provide a detailed description of both case studies (Ms. Bowsher and Ms. Heath classrooms) to introduce the context for them, addressing

teachers' and students' backgrounds, daily routines, and classroom settings. These descriptions will be documented for the analysis, focusing on differences and similarities.

CHAPTER 5

A MORE COMPREHENSIVE CONTEXT: TWO DIFFERENT CLASSROOMS, TWO
DIFFERENT TEACHERS, AND SIMILAR STUDENTS WITH DIFFERENT
LANGUAGE PROFICIENCY

In the preceding chapter –Chapter 4 of Methods, I briefly described the context in which my study took place: setting, participants, and researcher role; details of the observation procedure, data collection; and the process of data analysis. In this chapter I respond to the first question: What types of support do teachers in two different classrooms, mainstream and SEI/ELD, in an English-only context receive, and what additional resources do they look for to address the needs of their students for English language development and the learning of mathematics? To answer this question I address the curricula and approach of the implementation of the SEI/ELD model that has been adopted by the school to address English development and mathematics learning. In addition, I present both cases in their entirety, and provide a detailed picture of the environments or classroom ecologies. Followed by a description of the teachers in which I include their training and professional development and participant structure –teachers’ search of additional resources, I describe the students, and then I conclude with the description of the daily routines and classroom settings.

Within the teachers’ description, I respond in part to question number one with details of their *training and professional development* as resources provided to both teachers, and what additional resources do they seek to address the needs of their students. Besides answering the first question, in this chapter I aim to immerse the reader

to identify the roles of particular characteristics of teachers, students, and curriculum in a complex teaching environment such as the one provided by English-only policies.

School Curricula and Implementation of the SEI/ELD Model

As part of data collection, I included an interview with Ms. Gaona, the principal of the school, to gain a general idea of the school statistics, policy views regarding teaching PBLs, and the implementation of the SEI/ELD program model, including the curriculum for the teaching of mathematics. During this interview Ms. Gaona asked me to continue with data collection in the classrooms after the third week of classes (in September), once students felt more comfortable with their new teachers, which I did.

From this interview and my knowledge through my participation in the Teacher Study Group (TSG), I conclude that within the efforts to help its student population and improve school performance, Saguaros Elementary School made a substantial change in the year preceding data collection. During the interview, I questioned the principal about the mathematics curriculum. Ms. Gaona said that during the previous year, the school started to transition and adopted a new curriculum called “Media and More⁹” (MM), which was fully implemented the year of data collection. This curriculum or approach has

⁹ Media and More is a pseudonym.

been successfully implemented in other school districts in the United States, but in districts with different student population from the one in which my study took place. Some differences between the schools districts where the model has been successfully implemented are the number of the ELL population and the SES of students. With the MM model, in mathematics the school moved from using *Investigations*¹⁰ (*in Number, Data, and Space*) to the use of a variety of resources (technology –computer, internet, etc–, worksheets, and other materials) from no specific curriculum, requiring collaborative work among teachers of the same grade level and the mathematics instructional coach. In the excerpt below from the interview conducted with Ms. Gaona, she addressed some changes that have been taking place in the teaching of mathematics:

Jesus. What mathematics curricula do you, um, have you been using in the school?

Ms. Gaona. We use *Investigations*, which I think is very important, is part of process. Process is very important, and not product. If children don't know why or how a operation is, is uh functioning then they won't understand it... I think there has to be a balance of facts.

¹⁰ Investigations is curriculum funded by NSF, TERC, and Pearson that aimed to improve the teaching and learning of elementary mathematics.

What we want to do is this, and this comes out of the MM model...The children need to know their facts, period. We've gotten away with that and when we become purists in the *Investigations* teachers think that they don't have to teach that, which is wrong. I think um, factual operation once the children learn it should be part of it, so something like mad minutes or continue, you know, five seven minutes of facts a day is important... And so those are things that we need to move to because we don't give children enough time to think, and it's, and this is a way that our ELLs can shine and show us what they really know. It's not just language that's holding them up, but if they know how to do this and they can show you through numbers or expressing in Spanish that turns them on that they want to know okay now how do you say it in English and how do you do, what's the vocabulary I can use. So I think those are things that we're gonna start moving to next year, little by little.

With the implementation of the MM model, worksheets became the main source for students to practice among all different subject areas. For bellwork, a daily review in mathematics, language, and reading, the school uses mostly the Daily Math Practice, Grade 3, the Daily Language Review, grades 3 and 4 by Evan–Moor Corporation (Educational Publishers), and Reading for Speed & Content by Remedia Publications (which specializes in supplemental educational materials for teachers, students and

parents). In the case of homework, the school puts together a package for each grade level for Monday through Thursday to address math, language, and reading. The package includes additional information for parents to help their children, which in many cases, is not possible since all the material is in English. More details about bellwork and homework will be provided in the description of each classroom in this chapter.

In an effort to address the needs of ELLs particularly, during the last two years the school has also made changes in the implementation of the ELD, four-hour block, model based on the students' scores and pressure to comply with *Proposition 203/HB 2064*. During the same interview with Ms. Gaona, I also asked about specifics of the implementation of the SEI/ELD, four-hour clock model during the academic year preceding data collection, as well as implementation plans for the year in which my study took place:

Jesus. Um, how was that SEI/ELD model implemented at the school this year?

Ms. Gaona. Oh this is ver-well it was very hard. Um, what we did this year is, last summer when our district decided to go to the four hours because the state insisted on that, we looked at our children and what we actually did is segrega-pulled them out of the regular classroom... we looked at the numbers of the AZELLA and from that number we segregated the children...We did not, we had the option of separating them out like for specialists, uh, also for recess l-lunch time but we have our children pretty much um,

together... we looked at AIMS and any kind of benchmark assessment, so... the kids that passed those benchmarks, whether it was AIMS, TerraNova, or the Galileo we pulled them out because we felt that if they did well in reading and in math why are they still in the AZELLA?... we felt that we, if we give them more intense language we felt that that would move up. Well our results showed no...

Jesus. ...this is the next question. Uh, will changes be made in the implementation of the program?

Ms. Gaona. Probably, we feel that the model per se, does not work. The children, I'll be honest with you, all of my kids that were in the ELD block did not become proficient. They stayed the same, uh we had more behavior problems than before and so uh... So this year instead of pulling those children out we are going to keep them together. So if a child is identified as ELL, they're gonna be ELL whe-regardless of how they pass the benchmarks and hopefully we'll have those models, those higher level models to help our children to move up, okay? And to develop the language better...

The legislation, HB 2064, states that all schools in Arizona with ELLs should separate them to address their English needs for a period of four hours through the implementation of the ELD model. However, Ms. Gaona, the Principal at Saguaros

Elementary School, who was skeptical as to the effectiveness of the model, made efforts to address the needs of these students in a manner which would be less disruptive for the entire school. Although ELLs were segregated all day long from students who were already proficient in English, they were not being taken away from learning content during the implementation of the model. During the length of my study, the schedules for non-ELLs were not much different from ELLs. Students in the ELD/SEI classroom started their routines together at 8:05 AM, they supposed to be together until 1:00 pm, and then they would be mixed with students in the other three, third grade classrooms from this time –1:00 pm– until the end of the school day –2:30 pm. In spite of that, there were a few changes during the year that interfered with plans for not having students segregated for more than 4 hours. Schedules and routines will be described in more detail in other sections of this chapter.

It is important to mention that the school also has adopted the Success for All (SFA), a standards-based Comprehensive School Reform curricula for early childhood through middle school. SFA was produced by the nonprofit organization Success for All Foundation (SFAF). The goal of this curriculum, influenced by the Title I program, implemented across the United States is to actively seek students who struggle as readers to improve their reading skills.

Based on the needs of the students and implemented curricula, within the first month of classes and after I started data collection, after a few changes in classrooms size, the school allotted thirty-minutes for re-teaching/enrichment (R/E) or interventions in mathematics, and one-hour for project-based learning (PrBL) in science and social

studies. One of the objectives for implementing R/E and PrBLE throughout the school was to mix ELLs with the rest of the students of the same grade level, without violating the legislation (HB 2064) in terms of separating students for at least the required four hours the ELD block requires. For R/E or interventions, students were mixed based on their performance in mathematics once they were tested on the first quarter. Students were grouped based on their grades, A's, B's, C's, or D's, with D's being the lowest grade since F's are not given to students on the benchmark tests. In a conversation with Ms. Heath, the ELD/SEI teacher, she mentioned that teachers in Saguaros Elementary School were not allowed to fail students. The purpose of R/E is to provide students with extra practice on areas of mathematics in which they do not do well, and to reinforce those areas in which they do well. PrBLE, on the other hand, was implemented mainly to address the subjects of social studies and science, and there were no specific criteria for grouping. Within R/E, group sizes varied from 13 to 31 students, whereas in PrBLE groups, they were balanced in four groups of between 25 and 27 students.

This practice of mixing students in third grade classrooms lasted until mid-January due to a change in one of the other two mainstream classrooms, a teacher was moved to a different position and a new teacher was hired. The school principal, Ms. Gaona, stated that the practice of mixing students for R/E and PrBLE would continue until the new teacher became familiar with the school.

The Classroom Ecologies: Teachers, Students, Daily Routines and Classroom Settings
A Mainstream Classroom – Ms. Bowsher’s Classroom

Ms. Bowsher. Ms. Bowsher has a bachelor’s degree in biochemistry and obtained her teaching certificate through a master’s program at the University of Phoenix. The 2010-2011 academic year accounted for her 7th year of teaching experience. She also has a second (weekends) job as a waitress at a local hotel, which becomes a fulltime job on school breaks to get extra money to support her family.

Regarding her background and experiences as a student, Ms. Bowsher was born in an Asian country and moved to the United States when she was 10 years old. At that age, she was attending elementary school in Asia. However, her first encounter with school in the U.S. was at the middle school level, she was placed in 6th grade. She attributes her placement in the higher-grade level, because she was big for her age; she also believes that it was also due to the fact of being Asian (since her English skills were very limited). Her memories learning English were from an English as a second language program (ESL pull-out), with students from Mexico and Brazil - none from her country. Her main memories speak to learning phonics and repeating words daily for about an hour, with the feeling that it was “all day long.” Because of the belief at that time (1970s, according to her) that in order to become fluent in a second language, she would need to practice as much as possible. This entailed the teachers asking her parents to speak English at home (still a practice and belief as mentioned by both teachers in this study), which became a practice even though her family members’ English skills were very

limited. More of her experiences learning English will be addressed in the following chapter.

She also talked about her experiences with mathematics. In particular, Ms. Bowsher believes she was not good at it, but she thinks that being Asian was a factor for her placement in 6th grade, at the age of ten. She remembers being roughly an average or below average student in elementary school; however, when she came to the United States, she was often considered an excellent student. As mentioned, she did not know English and frequently would be asked to help others when doing mathematics, even though she did not have the language to teach. Her math learning experiences were very traditional – memorization and practice – but her belief is that students need a balance between memorization of facts and investigations – the exploration of new things (this echoes Ms. Gaona’s words). For Ms. Bowsher, mathematics stuck out as very important, and it is always reflected in her teaching practices, as she always tries to make connections with everyday life. She admitted being confident in teaching math, though it was not her favorite subject. More about her math experiences will be address in Chapter 6.

Ms. Bowsher’s Training and Professional Development. As part of her formal experiences for teaching, for Ms. Bowsher’ training has played an important part in how she thinks about the subjects she teaches and her perceptions of students and families. As mentioned earlier she started her professional development to be a teacher in a master’s program. This took her two years. By the time this research study took place she obtained her SEI-45 hour certificate through Saguaros Elementary school (required for all teachers

in Arizona by the Arizona Department of Education due to Proposition 203). In addition to this she attended training on the implementation of the Media and More (MM) curriculum, which she felt was not enough for the exigencies its implementation requires.

For two years (fall of 2008 to spring of 2010), as part of her professional development, Ms. Bowsher participated voluntarily in the Teacher Study Group (TSG) offered by the Center for the Mathematics Education of Latinos (CEMELA), in which I participated as part of the research team. The TSG focused its work around Latinos, mathematics, and language, addressing among other topics poverty and parental participation. Ms. Bowsher stated that her participation in the TSG has impacted her teaching practices. She said that after being part of CEMELA and teaching the ELD/SEI class (the year before this study took place), that she feels more capable and confident teaching ELLs. She also stated “there are so many challenges teaching these children, but we learn from our mistakes”. She added

...It has been very difficult because is not only the language, there are so many other issues. It is behavior, poverty, you know, and that is the most difficult part, when you deal with these kids. CEMELA, has greatly impacted, because there were many issues around Latinos and ELLs that we addressed through my participation in the program...I think CEMELA has a big part in how I teach. I never used to do group work. I hated it, group work, I hated the noise level. I hated how they a lot of time they went off tasks, but CEMELA has really changed my focus about that, is that there is one of me and there is twenty-five of them, and I now see that

they can learn from each other. I try to employ that in my teaching. Before CEMELA I never thought about collaboration. It is so effective.

Often times, Ms. Bowsher talked about her participation in the TSG as having a major influence in her teaching practices and in changing her perceptions of students, yet misconceptions/perceptions of her students and their families remain (addressed later in this Chapter 7).

During her participation in the TSG, Ms. Bowsher attended a couple of mathematics conferences. In 2009, she participated as part of the TSG in the National Council of Teachers of Mathematics (NCTM) conference, and in 2010 after the TSG had finished she attended the Cognitively Guided Instruction (CGI) conference, both paid by CEMELA. She saw these conferences as opportunities to better help her students with mathematics.

Ms. Bowsher believes that her job as a teacher is to provide all her children (particularly students with characteristics of Saguaros Elementary School) with the basic skills and knowledge to survive outside school. For her, training has been very influential, however, she expressed being nervous when she first started to teach ELLs only. She stated that she is more prepared and capable after being in charge of the ELD classroom for one year regardless of the challenges and responsibilities attached to the teaching of ELLs. Her training and professional development seem to be reflected in her practices. In her case, probably because I met her two years prior to this study, I was able to observe her trying to implement new strategies and doing different things for her students. She was always open to try things that could work in her classroom.

Participant Structure. Ms. Bowsher's Search of Additional Resources. One characteristic of Ms. Bowsher is that she is very energetic. She often organizes and thinks of meaningful activities trying to integrate them in the classroom so that her students are active. Ms. Bowsher's efforts to provide her and the other three third-grade teachers' students with more meaningful, quality instruction was instrumental in planning or finding additional resources. As part of the implementation of the MM curriculum, at the beginning of the academic year, she was in charge of planning for science and social studies. Later in the first semester she switched and was the one in charge of planning for mathematics for all third grade classrooms. Even though she does not feel confident teaching mathematics, she likes teaching this subject. With MM Teachers were required to collaborate and meet every Wednesday for lesson planning and sharing ideas. In an interview with Ms. Heath, she talked about Ms. Bowsher's collaboration in planning the math lessons

Well, Ms. Bowsher does the math plans, so she does all the, uh, you know, she gets all the worksheets and the lessons together. She makes the copies and gives them to us, so that's really nice, and then I just organize it, Monday, Tuesday, Wednesday, and Thursday.

Ms. Bowsher also got involved in several other activities to help teachers prepare their lessons. She received at least once a month "TIME for kids" and "Scholastic news" and distributed them to the other three third grade teachers. In addition, she provided them with worksheets for expository text for literacy development.

An important contribution as part of her collaborative work was that she contacted members of the community and invited them to all four third-grade classrooms. At the beginning of the year, she arranged with Tucson Water, Tucson Fire Department, and City of Tucson Environmental Services to visit the classrooms and give children a presentation about their role in the community. Each of them visited the classrooms 9 weeks apart. I was there for all presentations. In September, a member of Tucson Water gave a presentation focusing on the water cycle, water supply, and water conservation in the Tucson Basin. The Tucson Fire Department made possible two presentations in November. In the first visit, students were given a presentation based on the children's book "No Dragons For Tea," followed by a visit (a week later) with a small mobile home (10 by 22 ft. approx.), installed outside the school, with fire fighters around a fire truck showing students how it works and what their duties are. In the last visit made in January by a member of the City of Tucson Environmental Services, the topic of recycling was addressed through a lesson titled "Too Good to Throw Away!"

All presentations lasted about an hour. The strategies and techniques used by all presenters, who seem to have experience working with elementary school children, varied. They were: plenty of repetition, active student participation, modeling/demonstrations, pictures, connections with everyday life, realization, video presentations, etc. In addition to their presentations, teachers received additional materials to follow up and extend in their own teaching. It is important to mention that in most cases Ms. Bowsher used the presence or presentations of community members to make connection with lessons she did in her regular schedule. For instance, after the

presentation given by the City of Tucson Environmental Services Department, she got her students involved in a project where they had to build something from used materials as shown in Figure 5.1 below.



Figure 5.1. Students' work with recycling materials

In addition to the collaborative work around lesson planning and bringing members of the community to the classroom, Ms. Bowsher sought other resources to help her in the classroom since she did not have a teacher aide. Sometimes volunteer mothers came to the classroom (usually during centers/stations), and there was a retired teacher who helped her twice a week for about two hours. If she organized a big party for the students and parents as she did during Thanksgiving, she involved other people from outside the school such as co-workers from her weekend job. Whenever Ms. Bowsher invited community members to the classroom, she took advantage of it and used the time for students to write thank-you letters, asked students to sign cards, etc.

In addition, Ms. Bowsher raised money for the school by selling “Eegee’s” every Wednesday during the academic year of 2010-2011. She was always very active. “Chop chop”, a commonly used English phrase that means “hurry up,” with origins in Asia, is often used by Ms. Bowsher in the classroom to ask students to finish up their work and to

quickly move to a different activity. For Ms. Bowsher, exposure of students to the outside world was very important. As I explained, students in her classroom experienced learning about the roles of certain members of the community, in addition to the connections made by her in her everyday lessons.

Ms. Bowsher's Students. The school started the academic year (2010-2011) with four Third grade classrooms. Two were regular mainstream classrooms, while two of these implemented the ELD/SEI model. Students proficient in English (native English speakers or students proficient in the language according to the AZELLA test) were equally distributed in the two regular mainstream classrooms. There were 36 students in Ms. Bowsher's classroom at the beginning of the school year, but changes were made in the fifth week after classes, which reduced her class to 26 students; all non-ELLs were distributed among three teachers. Even though Ms. Bowsher was not happy with the large class size previous to the change, she did not like the fact that Ms. Gaona only sent a short notice letter to parents informing them that some students would be moved to other classrooms.

Except for one Anglo/White student in Ms. Bowsher class, all were of Mexican background. All students were proficient in English according to the AZELLA test, but

still students who recently passed this test or were reclassified as non-ELL, were monitored based on their English performance. Some students were more dominant in English and others more dominant in Spanish.

There were no recent immigrant students¹¹, however, some students were either born or started school in Mexico. Yet, Ms. Bowsher wondered if some students were “illegal.” She was curious about it, and she often asked me if I knew about them, once I got to know the students better. There were three students in Ms. Bowsher’s classroom whom she identified as been schooled in Mexico for at least two years (kindergarten through second). She would often tell me that these students were the “American Dream Children” because they were particularly well-behaved and always got good grades, in addition to their parents being more involved than others (this will be further addressed in Chapter 7 in the section of perceptions about students and their families, and support at home).

Ms. Bowsher talked about her students being the average classroom in terms of academic performance and behavior, but several times compared her students with the ELLs she had taught the previous year, and with students in Ms. Heath’s classroom,

¹¹ students in the classroom that either arrived from Mexico the previous year or in the middle of the school year

whose problems seemed more related to behavior, rather than language. From my observations and interviews with a few of her students, I have come to the conclusion that they like her as a teacher, and that they think they have learned more than during the previous year(s). Students talked about the different activities (discussed in more detail in Chapter 6) in her classroom compared to the other three third-grade classrooms. One thing that became apparent from the interviews with her and Ms. Heath's students, is that Ms. Bowsher often yelled at them if they were not paying attention or doing what they were supposed to be doing. However, they all seem to like her. A student in her class said the following regarding this

Sophia: ...if we don't listen to her she kind of yells at us and tells us to do it and if we don't do it we have to stay in for recess and finish it.

Because of this, I asked a few students in Ms. Bowsher class if they like her and the way she teaches and they say yes. While in the classroom, it is apparent that they (teacher and students) get along very well and that they like her. I often observe students showing their emotions and hugging her, even students that she had in the previous years would come to her classroom just to hug her.

Classroom Setting and Daily Routines. I will start this section by describing the classroom (Figure 5.2: Ms. Bowsher Classroom – Diagram) The door to get in Ms. Bowsher's classroom was located in the northeast side of the classroom (facing the east side where the hallway is, and her desk was in the southeast corner of the room from where she usually taught; there was a TV on a stand, in that corner. There were four double-tables with four students around them, and two triple-tables with five children

around them, for a total of 26 students in Ms. Bowsher classroom. All tables were arranged in a way such that it would be easy for students to look at the whiteboard while she was using a projector, without being blocked. She regrouped her students twice among all tables, considering gender and academic performance so they would help each other if needed. Opposite to where Ms. Bowsher positioned herself when she used the projector and taught, there was another whiteboard often used for poetry or for other activities. There were a rug and a comfy chair in the back southwest corner, where she usually read aloud, next to the whiteboard. There were also two half circular tables she used for two of the four stations (centers), one in the back, in the center, and the second one in the back in the opposite corner where Ms. Bowsher's desk and TV were. There is a second door in the classroom that connects to another classroom (Ms. Heath's classroom) in the northwest corner of the room. On the north side wall of the classroom, there is a counter with a faucet; and finally there is a closet on the northeast side of the room next to the entrance door. The walls in Ms. Bowsher classroom were mostly covered with colorful materials she bought or developed throughout the year for her students, as reference for the different subjects.

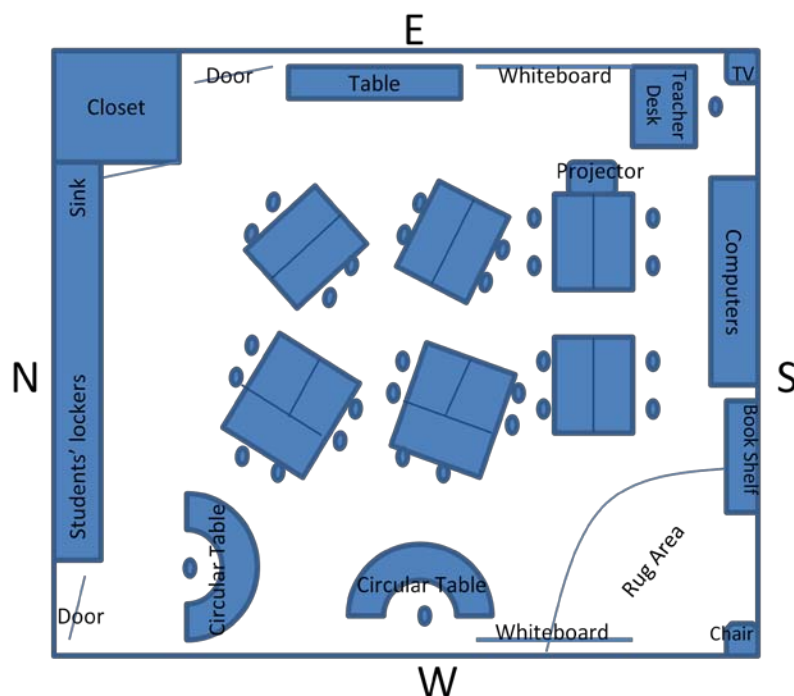


Figure 5.2. Ms. Bowsher classroom – Diagram

Although there was a schedule posted on the wall (Table 5.1), it was rarely followed. Ms. Bowsher started the day with an announcement of the day's schedule, followed by bellwork that usually lasted about 40 minutes. Within the time allotted to bellwork, students work (individual practice) every day for the first 15-20 minutes on mathematics and language. During this time, she often walked around the classroom making sure students were working, clarifying if necessary, and then in a whole group they solve and correct the items (using the projector or smart board). Bellwork continues with a reading of a short passage (usually one page), and review of vocabulary (through repetition) for the week. During reading time, Ms. Bowsher often shows her students short videos from YouTube, to make connections and expand upon the week's vocabulary.

Table 5.1

Posted schedule in Ms. Bowsher's classroom

Read Aloud	8:05-8:30	Specials: Monday – Library Tuesday – Art Thursday – Music Friday – PE
Reading	8:30-10:00	
Math	10:00-10:50	
Recess/Lunch	10:50-11:30	
Math	11:30-12:15	
Specials	12:15-12:55	
Interventions	12:55-1:30	
Literacy	1:30-2:30	
Wednesday (Short day)		
Reading	8:05-9:50	
Math	9:50-10:50	
Recess/Lunch	10:50-11:30	
Literacy	11:30-12:30	

Usually, there were no set times for the rest of the day in Ms. Bowsher's classroom. However, mathematics was a subject that she would teach every day, and depending on the topic and on students' understanding, she would allocate more time (sometimes up to two hours) to this particular subject. Centers/stations, on the other hand, were not a daily activity, as it usually took place two or three times a week. There are usually four stations: listening and writing, English, mathematics, and computers. Ms. Bowsher usually stays at the listening and writing station, and if there are no volunteers, students in the other three stations would be working by themselves with no guidance.

However instructions for them would be given at the beginning. For the English and mathematics stations, students usually play card games (e.g. go fish) or given worksheets (filling the hundred chart to form letters, numbers, or words) to complete. Students in the computer station would play games using the program Orchard, which provides targeted instruction in mathematics, reading, writing, language arts, and science. Limited supervision was given in this station (Figure 5.3), and oftentimes students would have to share a computer because not all worked properly. Usually two days (Tuesday and Thursday) a week between 9:00 and 10:50 am, Ms. Bowsher had a volunteer – an retired teacher (Ms. Johnson) – in her classroom who would help for about two hours, usually at one of the stations during centers. Also if I was there, Ms. Bowsher would ask me to help at a station as well. Centers/stations usually lasted one hour and twenty minutes (20 minutes per station) or one hour (15 minutes per station) depending on the time, and what she planned for the rest of the day.



Figure 5.3. Students playing in computer station

Other activities that often took place in Ms. Bowsher's classroom outside of bellwork, mathematics, stations, and R/E and PrBL (explained last in this part of the chapter) were reading aloud, poetry, expository text, and writing. In read aloud, which usually lasted between 20 and 30 minutes, students would be asked to go to the rug or stay in their seats, but always students took their small whiteboard with them to draw what came to their minds in relation to the reading - what Ms. Bowsher calls "mind movie." Read aloud was an opportunity for them to make connections, predictions, and sharing while listening to Ms. Bowsher. In poetry, usually after read aloud, students would recite 3, 4, or up to 5 poems, and then identify nouns, verbs, or other parts of the sentences in the poem depending on the topics they were addressing within the other subjects. Sometimes Ms. Bowsher would just make connections with previously taught concepts.

During expository text, students in Ms. Bowsher classroom were exposed to different activities that they seemed to enjoy. Students were asked to write connections to the reading, make predictions and share, and often Ms. Bowsher would play videos directly related to the topic or theme, to enrich it. Students were often active participants. During read aloud, students sometimes used their small whiteboards to draw. Often, expository text was followed by multiple-choice questions for comprehension, after which students would be given a few minutes to answer questions and then discuss as a group. As part of reading activities in Ms. Bowsher' classroom, students were often given the "TIME for kids" magazine or "Scholastic news," followed by reading comprehension questions.

The format for writing was also varied in Ms. Bowsher's classroom. Usually modeled and guided by her, oftentimes students wrote letters for their parents, community members, or students in other schools. In addition, students were asked to write a recipe(s) and had a personal journal. Ms. Bowsher bought for each student a composition notebook that became a personal daily journal in which students would write their experiences in and/or outside school almost every day, to which she would reply by writing notes in it at times.

From September to January, time in which I collected most of my data, from 1:00 to 2:30 pm Ms. Bowsher taught R/E or interventions and project-based learning (PrBLE). For 1 hour and 30 minutes, she would combine some of her children and those from the other three classrooms. For the first one-half hour of R/E, Ms. Bowsher would have the children with higher grades (A's) from the four third-grade classrooms as explained earlier in this chapter. During this period of time, she would reinforce or review mathematics with students based on topics from previous benchmark assessments (e.g. number sense, addition, multiplication, subtraction, division, fraction, telling time, etc). In PrBLE, for which she was the planner for all the four third-grade classrooms, she addressed topics of social sciences, history, and science. Students in her classroom often engaged in hands-on activities (Figure 5.4), watched videos related to the topic she was introducing or reviewing.



*Figure 5.4. Students and Ms. Bowsher participating in a science lesson
An ELD/SEI Classroom – Ms. Heath’s Classroom*

Ms. Heath. Ms. Heath’s personal and schooling experiences were very different from Ms. Bowsher. Ms. Heath, who graduated and obtained her teaching diploma from the college of education at the local university, had the same years of teaching experience Ms. Bowsher did; she started her seventh year of teaching just before I started my study. Although she has taught ELLs in regular mainstream classrooms, this is her first year teaching ELLs only.

From a White/Anglo background, she was born in New Mexico, and moved to Arizona when she was 7 years old. English is her first and only language. Her mom, who is a trained teacher and has obtained four masters’ degrees with a focus area in reading, has been the most influential person in her education. Ms. Heath learned how to read when she was three years old, and how to write when she was in kindergarten. She said that by the time she was in kindergarten she was reading at a third grade level.

Despite the many efforts for learning Spanish, English continues to be her only language. Ms. Heath remembers her father, who grew up in New Mexico, telling her not

to take French, Latin, or other languages but Spanish, because living in Arizona it would be something that she would need. Therefore, she took three years of Spanish in high school, and many courses (for about three years) in college, since she was minoring in this area. She attributes her failure to learn Spanish to being forced to do it, and she was reluctant to learn it in both high school and college. In addition to all Spanish courses she took in high school and college, Ms. Heath bought a program called “Rosseta Stone” when she found out she was going to teach at Sagueros Elementary School. The first reason was the high Spanish population in the school, and secondly, she wanted to lead her own parent-teacher conferences. She said it was one more effort, but did not work. She mentioned that she cannot speak Spanish at all, but understands some if people speak slowly to her. However, she expressed some empathy for students like the ones in her classroom who learn in a language not spoken at home. She said that as a teacher, she feels she has enough vocabulary, but would not talk to her children’s parents because she cannot conjugate verbs correctly and does not sound very good. More about her language learning experiences will be addressed in the following chapter.

Her memories around mathematics, since she was in elementary school, varied. Ms. Heath admitted she never liked math. Ms. Heath repeated a few times that she struggled in math more than any other subject and always had to work harder, even in her teaching. She said she has always enjoyed teaching reading and writing but never liked teaching math. She also mentioned that about 4 years previous to my study she even traded teaching math; she taught science (which she does not like either) and social

studies to her colleague/friend's students, and her friend taught math to her students. She said that she loved teaching that year.

Ms. Heath also said frequently that another subject she did not like or enjoyed teaching besides math was science, but she teaches them [math and science] because she has to. She stated that she loves teaching any other subjects and her favorite one is writing because she sees so much growth in her students. However, according to her, writing was unfortunately a subject they [teachers] did not teach the year my study was conducted. A more comprehensive description of her experiences in math will be provided in Chapter 6.

Beyond her dislike for teaching mathematics and science and love for reading and writing, something that characterizes Ms. Heath is her desire to maintain a quiet, serene classroom in which students have to follow her rules to meet academic objectives. She sees this characteristic of classroom management and keeping students on task as her major strength as a teacher.

Ms. Heath's Training and Professional Development. Despite the fact that Ms. Heath obtained her teaching certificate in a four-year long program, her additional training and professional development is more limited compared to Ms. Bowsher. Besides the SEI training required by the Arizona Department of Education of 45 hours, provided in Saguaros Elementary School by district personnel, Ms. Heath attended a couple of sessions with a few teachers from Saguaros Elementary School of a mandatory training program to learn about strategies that address the needs of ELLs. She said the following about these training sessions

...Uh... I just, I felt like I wasn't, um, very well trained in ELL, so Liliana, Candy, and I took that, and I, I took away so many strategies. I have a whole binder filled with strategies used for ELLs, lots of templates, and, yeah, so, um, so I feel, I feel pretty well trained with it. I mean, I could always have more training, and I can go to the training after school. They have the ELL teachers go to training from three to five at this Radisson hotel. I can't do that because of my boys, so I've missed the last two, so... I mean, I should go to (incomprehensible).

She said she stopped attending these training sessions of two hours at a hotel for family reasons (childcare issues). However, she said she tries to use strategies such as visuals and making funny voices, strategies that may work based on her own language learning experiences. She feels pretty well trained to work with ELLs also because of her six years of experience teaching mainstream classrooms that included students who were not proficient in English. She also said that she does things differently to address the needs of her ELLs. Some of the changes she mentioned as a result of this training are that students do the listening center (Figure 5.5) everyday, whereas before they used to do it just once a week. She does poetry more interactively: previously she would put the colored tape on words (nouns, verbs, etc) of the poem, but now the students stand up, point to what she asks, and put the tape on (See Figure 5.9). For read aloud, she found that she has to stop and explain more frequently, and ask students to explain what the reading is about in their own words.



Figure 5.5. Listening center

She said the following when I asked about training specific to the subject of mathematics

Same thing, we have, uh... actually we haven't had them in a long time, but we used to have a lot of, uh, mathematics training, and, uh, they would give us resources. Now we really just off MM, Media and More, and we get a lot of our resources there.

The implementation of MM apparently has taken away some training because it requires them to work collaboratively, which seems to be more a division of tasks as she said,

...Well, Ms. Bowsher does the math plans, so she does all the, uh, you know, she gets all the worksheets and the lessons together. She makes the copies and gives them to us, so that's really nice, and then I just organize it, Monday, Tuesday, Wednesday, and Thursday...we get together every Wednesday and we say, "OK, next week we're gonna be talking about

addition and subtraction. The copies will be in your box. Test on Friday."

...I do writing, science and social studies...

This division of tasks seems to be a practice she likes because it facilitates their planning in a way. However, these practices have had many implications for her teaching in mathematics, implications that I will address in the following chapter.

Similar to Ms. Bowsher, Ms. Heath expressed feeling nervous when they started to teach the ELLs only, but this changed after being in charge of the ELD classroom, which carries many challenges and responsibilities. Yet, her training seems to be reflected in their practices. Ms. Heath seems to rely more on practices she has experienced that work for her. Also, as I have addressed, the way in which MM is implemented in Saguaros Elementary School is helpful for her in a way, because she does not have to plan for other subjects she may not like, such as mathematics and science, depending on other teachers' planning.

Participant Structure, Ms. Heath's Search of Additional Resources. Ms. Heath's collaboration was limited to the minimum the school required for lesson planning and sharing of ideas among the teachers of the same grade level. In the interview with her, Ms. Heath talked about her participation in the Wednesday meetings with the other three teachers, which is the day they planned for the following week, as required by the implementation of MM:

Jesus: And do you get together and discuss that [planning] or...?

Ms. Heath: Well, we, yeah, we get together every Wednesday and we say, "OK, next week we're gonna be talking about addition and subtraction. The copies will be in your box. Test on Friday."

Jesús: OK. What about the other subjects?...what is your part in terms of planning?

Ms. Heath: I do writing, science and social studies.

Jesús: And how do you feel? Because you don't like social studies.

Ms. Heath: I don't. Um, yeah, I used to just do writing, but then we pushed writing to the side. I really liked doing the writing plans. You know, it, it was fun, but now we don't have time for writing, so I do science, social studies.

Often times during the interview, Ms. Heath brought up her dislike for teaching mathematics and science and compared them with reading and writing, which she liked the most. Therefore, I was curious about her participation in planning as part of their collaborative participation at the Wednesday meetings.

As far as inviting other community members or parents to participate in the classroom, it was a practice that I did not observe in Ms. Heath's classroom. She even

told me the following when a person from Tucson Water¹² visited her classroom to give a presentation about the water cycle, water supply, and water conservation in the Tucson Basin: “why do they [students] need to learn about water now? My students need that time for writing. Their literacy skills are so low, it is just a waste of time”. It is important to mention that Ms. Heath admitted to be overwhelmed by the fact that her class almost doubled in size, and she was worry because of specific needs such as writing, which she identified in her students. However, she could have used the presentation and additional materials the presenter gave her to expand upon what she thought the students’ needs were, since they [students] enjoyed the presentation.

Ms. Heath’s Students. Ms. Heath started the academic year with 17 ELLs. In the fifth week of classes, when the school principal decided to regroup and make changes in classrooms size, there were 31 ELLs, but four of them were reclassified as non-ELL and were moved to one of the three mainstream classrooms because HB 2064 limited the number of ELLs in the ELD classroom. With this change Ms. Heath end up having 27 ELLs. At the beginning, after resizing all groups, she was really concerned and said she

¹² Tucson Water, Tucson Fire Department, and the City of Tucson Environmental Services visited Ms. Heath classroom because of Ms. Bowsher efforts of involving the community as part of the implementation of the MM curriculum.

did not know how she was going to handle such a big group of students with language and behavior problems. By the time I finished data collection, she had about 25 students. A few students moved out to another school or passed the AZELLA test and were reclassified as non-ELLs, and other students moved in from other schools. Just like Ms. Bowsher, Ms. Heath was not happy with the changes made throughout the academic year because some students experienced three or four different teachers, and also because most changes were made without their [teachers] opinions or without consulting parents.

All students in Ms. Heath classroom were of Mexican background and ELL (as it was the ELD/SEI class), except for two students whose primary language was English but who had to take the AZELLA test because their parents speak Spanish at home, all students spoke Spanish or their primary language was Spanish. Some students were either born or had attended school in Mexico

According to Ms. Heath, the students' academic performance in her classroom was very low; she attributed this to her students' language skills in addition to the low skills they carried over from previous years. Although Ms. Heath often compared her ELLs with students she taught in the previous six years saying that they [her current students] were the average if not better in terms of discipline, still, for a few times she talked about behavior problems when teaching her ELLs. Behavior and classroom management and the teacher's perceptions of her students will be further discussed in chapters 6 and 7.

Classroom Setting and Daily Routines. Ms. Heath's and Ms. Bowsher's classrooms were next to each other, and had a door that connected them. The door to get

in Ms. Heath's classroom (Figure 5.6 Ms. Heath's classroom – Diagram) was a few feet from Ms. Bowsher entrance door in the southeast side of the classroom. Her desk was in the opposite northwest corner of the entrance door, next to a bookshelf by the rug where read aloud and poetry took place every day. There was a whiteboard by the rug on which Ms. Heath posted the everyday schedule (Table 5.2). The computers for students to use during centers/stations were located in the north side-wall by the bookshelf, next to the TV on a stand located in the northeast corner of the classroom. The students in her classroom faced two whiteboards on the east side-wall where Ms. Heath used the projector and did most of her teaching. There was a half-circular table in the back, in the center of the room where the station that Ms. Heath led took place; and finally the counter with the sink and faucet is on the south side wall next to the closet where classroom materials were stored, next to the classroom entrance. Students were distributed around seven double-tables usually facing the east side-wall. Compared to Ms. Bowsher, there was significantly less material on Ms. Heath's classroom walls since she did not post what she or her students did for reference.

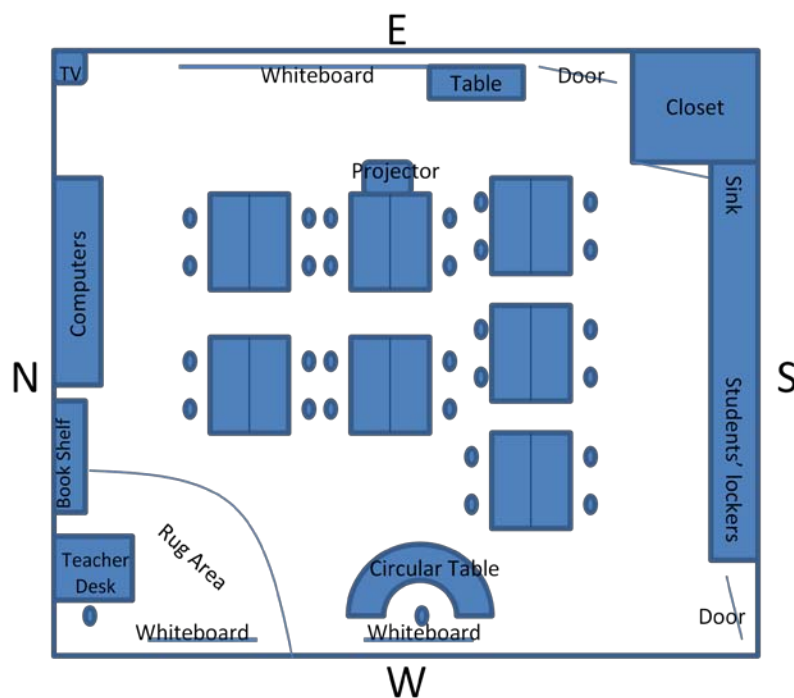


Figure 5.6. Ms. Heath's classroom – Diagram

As part of the daily routine in Ms. Heath's classroom, the schedule was posted every day as follows:

Table 5.2

Typical schedule posted in Ms. Heath's classroom

8:00-8:10	Math bellwork
8:10-8:30	Read Aloud
8:30-9:30	SFA (Success for All)/Centers
9:30-10:50	Math
10:50-11:30	Recess and Lunch
11:30-11:45	Language and reading bellwork

11:45-12:00	Fluency
12:00-12:15	Poetry
12:15-12:55	Specials
12:55-1:00	Clean up and get ready for R/E
1:00-1:30	R/E (re-teaching of math)
1:30-2:30	PrBL

This schedule changed slightly on Wednesdays, the short day in which teachers got together for planning and to do collaborative work. Classes ended at 12:30, so the fifteen minutes after poetry were assigned for clean up.

Most activities took place every day in the order they were listed on the whiteboard, however, before recess and lunch the times allotted for each activity were often not followed. The average time for the first two activities was often twice as long, and SFA usually took up to one and a half hours since students normally spent twenty minutes in each of the four stations, leaving little time for mathematics, which sometimes would be extended after students return from lunch.

The day in Ms. Heath classroom started with math bellwork. For about ten minutes students practiced individually, then in a whole group, they shared their answers and corrected them with Ms. Heath's guidance. From start to end this activity usually took between 15 and 20 minutes. As soon as students finished they were asked to turn

towards the whiteboard where the schedules was posted to check for discipline during the first minutes in bellwork.

Read aloud is the second activity that took place in the ELD/SEI classroom. For this section, Ms. Heath usually read to her students a chapter book that was of interest for them, and had came out in a movie format to show them once she finished reading the whole book. With lights off but some daylight since the windows are not too big, Ms. Heath read every day between 20 an 40 minutes often stopping and asking students to make connections and predictions about what she had read. She occasionally asked students to share their thinking, but provided them with very limited time to do so. Students seemed to always enjoy read aloud as Ms. Heath's tone changed often and body language was an important component during that activity. As I mentioned, when Ms. Heath finished reading the book, it was complemented with the movie. During movie time juice and popcorn or chips were provided. Watching the movie sometimes was followed by a teacher guided writing activity where students shared and wrote similarities and differences between the book and the movie.

SFA or Center/stations usually followed read aloud, and took between sixty-five minutes and ninety minutes. There were 4 stations (math, listening center, computers, and the fourth one varied on the topic) where students spend fifteen or twenty minutes (each) depending on what MS. Heath had prepared for the day. Ms. Heath started SFA by giving directions for each station. In the math station students usually played math games (often addition and subtraction), sometimes they worked on 5-minute math, and occasionally they addressed the math objectives of the day or week working on worksheets

individually. Students in the listening center station usually listened to a tape while they had to write and draw, in addition they read a short story at the same time, related to what they were listening (Figure 5.4). In the computers station, usually they played games using the program Orchard (explained earlier); and at the station Ms. Heath led they were tested sometimes, had an English lesson, worked on small projects or something else. While at the station she led, students got some guidance, in the other three stations/centers students were usually on their own since there was never a volunteer to guide them or help.

The rest of the time before recess/lunch was assigned to mathematics as posted in the daily schedule, however, this time normally did not exceed one hour. Ms. Heath usually started mathematics instruction by making explicit the content and language objective(s) and then the activities around them varied, whether she was addressing a new topic or students were reviewing or working on worksheets. If a new topic was introduced, Ms. Heath usually did it through a PowerPoint presentation prepared by another teacher (the one in charge of planning math). If students practiced or worked on worksheets, it was usually through the teachers' guidance. Ms. Heath sometimes went back to mathematics after recess and lunch depending on her perceptions of students' understanding.

After recess and lunch, the schedule was usually followed. At their return from lunch students knew they had to work on bellwork addressing mostly language; they did not even need directions to start. Like in math bellwork, students were given a few minutes to practice on correcting sentences and other areas of language, and then with

Ms. Heath's help as a whole group they corrected and worked using the projector. This activity took usually between fifteen and twenty minutes. Within the bellwork package (worksheets) there was a short (usually one page reading) that Ms. Heath used for fluency. During fluency, Ms. Heath often read the passage with the students once or twice and then she timed students reading for a minute at least twice, asking them to circle the last word they read. While working on fluency, she sometimes addressed the characteristics of good readers. Then she continued with the following task, which was poetry. For poetry, Ms. Heath posted a poem for students to memorize every week. Poetry took place on the rug in the back of the room. Throughout the week, the activities around poetry varied day by day. By the end of the week, students should have memorized the poem. Oftentimes students read the poem together, but sometimes they had to say it individually. Depending on the topic Ms. Heath had assigned for language (e.g. nouns, pronouns, verbs), she asked students to identify the words with colored tape to differentiate nouns from verbs (See Figure 5.7). On Friday, usually when students had memorized the poem, they were asked to illustrate it, and then if there was enough time, Ms. Heath asked students to share their illustrations.



Figure 5.7. Students identifying nouns and verbs in a poem

At 12:15 pm, all students went to specials (music, art, physical education, or library) for forty minutes. After specials, there was a five minute transition in which students got ready to go to R/E and PrBL. For R/E (re-teaching/interventions) Ms. Heath always had students with lower scores (D's) in mathematics. During the length of R/E, Ms. Heath usually reviewed through guided practice, the concepts that students already worked on in the previous quarter or tests. This activity usually lasted between 25 minutes and ½ hour. Finally in PrBL, from 1:30 to 2:30 pm, students watched PowerPoint presentations, worked on worksheets, and/or watched videos, depending on the topics and time. Students in Ms. Heath classroom usually learned about social sciences and history but not science.

Discipline and structure appeared to be major themes in Ms. Heath's classroom. She checked for behavior problems for each period of time after students finished a different activity throughout the day. More details about it will be provided in Chapter 6, in the section of Classroom Management.

I was surprised to see that the students in Ms. Heath's classroom were not affected as they would be if the school had implemented the ELD model as stipulated by *HB 2064*. Students in most schools and districts with a large number of ELLs in Arizona are segregated for four hours receiving just English lessons. However, ELLs in this classroom were segregated nearly all day, despite efforts made by Ms. Gaona (school principal) to keep them separated from the non-ELLs for only four hours as required by law. Ms. Gaona, who is a bilingual trained teacher, said the following regarding the implementation of the four-hour block:

So this year instead of pulling those children out we are going to keep them together. So if a child is identified as ELL, they're gonna be ELL ...regardless of how they pass the benchmarks and hopefully we'll have those models, those higher level models to help our children to move up, okay? And to develop the language better... Another change that we have been talking about this year is that we need to have, we would like to do four days of the, the block and on the fifth day, like a Friday, have it project based. And one idea is that the teachers in the, in the, in the grade level will say, let's say we have four teachers. Two will do a social studies type of project, which is like thematic, which is very good for ELLs, or maybe do a science. And, and then the children can choose that quarter which one they want...

From my narrative about the daily routines, I concluded that the schedules were not set up as Ms. Gaona thought originally. Students in Ms. Heath's classroom had access

to the same core curriculum that other third graders did. Nevertheless, the practices in the ELD/SEI classroom were shaped by her training and beliefs regarding the subjects she taught, language, and students. In the following section of this chapter, I address the practices that took place in Ms. Heath's classroom compared with Ms. Bowsher's practices.

In summary, this chapter provided a descriptive account of two different classroom ecologies within Saguaros Elementary School. I started with an overview of the implementation of the ELD four-hour block, and the recently adopted curriculum – Media and More (MM). In the teachers' sections of the classroom ecologies, I addressed briefly their personal experiences as learners of language and mathematics, their training and professional development, their search of other resources to assist them in their teaching practices, and general characteristics as teachers. On the students' description, I focused on background, language characteristics, and general performance and behavior based mostly on the teachers' perspective, since one of the objectives of this dissertation is to determine what is it that teachers do for their students in terms of resources and/or practices. Finally, in the daily routines and classroom setting, I addressed the physical classroom structure and a brief summary of the activities in each classroom. From these descriptions, I conclude that there are substantial differences at a surface analysis of the classrooms, and for the in-depth analysis I expect the differences to be greater regardless of similar curriculum implementation.

In the following two chapters I will focus on the analysis of my data to address the experiences of both teachers and how these experiences inform their practices, as well as the teachers' perceptions of their students and families.

CHAPTER 6

TEACHERS' IDEOLOGIES AND ATTITUDES: CONNECTIONS BETWEEN EXPERIENCE AND CLASSROOM PRACTICES

In Chapter 5, I provided a detailed description of Ms. Heath's classroom, an ELD/SEI, and Ms. Bowsher, a mainstream classroom. To provide more context, I also included an overview of the mathematics curriculum and the way the ELD/SEI model is implemented at Saguaros Elementary School. In that chapter, within the teachers' descriptions, I addressed their training and professional development. In this chapter, I answer questions 2 and 3: (2) What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these meaningful for students of Mexican Background in Particular? (3) How do the teachers' learning experiences around mathematics and language learning inform their classroom practices towards these areas?

With the teachers' autobiographies I was able to make connections between their experiences around language and mathematics and their classroom practices. To answer question 3, I addressed language ideology as mediator between the teachers' language experiences and their approaches to the use of language in the classroom. Cummins (2000) states that language ideology represents a statement of identity. He adds that they range from coercive to collaborative in nature. For him language ideology is articulated as an expression of discursive power by people of dominant groups to eradicate manifestations of linguistic diversity. However, a different notion of language is provided by Ruiz (1984) in viewing language as a right and as a resource rather than as a problem.

In the case of mathematics, attitudes towards the subject was the mediator between their experiences and the used of strategies in their classrooms. Philipp (2007) defines attitudes as “manners of acting, feeling, or thinking that show one’s disposition or opinion” (p. 259) stating that attitudes are more cognitive and more stable than emotions.

Classroom practices represent those things teachers do to help students acquire knowledge. These practices are designated for students first, but they should also assist parents and other teachers in providing quality learning environments for all children. Using the coding scheme described in Chapter 4, I analyzed the strategies and techniques I identified particularly around mathematics. I analyze some of these practices observed in both classrooms based on their designation, ELD/SEI or mainstream. To address strategies and techniques, I made conceptual logs of the videos and field notes collected during a period of six months. Teaching strategies are those techniques, approaches, activities, and assignments that teachers implement to help students to process new information and apply prior learning, facilitating understanding and making content more accessible to them (Reiss, 2008).

Ms. Bowsher (Mainstream Classroom Teacher)

Experiences as Learner of a Second Language

Ms. Bowsher, who came from an Asian country to the United States when she was 10 years old, learned English in school and at home. In the process of learning English, she lost her first language. Growing up, Ms. Bowsher lived in an environment where there were few speakers of her native language, in addition to that, a context where her family (her father) chose to speak only English to ease the process of assimilation.

The decision to switch to English was made a month after they arrived in the new country where she was not adapted yet, and none of her family members speak English fluently, “in fact, it was very limited” she added. She and her older brother were in middle school. Ms. Bowsher said that she will never forget that incident that led her father to take “a drastic decision” of not speaking her first language at home. According to her, in that incident her little brother, who was in first grade, was crying without stopping [at another school] and his teacher could not figure out the reason, so her father was called and had to leave work. When the father arrived, they found out that the little brother who was five at that time could not communicate that he had lost the dollar his father used to give him and his siblings for lunch every day. Ms. Bowsher words were “from that day on my dad said in our native language *you guys are gonna speak English, and you guys are gonna speak like natives*, and from that day on we didn’t get to speak our first language at home”. She attributes to this incident the loss of first language in her and her little brother.

Ms. Bowsher also expressed how learning English was easy for her as she said, “it was the age, or just wanting to be social.” However, her experiences with the English of school were different. She said that in high school and even in college learning English was “tricky” because she did not understand her teachers in science, social studies, and even in mathematics. Even though she was quite social she was often embarrassed to ask questions, consequently she would sit and be quiet not understanding or having a clue of what was happening in the classroom.

She also brought up that people would assume she knew everything because she did not ask questions; it was granted to have some knowledge. She attributes this to the fact of being Asian as she said

...I don't know what the hell they're talking about, but people assumed that I knew things because of being Asian. I think that if I was maybe Black or even Hispanic it would've been different but nobody questioned whether I knew or not. And it happened in, it was the same in high school it happened, I mean, even in, in college.

Somehow, Ms. Bowsher addressed important theories around second language acquisition when she talks about children learning the language easily in social settings. Then, length of acquiring English for social or academic purposes, for instance is addressed. An interesting point she made, was that perceptions make big differences when educating non-mainstream students, that perceptions can easily mislead if a student understands or not the content or what is being thought in school. She addressed the stereotypes of being poor and uneducated (discussed in the following chapter). In the following excerpt she talked about the psychological factors when learning a language

I can't speak my native language fluently and I can't, I certainly can't write or read, um, so through that course I've lost everything. Um, but I, I could, I recognize it and um, I've tried to go back to it (her native language], school and stuff when I was older, some-there's a block somewhere because I can't seem to get it. It doesn't, I, I don't retain it and I don't know what it is, and I don't know if it's a mental or emotional or what...

Ms. Bowsher also mentioned a specific practice that she experienced back when she was in middle school, which seems to be part of her own teaching practices. This practice is drilling and memorization. She remembers a traditional teacher in her English classes that used this strategy (practice) for vocabulary learning; she said that the teacher's voice and words she learned are still in her head. She mentioned that she should credit her for it. It seems that Ms. Bowsher sees the practice of drilling and memorization as positive based on her experiences back when she was learning the language. This is a strategy that she uses often with her students even though is for vocabulary development in content areas.

In addition to her school and learning experiences Ms. Bowsher sees the mentoring of a neighbor as instrumental. He was a professor in geology and was a friend of her family. She remembers him taking her and her brothers to different places around the Tucson region. When talking to her and her brothers he would always model pronunciation and tone of words in an exaggerated way so she and her siblings would remember which she still does.

At the end of her narrative about her language experiences Ms. Bowsher stated that it was a hard exercise to go back to her experiences when she was a student. She said that now that she thinks about them, they were not as smooth as she thought. In her reflection she pointed out that immersion in English was key for her in becoming proficient in the language, but at the same time she felt a loss because there was a disconnection between herself and her Asian background.

Language Ideology

Ms. Bowsher's language ideology seems to be shaped by the context in which she grew up learning the language in the 1970s. A few times she referred to people in this period of time [when she was in school] as believing that in order to learn a language one has to be immersed in it and speak it as much as possible. Within her comments she mentioned that at that time the "sense of proud for being American and living in America" was common. She also said that her exposure to other cultures was very limited, even though she grew up in Southern Arizona, and attended schools with children of different backgrounds (Mexican mostly). She stressed "it was all about English", even at home with her family since her father decided to assimilate to the "American Culture" without thinking on the consequences.

Before my study and at the beginning of it, oftentimes, I heard her saying that to succeed in America it is essential to learn English and adapt as soon as possible. A phrase I also heard telling her students often was "*speak English, you live in America,*" even in the classroom, a reproduction of her own experiences. However, through the three years that I have known and interacted with Ms. Bowsher, I have seen some change in her in how she thinks about English and her students' primary language. Nevertheless, towards the end of data collection I heard her talking to the students about the importance of going to college, and how important is to have two languages like they do, to be bilingual like they are, she said and stressed, "*I am jealous about you speaking Spanish besides English.*" Similarly, she said the following during the interview,

I think it's a great asset to have dual languages. Mhmm. I think it's, I think it doesn't hurt, the kids, I think when it hurts the kids is when they don't

have exposure but now we have so many mediums where they could be exposed at home so it's not limited to just that...I think it's just the idea of, or somehow introduce that it's okay for them to speak another language, and I bet that it wasn't okay. I mean every time you spoke [back when she was in school] then someone told you, you know, speak English. You know, English only, that kind of thing. Um, and I think just sense of pride, sense of, you know history and sense of...

The quote above reflects a very positive attitude towards language, opposite to the phrase "*Speak English you live in America,*" heard from her prior to my research and at the beginning, which she now sees as a result of being proud of being American. Still, the use of Spanish in the classroom where more than 90% of her students are of Mexican heritage was very limited. In the following section I address how English-only policies and her own experiences and ideology has an impact in her classroom.

Teaching Practices (Language of instruction and role of students' primary language)

Despite the fact that close to a hundred percent of her students spoke Spanish, English was the only language of instruction observed in Ms. Bowsher's classroom for all subjects. Ms. Bowsher's only language is English. However, students sometimes spoke Spanish in the classroom, but it was not related to math or the subjects she taught. Their interactions in Spanish were more social, but still limited. There was an instance at the beginning of the school year in which students were getting ready to leave the classroom after re-teaching of mathematics (R/E). There were students of all 4-third grade classrooms mixed, and Ms. Bowsher heard to two students (ELLs) from Ms. Heath

classroom speaking Spanish and she told them *speak English, you live in America, you need to learn English to succeed in America, otherwise you won't achieve what you dream for*. The students who were there for just one half hour left the classroom and said nothing. While in the classroom, I did not hear or observe other instances like this with her students. She probably told this to Ms. Heath's students, because she knew those two students were in the ELD classroom and wanted to make a point that they need to learn English. During my participation in the Teachers Study Group (TSG), before data collection, when Ms. Bowsher was assigned to the ELD classroom, I heard her make similar comments to her ELLs. Other cases like this happened with students that she new were ELLs but it was outside the classroom.

An attempt to use Spanish as a resource happened during math bellwork, when Ms. Bowsher noticed that one of her students was not paying attention. She was explaining the concepts *even* and *odd*. At that moment the student, who she found out attended a few months of school in Mexico, could not tell what an odd number was, Ms. Bowsher then asked another student who she knew attended first grade in Mexico, if he could tell how to say "odd number" in Spanish. The student Ms. Bowsher asked did not know the answer, and Ms. Bowsher explained the concepts giving examples of even and odd numbers using the students, putting them in pairs or groups of three and five. It was interesting to see Ms. Bowsher trying to use the students' primary language but it was obvious that she did not know the levels of proficiency. The two students in this case were still monitored since they recently passed the AZELLA test.

Read aloud in Ms. Bowsher's classroom was an opportunity for students to listen to her say several words in Spanish. In one occasion, after reading a very short book titled "When I was young in the mountains," Ms. Bowsher told students that she was going to read a book that one of their classmates chose. The name of the book was "Adelita: A Mexican Cinderella Story". The book had several words, and even complete sentences, in Spanish that were translated simultaneously in the book. The students seemed to enjoy the book. While Ms. Bowsher was reading the Spanish words and sentences, she was having trouble pronouncing, but the students would help her. This was also an opportunity for students to feel that it was okay to speak their mother tongue, and some of them were doing it so. The second time I documented Ms. Bowsher saying or reading Spanish words, was during read aloud when she read a part of the chapter book or novel "Esperanza Rising", a book that addresses the struggles of a Mexican girl and her family in terms of poverty and surviving in the United States. Similar to when Ms. Bowsher was reading Adelita, students would correct and help with mispronounced words.

Spanish, which was the students' primary language, was limited in the classroom. However, there were instances in which Ms. Bowsher attempted to use the language as a resource among students, or use it herself in read aloud, even though she did not know how to pronounce those most words. In the section of language ideology I mentioned that in the interview and in the classroom (once) she talked about the importance of having two languages, again this was almost at the end of my study but I was happy to hear her saying this to her students too. Changes were noticed from when I met her at the beginning of the TSG to the end of my research, in almost three years.

Experiences as Learner of Mathematics

Ms. Bowsher's mathematics learning experiences were totally different from those of experiences acquiring a second language. In this case when she arrived in the United States, at the age of 10, she had learned mathematics [in elementary school]. She believes that according to her teachers for being Asian her knowledge in mathematics was strong compared to the U. S. standards, consequently she was placed in 6th grade – middle school. Along with all other subject areas Ms. Bowsher were taught only in English, a language with which she was not familiar. No support in her native language was provided at any school level. Nevertheless, mathematics was the easiest subject for Ms. Bowsher as she recalled when she said,

...computation was easy but [word] problems were difficult, I think that one subject I did well in was in math, I was an average student and probably below average [in Asia], I was not that special, but when I came here [to the U.S.] I was perceived as excellent student, in math specially, and I think I excelled in that because it was easy and it was something I could participate in...I tutored algebra all through high school and college and those things were easy, but when we went through calculus or things that required more reading or more kind of deduction, then I struggled...in middle school and high school math was easy, it was easy, again, being Asian made it easy, they assume that I knew, I was tutoring before I learned how to speak because of my test scores and so, it looked like I knew what I was doing, that I had the language to teach everybody, no...

Regardless of Ms. Bowsher's confidence in mathematics, she was perceived as knowledgeable by her teachers, the reasons for these opinions are unknown, but Ms. Bowsher was seen as a leader and knowledgeable in the math classroom when she attended school, and she was seen as an excellent student. Not only did she seem to do well, she was also often asked to tutor other students regardless of language. "Again" she said, the teachers' perception of her for being Asian was a factor that made schooling easy for her [in mathematics].

Professional development particular to mathematics also accounts a part of her experiences. In Chapter 5 a provided a description of her participation in the Teacher Study Group (TSG), which was voluntarily. Besides mathematics this training addressed issues around ELLs. Since I participated as facilitator in TSG I can tell that she was not very confident about mathematics, however she was very active often volunteered to try new things in her classroom.

Attitudes towards Mathematics

It is interesting to see that Ms. Bowsher was not confident of her ability to do mathematics when she was in school, all the way through college, but still she is confident in the classroom and likes teaching this subject even though is not her favorite one to teach, she admitted liking science more than anything else. According to her experiences, math was not her favorite subject either but it was easy compared to social studies or other subjects when language was a barrier. In the following excerpt from the interview she talks about the importance of mathematics,

It is important because you see them everywhere, if you have a sense of numbers it would help on everything you apply them... independently of school, we are surrounded by them. With my students I always try to make connections with everyday situations, you know, when doing fractions, painting the house, in measurement, floors, and of course basic operations when going to the mall, to the market, at home...

For every lesson or topic she introduces or teaches, she tries to make connections with real life situations and talks about the importance of it. A few times while observing her math classes, she told student that the strategies she used worked for her when she was a student and that it did work for her. Even though mathematics is not her favorite subject to teach, she was the one in charge of preparing math lessons for all third grade teachers. In addition, if students did not seem to get the concepts she was teaching, she would look for other resources to reinforce her teaching practices.

Her attitudes towards mathematics have led Ms. Bowsher to seek for other resources to help her students with math. If opportunities are presents to her she takes advantage of them. An example is her voluntarily participation in the TSG offered to teachers in her school even though she is not confident in the subject. Again, during the length of the training she was always an active participant and showed positive a disposition.

Use of Strategies during Mathematics Instruction

In this section of the chapter I attempt to see if there is a relationship between the teacher's experiences as learners of mathematics, her attitudes, and the practices or

strategies in her classroom. To help me answer the second question, I made conceptual logs of the videos and field notes and extracted a wide variety of strategies used in Ms. Bowsher's classroom. Figure 6.1 summarizes most strategies identified during her mathematics instruction. Among these strategies, the most significant with 5 or more occurrences were *activating background knowledge*, *modeling*, use of *supplement/complement materials*, *vocabulary development*, *adaptation of curriculum*, *guided practice*, *individual practice*, and *checking for understanding* (Figure 6.1). Several other strategies and techniques were observed, but with less frequency. As I describe a few of these strategies I will make connection with her experiences and attitudes if any.

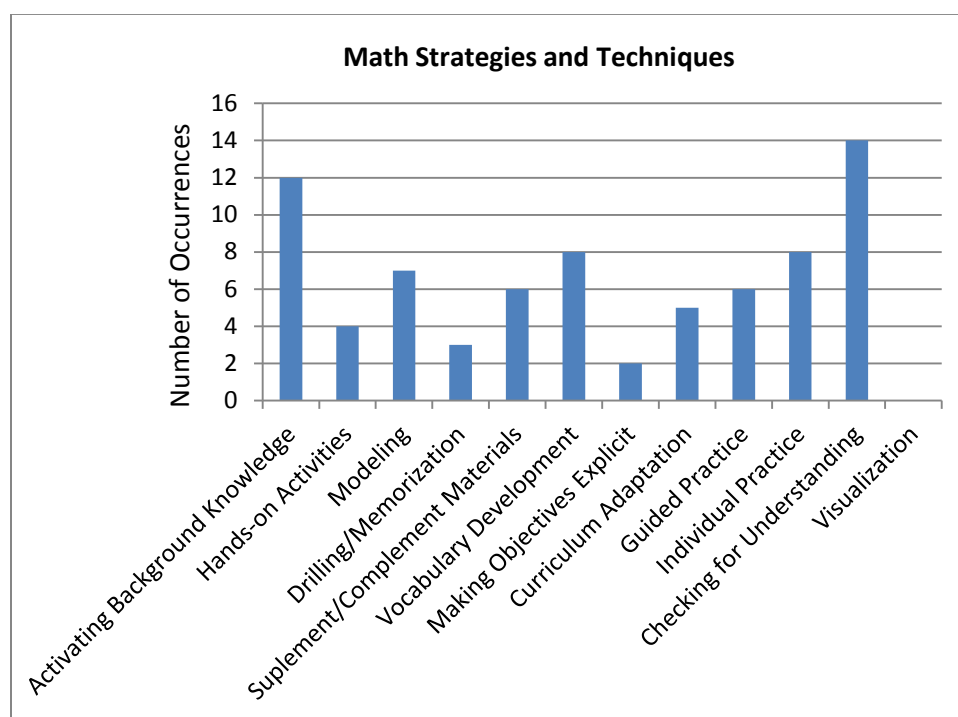


Figure 6.1. Math strategies and techniques in Ms. Bowsher's classroom

One of the most frequent strategies observed in Ms. Bowsher mathematics instruction was *activating background knowledge* (12 occurrences - Figure 6.1). As she addressed in the interview, it was common to see and observe her making connections with everyday life and/or students or with previously taught concepts. Both at the beginning of a lesson or in the middle of it, she always tells students the application of concepts in real life and oftentimes students bring examples based on the connections made. However, Ms. Bowsher sometimes did not build from those examples on connections made by the students and continued with what she had planned. In the following example, after reading with the students the content and language objectives, at the beginning of a lesson on units of measurement and conversions, Ms. Bowsher addressed the importance of converting measures in everyday life

Ms. Bowsher. (writes *converting – measurement* in a piece of paper projecting in the whiteboard and then asks her students pointing at the words) Why is this important on real life? (then she adds) Remember that everything we do, we say, you need to be able to do this in real life.

Rosita. Like if you (inaudible) you can say I want two gallons of milk, not cups or something like that...

Ms. Bowsher. Ok, so instead of buying cups of milk it will be easy to buy a gallon for the whole family, right, ok (thinks aloud and writes in the projector is easier, pointing at conversions,). If you wanted to measure this floor, let say we want to get new tile for our

classroom, if we wanted to measure the floor, is it easier for us to measure in inches or feet?

Students. Feet

Ms. Bowsher. Is it better to use feet or yards

Students. yards

Ms. Bowsher. So, and if we do not have the appropriate tools you may have to start with inches and then you have to convert, change it up...

In this example, Ms. Bowsher followed up for a few seconds on the example given by Rosita and continued with another example; however, this is not always the case. This strategy was less likely to happen during math bellwork and re-teaching enrichment (R/E) or interventions due to the nature of the activities. During bellwork, students worked more independently for 10 to 15 minutes, and in R/E in which there was little more time given [30 minutes] to students, they worked mostly on worksheets by themselves or played games to address and reinforce concepts they had worked in the previous weeks.

Modeling was a frequent strategy used in Ms. Bowsher's classroom. (Seven occurrences - Figure 6.1). This strategy was observed mostly during regular mathematics lessons. *Modeling* was not observed during bellwork due to its nature and time allocated to it. Depending on the complexity of the topic and students understanding, *Modeling* happened within one math session more than once, but not necessarily with the same example. The same day Ms. Bowsher was teaching converting measures, in an extension

for practice, Ms. Bowsher modeled what students would have to do for the next four days in which they had to measure other five people. First, she asked students to read the instructions, and then she read them aloud with the class. She modeled measuring one student, and asked the class how was she going to determine how tall Adrian was, “am I going to use yards or a ruler of a foot?” She asked, then she measured Adrian with a 12-inch ruler thinking aloud as she placed the ruler next to him from the floor to his head. She counted by 12s until 48 and then she continued counting 50, 51, 52 then she said “he is 4 feet 4 in.” She kept given instructions and told students that the person or student measured would have to sign to agree, as a way to check their work. Ms. Bowsher repeated the importance of being accurate to make sense of numbers.

An important component during instruction in Ms. Bowsher’s classroom, was the use of *supplement/complementary materials* to enhance students learning. In addition to worksheets and everyday teaching materials for mathematics, she used commercially made games or games she had created for students to use during *Individual* or *Guided Practice*. During mathematics lessons, she often also used rulers, play money, geoboards, and cuisenaire rods. In the following example, before starting the activity to review number sense and expanded notation, she distributed to all students strips of numbers in an envelope [a game she developed], but before that she asked students to clean their tables and be careful because the sets of cards (strip of numbers) were complete. She asked students to put numbers together, ones with ones (0,1,2...9, tens with tens (10, 20,30...90), hundreds, and so on... and students sorted them out (Figure 6.2) When students were ready, they started playing the game. Ms. Bowsher would say a number,

and they would form it. She stressed and repeated the numbers to make sure numbers were put in order (e.g. 100, 200,300...900) so it would be easy to form the number she would say. The first number they had to form was 872 with 800, 70, and 2 (students would have to put the 70 on top of the 800 number in the tens place and the y on top of the 70 in the ones place). Ms. Bowsher wrote the number on the whiteboard and students formed it. The game continued, increasing the number of digits making, it more complex. In addition to writing the numbers on the whiteboard, she wrote the sentence number.

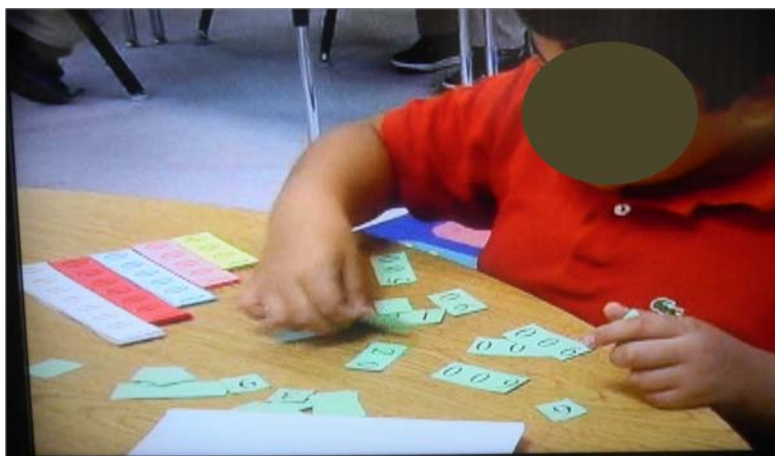


Figure 6.2. A student sorting out game cards

Within her teaching, Ms. Bowsher frequently emphasized *vocabulary development*. Either at the beginning when a lesson is introduced, or in the middle of it, it is often reviewed (eight occurrences; see Figure 6.1). Although it may be addressed in bellwork or R/E, *vocabulary development* is more likely to happen during regular lesson when introducing or reviewing a topic. In a lesson about patterns, after making connections with applications in real life situations, Ms. Bowsher wrote the following, projecting it on the whiteboard:

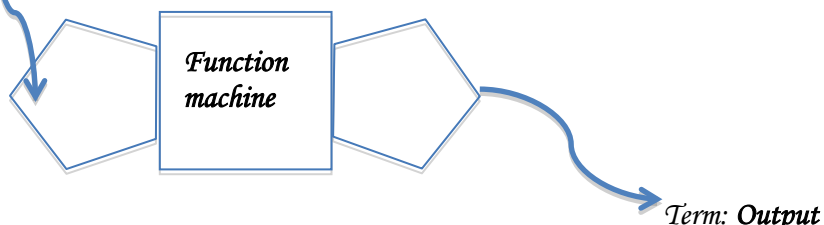
Essential Vocabulary:**Term: Function***Definition: It is the rule that creates the problem***Term: Input***Definition: The number that is entered into a function machine**Definition: The number that comes out of the function machine*

Figure 6.3. An example of Ms. Bowsher's way to address vocabulary

As the lesson continued Ms. Bowsher repeated the vocabulary several times and gave students opportunities to practice it. She complemented this lesson with a simple graphic organizer, giving examples as she repeated the key vocabulary. Other ways to address vocabulary depending on the lesson materials were by underlining words or highlighting them in worksheets, and most of the time she asked students to write down the new words.

For *individual practice*, one of the most common strategies in her math instruction, Ms. Bowsher always provided students with additional practice in which they had to work by themselves to reinforce concepts they were learning. Depending on the level of understanding, she let students work by themselves or turn it into *guided practice*. In the same topic of measurement and conversion (explained with *checking for understanding*), she handed out two different worksheets for students to work on by themselves. In one of the worksheets, students had to identify and match instruments with

items to be measured. In the other one, they had to do conversions from inches to feet or vice-verse, feet to yards, and conversions around time (hours, minutes, days, etc). The students did not have trouble with the matching activity, however, when students were working by themselves in the worksheet converting measures, Ms. Bowsher noticed that most students were struggling to solve conversions. In that case, she stopped them, explained some examples, and converted the exercise in *guided practice*.

Checking for understanding was the most common strategy (14 occurrences) used in the classroom by Ms. Bowsher. She addressed this strategy in most of her instruction (new lessons or review of concepts, bellwork, and R/E). In bellwork for example, while students were working on the items for the day, she usually walks around the classroom to make sure students are working. And if she noticed that a student was not doing the exercise correctly, she stopped and asked questions about it to make sure that the student understood the concept. Also, while monitoring the whole group, she constantly asked questions to make sure all students understood.

Even though *drilling/memorization* is a practice I found to be infrequent (3 occurrences; Figure 6.1), when I first observed it, I wondered about it and asked Ms. Bowsher what her thoughts were around that practice, to which she responded:

These students in general need more practice, memorize, they don't know their basic facts and that where this school is going with MM, Media and More. Combining memorizing and making connections really works, that's why we do the 5 minute math every day, because they need to know multiplication, addition, otherwise they will fall behind."

Ms. Bowsher's words in the quote above echoed Ms. Gaona's (School Principal) statement of what students need to be successful in mathematics learning:

...If children don't know why or how a operation is, is uh functioning then they won't understand it... I think there has to be a balance and that's where we're moving to next year, a balance of, of facts...the children need to know their facts, period. We've gotten away with that and when we become purists in the Investigations, teachers think that they don't have to teach that, which is wrong. I think um, factual operation once the children learn it should be part of it, so something like mad minutes or continue, you know, five, seven minutes of facts a day is important.

According to Ms. Bowsher, from an informal conversation, *five minute math* worksheets were given to students twice or three times in a week or even more frequently to address basic facts, multiplication, division, addition, or subtraction. She addressed *drilling and memorization* as a practice that needs to be part of students' daily routine. As documented through my observations, these worksheets were sometimes given to students twice in a day. She timed students for the five required minutes, often addressing two of the basic operations (e.g. multiplication and subtraction). Soon after students finished, they exchanged their papers and graded them among themselves with Ms. Bowsher's guidance. This activity from start to end took up to thirty minutes.

Other, less frequent *strategies* that were visible in Ms. Bowsher's teaching of mathematics, that are shown in Figure 6.1, were: *hands-on activities*, making *objectives*

explicit, and *curriculum adaptation*. It is also important to mention that in most cases she used several strategies for one activity.

Even though Ms. Bowsher did not talk about specific strategies in her mathematics learning experiences, she seems to provide her students with strategies that allow them to enjoy this subject. In her narrative she did not bring up negative experiences, however her effort to bring different experiences to her students is shown by the fact that she looks for additional resources or takes advantage of professional development to better address the needs of her students.

Summary

Ms. Bowsher's approach to language and her attitudes towards mathematics seem to be important factors that determine her practices in the classroom. The fact that she was a second language learner and immigrant when she was a child somehow compares to the experiences her students are facing in her classroom. It is important to mention that by not having the stress of having to address the needs of English language learner students gives her a freedom to implement practices that are more meaningful to her students. In addition, her training and professional development helped her try new things since it addressed both ELLs and mathematics. The limitations of the use of the students' primary language in the classroom seem to be related to her experiences, which are greatly impacted by the sociopolitical context in which she grew up in addition to the current educational policies –Proposition 203 and HB 2064–, which state that no other language than English should be used for instruction in the classroom.

Ms. Heath (SEI/ELD Classroom Teacher)

Experiences as Learner of a Second Language

The experiences learning a second language of Ms. Heath, a White teacher who was born and schooled in the United States, were totally different from those Ms. Bowsher had. She grew up in New Mexico and had some exposure to Spanish but did not pay attention to it until her father addressed the need to take Spanish instead of other languages in high school. Ms. Heath's parents only speak English, however they encouraged her to learn Spanish because of the context in which they lived.

Despite six years of formal Spanish lessons, three in high school and three in college, acquisition of the language did not occur. She attributes it to feeling forced to learn a second language because of the school requirements. When I asked her to talk about positive or negative experiences learning Spanish, this is what she replied

Well, I was always forced to do it, first of all. You know, in high school we were forced to take a foreign language, so I never wanted to. Um, so I don't like being forced to do things. Already I was reluctant to do it, and then in college we were forced to do it. Um, didn't like being forced again...

Ms. Heath talked about how she had the pressure by her dad to take Spanish classes in high school, because of the context in which she grew up – New Mexico and Arizona. Then in college, even though she decided to minor in Spanish, she also felt she was forced to do it, but there was no motivation, her classes were not the best and she just wanted to get a passing grade. She added that her best experiences learning Spanish was

with the *Rosetta Stone* program, a computer-based program she bought when she was already teaching at Sagueros Elementary School. She said she did it only a few times, because she did not have time or a computer compatible with the program. Her motivation to learn Spanish this time was to lead her own parent-teacher conferences, as she remembers an occasion in which she did not have a translator,

I remember, uh, I led a parent-teacher conference one time and my translator didn't show up, so I had the conference... I, I used my horrible Spanish and it was, it was a nightmare. It was truly straight out of a nightmare. Um, I couldn't remember, and words that I know all the time, I was nervous... She was a good kid too. I was... All I was trying to say was, "Ariana does a great job in class. She's always doing her homework. She's always on task." I could not think of the word "tarea", homework. I couldn't think of it, and I was just, "You know, uh, *¿cómo se dice? ¿Cómo se dice?*" And it was a nightmare, and the mom was just like sitting there and she was annoyed, so that... I mean, I'll never try to lead my own parent-teacher conference again until I feel more comfortable with it. So that definitely, I mean, when I try to talk to parents, I'll stop, because I'll remember that. That was like three years ago and I'll never try to do that again. So that definitely turned me off of speaking the language. (Grins) Uh, parent-teacher conferences are a big, uh, a big motivator for me to want to learn the language, 'cause, I mean, I had you this year, but...

Experiences that involve feelings seem to be a strong component when learning a second language. In her narrative, Ms. Heath, despite previous experiences as a student of Spanish and her intentions and motivations to learn the language, had experienced frustration discouraging her from speaking the language. Such discouragement is often found in the literature around second language acquisition. These experiences seem to have an impact not only around her students, but also around her expectations from the students' parents as she has developed misconceptions about them, which I will address in a the next chapter

Language Ideology

Ms. Heath's experiences learning Spanish seem to have an impact in how she thinks and approaches language in the classroom. Similar to Ms. Bowsher, she has lived most of her life in Arizona where immigration and language is a very controversial topic. I met Ms. Heath just prior to the start of my study, for a shorter period of time compared to Ms. Bowsher, which makes it harder for me to tell if Ms. Heath's attitudes towards language have progressed or not. She talked about language being important to her because of the context she teaches. However, my perceptions from what I observed in her classroom does not match what she said. When I asked her about the laws – Proposition 203 and HB 2064 – and what she thought about the 4-hour block and students learning the English language within one year before moving them to a mainstream classroom, she said the following,

...I think the law is just awful; having them all segregated into one class because-, and we all feel this way. It's, it's just horrible 'cause they don't

have the, you know, the good language role models around them, so they all slip into Spanish, you notice that? That they slip into Spanish a lot, and I have to correct them and say, "No, no Spanish. We're talking English here".

Despite the fact that she believes that students should not be segregated, Ms. Heath is less tolerant about students speaking Spanish in the classroom. We have to remember that segregation is promoted by Proposition 203 and HB 2064 as is requires that ELLs should be "separated" in English-only classrooms. Segregation has become part of the school teachers' and administrators' discourse, and as much as they do not like students being segregated, it is a common practice across Arizona and many states in the U.S. This practice of segregating students whose first language is not English has been part of the U.S. educational system for many decades, particularly in the southwest where close to one third of the population is of Mexican background.

Ms. Heath practices around the use of Spanish in the classroom match her words, even though she talks about the importance of learning a second language. Spanish in her classroom was almost absent during my presence. Neither in academic nor in social settings I heard students speaking their native language as much as I which to hear them. In the next section of this chapter, I provide the example in a mathematics lesson when students were just saying numbers and they seemed to be discouraged. The issue of segregating students, as we can see, has impacted negatively the classroom practices, having a direct impact on academic achievement.

In regards to learning the language for academic purposes [as stated by *Proposition 203*] within one year of schooling, she had the following to say

Uh, I don't know, they seem to... Like Natalia was, uh... She came in first grade and didn't speak at all, and now she speaks pretty well. You know, she's, she's on the lower side, but, I mean, I, I don't know if a year's enough, but maybe two years.

Despite the fact that she struggled learning a second language for several years, which seemed not to happen, and even though for her it was not a medium for learning content as it was the case of her students, Ms. Heath did not realize how long it does take to learn it. From the quote above, I conclude that she was not familiar with theories of second language acquisition, which address that learning a second language for academic purposes takes at least 5 years.

Teaching Practices (Language of instruction and role of students' primary language)

Except for two ELL students who were dominant in English, the students' primary language in Ms. Heath's classroom is Spanish. She did not speak Spanish, but understood some of it. Just like in Ms. Bowsher' classroom English was the only language of instruction for all subjects; however, I documented an opportunity in which students prompted the use of Spanish while reviewing academic concepts in a lesson of measures of capacity:

Ms Heath: we can look at King G and we can determine how many quarts,

I should see eyes over here, how many quarts there are in one

gallon, everyone give me a hand, how many quarts there are in one gallon, show me on your fingers

St: (one student whispered) *cuatro*

Sts: *Cuatro*

Ms. Heath: Four

Sts: Four

Ms. Heath: There are four quarts in a gallon--Listen, we are not being silly right now, we can look at King G and can determine how many pints are in one gallon, how many pints are in one gallon, look at King G, show me on your fingers

Sts: Whisper *ocho*

Ms. Heath: Tell me

Sts: eight (some students say *ocho*)

Ms. Heath: eight, there are eight pints in a gallon, one, two, three, four, five, six, seven, eight..., now listen we can look at king G and we can determine how many cups in a gallon, you cannot show me this on your fingers, is too high, everyone look at king G and count how many cups are in a gallon

Sts: (Two students whisper sixteen)

Ms. Heath: raise your hand when you know, don't chat up

St: (one student whisper) *diez y seis*

Ms. Heath: Tell me

Sts: Sixteen

Ms. Heath: Everyone count with me

Ms. Heath and Sts: one, two, three,.. sixteen

Ms. Heath: There are sixteen cups in a gallon

It was interesting to hear most students trying to use their first language, even though it was just saying basic numbers, and how the teacher in a way discouraged it by ignoring it or telling students not to be silly. The number of students responding in Spanish diminished every time in less than a minute, until only English was heard during class.

The lack of knowledge and fear around Proposition 203, in regard to the amount of the children's first language that can be used in the classroom, impacts how Ms. Heath perceives the use of Spanish in the classroom. On one occasion, I expressed to Ms. Heath that the presentation that the person from the Fire Department (who was a bilingual teacher) had done was great in terms of using strategies and even some words on Spanish – concurrent translation. She responded to me *“then she shouldn't be speaking Spanish, doesn't she know that that she shouldn't be talking or giving instruction in another language”*

Ms. Heath even expressed her feelings for the use of Spanish by her students more socially in the classroom, which was very limited

Jesús: And how do you feel about it, when you hear them, um, among themselves, speaking Spanish here [in the classroom]?

Ms. Heath: Well, it's frustrating to me, because I'm trying to help them so much, and I just want them doing everything they can, you know. I want, I want them to be, you know, as fluent in the language as they can, and I want them to be speaking it [English] on their own time. So it's frustrating to me...

From the example and her comments, we can say the Ms. Heath believes that in order to help students become proficient in English, it is crucial to be immersed in it. Language policy in Arizona supports these views; however, research around theories of second language acquisition theories rejects them. All students agree that everything they did in the classroom was in English only and that they did not get to talk much in Spanish even though they like it. Of the four students I interviewed, three said that they only get to speak Spanish in recess and in lunch time.

Although Ms. Heath experiences learning a language are different from the experiences her children are facing in school [in her classroom], due to their nature [elective vs. imposed], the sociopolitical context seemed to be a common factor in the way. In Ms. Heath case, she chose Spanish because of the context in which she grew up, however, Arizona's language policies and her experiences as a student of a second language did not help. On the other hand her students are victims of the current language policies in which they are forced to learn in a language they often do not understand, policies that also determine the teachers' behavior in the classroom.

Experiences as Learner of Mathematics

While Ms. Bowsher's learning of math was relatively carefree, that is not how Ms. Heath would identify her experiences. All the memories that Ms. Heath discussed in regards to learning this subject were related to stress and anxiety. She often compared learning mathematics with the subject she liked the most—reading,

Mh-hm. Um... Well, I've always been more of a, of a reader, you know, reading, social studies kind of girl. I never liked science; I never liked math. Um, I always excelled a lot in reading... and then with math, I think I was, I was pretty much, I was, uh, I was equal with the rest of my class, probably until that third grade... yeah, and then in third grade I remember we started multiplication and I couldn't get it, and I remember, you know, running over the times tables with my mom... and then fourth grade with long division and I couldn't get that, and I started really struggling with math, and I started realizing I didn't like math because I wasn't good at it... then I remember moving into, uh, junior high, and I realized that, yeah, I had to work a little bit harder in math... Then I went on to high school and, uh, again, I had to, I had to really study and my dad would help me at night. Um, I, I always got As, but I, I really had to work at it. Uh, I went on to college and I had to take a placement test, you know, to get it, and I placed into the lowest math, which was college algebra, which most people tested out of, but I didn't. I had to take that college algebra class. It was my first semester of college and I just

remember crying every night because we would have like three pages of homework...

Starting in the early years of schooling, when she was 8 years old, Ms. Heath started realizing she was not good at it, "it was just not her thing" as she repeated. She had to work harder all the way through college, and always get support from someone else to be mediocre in her exams.

Within her experiences Ms. Heath did not discuss any particular practices or strategies in her narrative; however she mentioned having extra support from her teachers [spending time in recess] in middle school, as well as getting help from her father at home. She said that this was the only positive she can recall from her experiences learning mathematics which were the result of very stressful times.

Attitudes towards mathematics

Ms. Heath's mathematics learning experiences seemed to have a strong impact in her attitudes towards this subject. Her dislike for mathematics [and science] has prevailed. When asking her how her experiences have affected her math teaching she said,

I don't, I don't enjoy teaching math or science... I love teaching the other subjects, but math and science it's like, "I have to do it."...I, I make sure to tell my kids every year. Maybe I shouldn't, I don't know, but I tell them that I don't like math. I tell them, you know, "Teachers don't always enjoy everything," you know. (Grins) Like I was a kid once too. I struggled in math. I continue to struggle in math. Um, it doesn't just come naturally.

You have to work at it, you know, and I tell them, "I don't even necessarily like teaching math," you know, like, "You guys need to learn math, yes, but, it's, it's, math is not something that I like."

The impact of her beliefs and academic preferences around the subject goes beyond teaching, as she feels she has to tell her students she does not like mathematics, even though it is not the best choice, she tells them she does not like teaching it. Oftentimes, she repeated that math [and science] are the subjects she does not like to teach; we can see that from the "I have to do it" attitude. She often compared teaching math and science with her taste for teaching reading and writing which are subjects she *loves* to teach. Like in her experiences learning Spanish, she feels forced to do it (to teach math). She often repeated "I'm not good at it", however she thinks it is important for use in everyday life and tries to make her teaching fun with games and manipulatives (explained in the next section of the chapter) , because she does not remember enjoying it at all or using any kind of teaching materials when learning. In many ways, her practices support her experiences even though she knows she has to work harder for her mathematics teaching

I know I have to work harder, you know, and even in my teaching, I always enjoyed teaching reading and writing. I love it...but math, I've never ever liked teaching. I like it a little better now, um, just 'cause I have the experience with it and I know what I'm teaching now, but I remember the first couple of years, I really didn't like it, and one year,

"Oh, can I trade it?" and she taught my kids math, and I taught her kids, um, science and social studies, and I loved that year. (Laughs)

Somehow there is a direct relationship between Ms. Heath' math experiences and her attitudes towards this subject. She repeated several times that she never liked mathematics and also that she does not like teaching the subject. She also added that if she can avoid teaching the subject she will do it, like she did one year as she did in one of the first years of teaching as she addressed in the quote above when she traded the teaching of math for science and social studies. She said she "loved that year." One of the implications of division of work in planning, which happens with the implementation of Media and More (MM), is that it has facilitated her job in that regard.

Use of Strategies during Mathematics Instruction

Among the most significant strategies, with 5 or more occurrences (See Figure 6.3), identified in Ms. Heath classroom during mathematics instruction were: *making objectives explicit, vocabulary development, guided practice, individual practice, and checking for understanding*. The rest, *activating background knowledge, hands-on activities, modeling, drilling and memorization, supplement/complement materials, and adaptation of curriculum* were observed once or twice during my participation/data collection (Figure 6.4). As I analyze the most significant ones, I will provide examples in this part of the chapter.

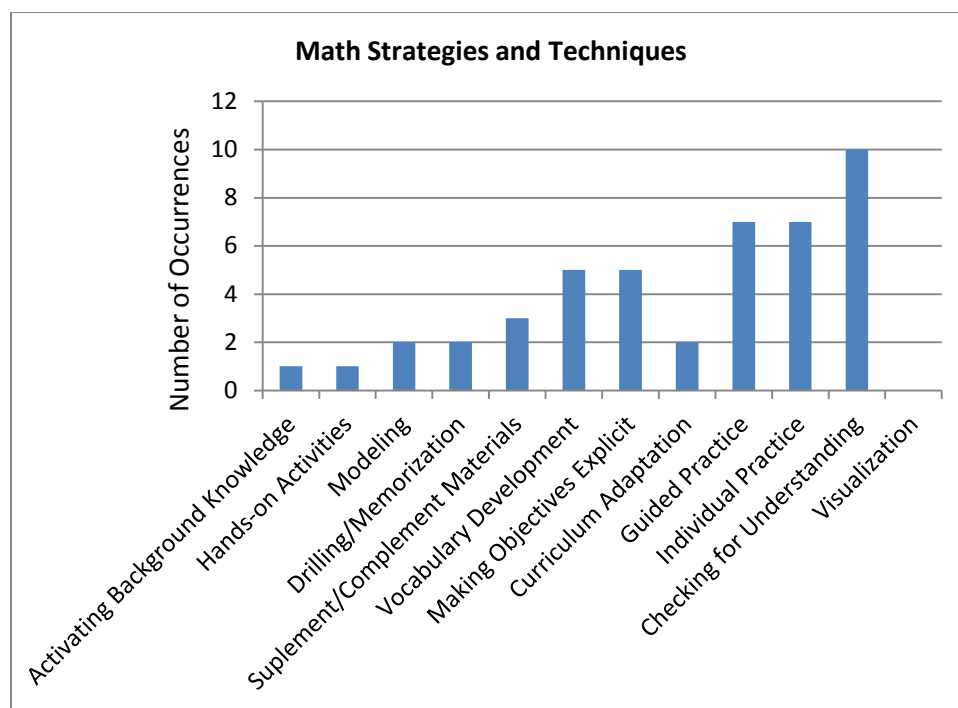


Figure 6.4. Math strategies and techniques in Ms. Heath's classroom

Hands-on activities in Ms. Heath classroom was not a commonly used strategy (1 occurrence; Figure 6.4). This did not surprise me after I heard her a few times saying that science or activities that require students to work in groups and use their hands create chaos in the classroom, which she doesn't like to deal with. She often compared herself with Ms. Bowsher, who often developed activities in which students had to use their hands. She said that she wished to have Ms. Bowsher energy and not to be bothered by the level of noise her students made when they engaged in any activity that required group work and hands-on. The only instance I observed students engaged in hands on activities was during centers/stations (for about twenty minutes). Students were using geo-boards and rubber bands to explore the concepts of translation, rotation, and reflection, but with no guidance. In this occasion, before students started working

individually at their stations (centers), Ms. Heath modeled (two occurrences; Figure 6.4) what they would be doing in the math station, she told students that they would be using geo-boards and rubber bands in the math station. She modeled with a student an example of translation with a 90 degrees triangle, asking students which of the three concepts (translation, rotation, or reflection) she was addressing. She had to give students the first syllable of the word, translation “tra”, to which all students would respond together “translation” otherwise students would not answer.

Ms. Heath usually addressed *vocabulary development* during instruction (regularly in *guide practice*). In a lesson to review measures of capacity, for example, she repeated several times the vocabulary related to it (gallon, quarts, pints, and cups). However, there was an instance during *guided practice* in which she lacked addressing the proper vocabulary for the topic she was presenting – patterns. As she solved all problems with her students she repeatedly used “going up” or “going down” instead of increasing or decreasing. This particular lesson to review patterns caught my attention, because I observed a very similar one in Ms. Bowsher’s classroom, in which she (Ms. Bowsher) repeated or used the academic vocabulary frequently pointing at the wall where she posted the vocabulary for that particular lesson. It is also interesting because Ms. Heath intended to modify her instruction, making the content more accessible to her students because they were not familiar with as much vocabulary as students in mainstream classrooms. In her case, she was just guiding her students through a series of problems where students needed to figure out rules in patterns.

A common practice that took place in Ms. Heath's classroom was making *objectives explicit*, particularly in mathematics and social studies (Figure 6.5). This was not surprising given that for Ms. Heath structure was an important component that needed to be maintained while working with students who were not proficient in English. Making objectives explicit was the result of teachers of the same grade level working together (in lesson planning and developing of materials) to address the MM curriculum. This practice of making objectives explicit took place almost every day at the beginning of the lesson. Students usually repeat with Ms. Heath the content and language objective(s) for each lesson when it is first introduced or when reviewing it.

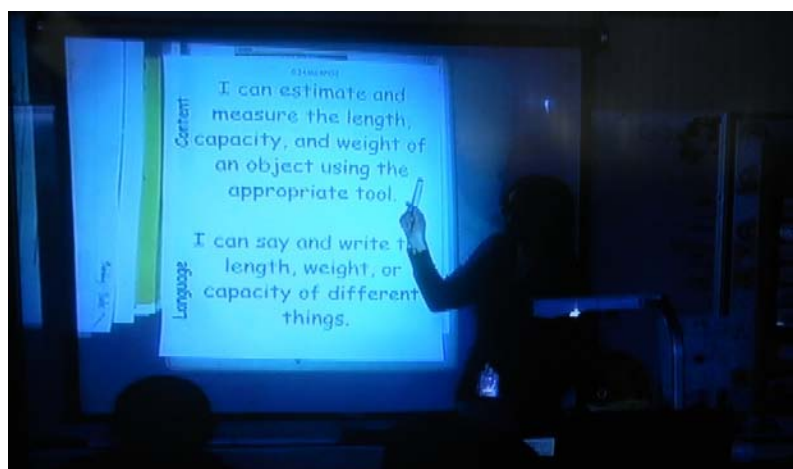


Figure 6.5. Ms. Heath reading content and language objectives

Guided practice and *individual practice* were the two top practices used by Ms. Heath. *Individual practice* was identified most often during bellwork. On one hand, as part of the daily routine students, work for a few minutes (usually 7-10 min.) by themselves on a few different, simple operations (addition, multiplication, subtraction, or division) or simple problems related to content they have previously addressed, and then

in a whole group with Ms. Heath guidance they solved the problems or corrected them while projecting them on the whiteboard.

On the other hand, *guided practice* usually followed a PowerPoint presentation prepared by another third grade teacher (since she was not in charge of planning mathematics); this was normally done as a review before taking the benchmark test, or during interventions (R/E). A few times I noticed that Ms. Heath handed out worksheets to her students without reviewing them as I will note next. These were prepared by another third grade-teacher as part of team work required by MM. While working and guiding the students through the problems in these worksheets, she made mistakes or there were errors that neither she nor the students captured. In one occasion for example, before making a mistake, she told students that the second problem was really hard, that she should have seen it before handling it to them. The problem was solved by elimination with all students, who seemed not understand the problem. In other occasion, in a review of a topic in geometry addressing reflection, rotation, and translation for a test they would have minutes later, MS. Heath solved the following problem (Figure 6.6) as follows

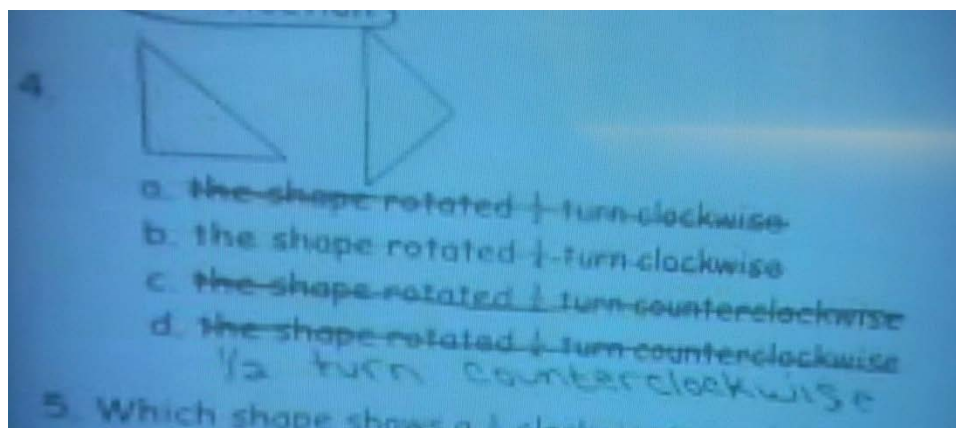


Figure 6.6. Solution given to a math problem in a review for a test

The students needed to figure out if the shape rotated a) $\frac{1}{2}$ turn clockwise, b) $\frac{1}{4}$ turn clockwise, c) $\frac{3}{4}$ turn counterclockwise, or d) $\frac{1}{4}$ turn counterclockwise. To solve this problem, she drew a triangle and cut it. She started with letter a) putting in the original position and doing the indicated rotation to find out if it was the correct answer. She tried to solve it by elimination, but by the time she modeled letter d), she found out there was a mistake and said “Mr. Daniels [another third grade teacher] did not indicate the right answer for that problem, there is no answer”. Then she came up with $\frac{1}{2}$ turn counterclockwise as an answer, which would result in the same answer as in letter a. “the shape rotated $\frac{1}{2}$ turn clockwise.” Before moving to the next problem, she said that it would not happen in the test. The rotation of the figure was not accurate, so there was no solution to the problem. Obviously the “collaborative work” has implications for teachers if they do not review the materials before presenting it to the students, as in this case. As mentioned, this happened a few times and she blamed it on other teachers.

Checking for understanding was the most observed strategy in mathematics instruction. This practice happened often in both regular mathematics classes and during

R/E. She often asked questions and tried to clarify if she noticed that students did not understand a concept they were reviewing. In addition, she often walked around the classroom when students were doing *individual practice*, to make sure that students were on task.

Students in Ms. Heath's classroom seem to like her and how she approaches her teaching in some subjects. However, they realized that little time is allotted to mathematics, the subject she struggles the most when teaching, compared to reading which she likes the most. Maria, an above average student, had the following to say in this regard

Jesús. What is your favorite subject in school?

María. My favorite subject in school is math.

Jesús. Math? Why?

María. 'Cause we get to do graphs and we also get to, um, do, um, fractions with candies.

Jesús. Do you think that you have enough time to do mathematics in the classroom? (María shakes her head no) You think that you need more time? (María nods) Why?

María. 'Cause we don't get to go over the bellwork and, and... Uh, bellwork and sometimes a little bit of math.

Maria also commented that Success for All (SFA) was what she liked the least because the time allotted for each station was not enough either. She addressed that in the station where they did math time was not enough and if they [students] did not have

enough work they got bad grades. From my observation and video recordings I also documented that often times during their math station students play very simple commercially made math games that did not required monitoring, or students were given two or three of the worksheets to do the five minute math that addressed basic operations (addition, subtraction, multiplication, or division) with no more than two digits. Except from Maria, the other three students that I interviewed from Ms. Heath classroom said they like read aloud the best.

Summary

Different from Ms. Bowsher, Ms. Heath's experiences learning a language were different. She did not have the stress of learning content subject areas while learning a language, which makes it harder to relate to her students. Even though she felt forced to learn a second language, it was more of elective for her. Mathematics on the other hand has been more stressful for her since she was an elementary school student. She acknowledged she has to work harder to be average, not only on her learning experiences, but also in her own teaching.

Ms. Heath experiences whether language or mathematics have developed an ideology and attitudes towards these subjects impacting and shaping her teaching approaches in the classroom. Besides her learning experiences, the sociopolitical context in which she teaches has created many limitations on what she can do for her students. Being assigned to a ELD/SEI classroom with limited training on ELLs and mathematics, on top of having a large classroom of students (28) who have not passed the Arizona English Language Learner Assessment (AZELLA) test, limits her from providing a more

meaningful, stress free education to her students, who are also developing or having the same experiences she has gone through. Students are learning that English is the dominant language, not only in the school context, but also in the wider community. Students in Ms. Heath's classroom are experiencing that subjects such as mathematics are not as important as learning English, which creates a gap between them and students in mainstream classrooms.

In summary, in the process of writing this chapter I learned that the experiences around language of both Ms. Bowsher and Ms. Heath, which are somehow promoted by the sociopolitical context in which they grew up, have an impact in their own practices as teachers as well. Seeing English as the language not only of school, but also as the one of the United States creates a relationship of power over other languages. Consequently by giving priority to the teaching of English over other subjects limits the teachers' teaching experiences and prevents students from more meaningful experiences that allow them to succeed academically and later in life.

In Chapter 7, I will address the teachers' practices towards their students in terms of differentiated instruction or treatment, given that students are of Mexican background. These practices will be analyzed based on the sociopolitical context in which these students are being educated. In addition, I will do an analysis of the teachers' perceptions of their students and their families, including the teachers' perceptions of home support in relation to language and mathematics.

CHAPTER 7

TEACHERS' PERCEPTIONS OF THEIR STUDENTS

The purpose of this study was mainly to explore the practices for teaching English and mathematics that took place in two different classrooms. However, as I looked at the interviews and autobiographies conducted with the teachers, their narratives opened the opportunity to explore their ideologies and attitudes (addressed in Chapter 6), as well as their perceptions of their students and families.

In this chapter, through the voices of the two teachers, I address their perceptions about their students and their families and link it to what is found in the literature. For example, the misconception that ELLs failure in school and standardized tests are due to their culture and home environments has historically been a common held belief among teachers regarding the teaching of ELLs (Sheridan, 1984). The connection between misconceptions and deficit models is constantly addressed particularly in the education of students of Mexican background and their families (Valencia and Black, 2002).

In Chapters 5 and 6, I provided a detailed description of both classrooms' ecologies and the analysis of some practices that have developed within each of the two distinct spaces, mainstream and SEI/ELD. In this chapter, I answer my fourth question: What are the teachers' perceptions of their students and families and how do they compare themselves in relation to their student's backgrounds? In the last part of this chapter, while addressing *differentiated treatment*, I also answer my second question: What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful

for students of Mexican Background in Particular? Gándara and Rumberger (2002) address the inequitable treatment of ELLs in California public school as consequence of the implementation of Proposition 227. Lack of proper training and professional development, inadequate access to instructional facilities and materials led to this treatment. Similar outcomes were reported in a study conducted by Rios-Aguilar, Gonzalez-Canche, and Moll (2010) with the implementation of Proposition 203 and HB 2064. Moreover, in regard to differential treatment Losey (1995) suggests studying classroom interactions because it is the medium by which teachers express their expectations for students often based on race, ethnicity, and socioeconomic status.

Data from the language learning and mathematics learning autobiographies, as well as the interview about teaching, school, students, and families helped me to answer these questions making connections with their current practices in the classroom analyzed in Chapter 6. Similar to previous chapters, I will compare and contrast Ms. Bowsher, a mainstream teacher, and Ms. Heath, the ELD/SEI teacher, as I address various domains of data related to their practices around students of Mexican background, and perceptions they held about their students and families.

Teachers' Expectations of their Students

Like any other teacher, Ms. Bowsher and Ms. Heath have developed expectations of their students through their academic performance and behavior in school, and through the context in which they teach. In Ms. Bowsher's classroom, students seemed to not have behavior problems and be average regarding academic achievement, compared to Ms. Heath's group or the ELD group she (Ms. Bowsher) taught the previous year, as she

mentioned when I started data collection. Still, Ms. Bowsher perceptions and expectations of her students are strong and reflect general perceptions of Mexican students,

...my expectations hum, I expect all my students to do well and go to college, but these students I doubt they're gonna finish high school... maybe their socio-economic status, the culture of poverty, what do you think, is this something that you observe being Mexican? I grow up poor and for us there was no option, we had to go to college.

It was not clear to me if in the quote above she referred to her current students, or students attending Saguaros Elementary School in general (which in its majority are of Mexican background) as she said "these students". However, her perceptions of her students may have remained as she interacted with the students' personal journals. The year in which I conducted my study, Ms. Bowsher started using a strategy she never used before. She used personal journals as a strategy for students to write, which she would read and respond with some comments. She explained to me that this activity was very powerful, that it filled its purpose. In addition, it allowed her to find out most of what happen in the students' personal lives. She told me that students would write about their parents fighting, being deported, sent to jail, etc., and that in some occasions she did not know what to do because their problems probably were affecting them not only academically, but also psychologically. She added that a few times she referred students to the counselor, but she was not sure if it was the right thing to do. In one occasion, when I started data collection and I visited her classroom to help and the students were

very disruptive, there were a couple of students arguing over a pencil that was lost. In this occasion, Ms. Bowsher called for attention angrily and told the class that the choices they make can take them to jail, do nothing, or have nothing in life, that knowledge is important and can change their lives. Also, a couple of times she mentioned to me that the students' actions may be related to their parents not caring about their education, perhaps due to the culture of poverty.

Still, her concern for her students was often brought up. Some of her practices in the classroom, which often were connected to the content, were to include students in meaningful activities or activities that she knew they would enjoy. She made parties and invited her students' parents and other community members, and yet she would compare her own children's lives with those of her students:

...we are trying to focus on these kinds of, like these kids are so resilient, like I can never see my kids growing up the way they do, I mean they come with so much baggage, they come with so much deficit and it's not fault of their own, hum, they're so resilient and so loving, like I, you yell at them one day, and the next day, the next minute nothing happened... I think that if they are given a different opportunity, and I am not talking about (inaudible), is even beyond that, if they just, if somebody takes their hand and just make them realize that they can do anything they really could...

When looking at her experiences learning language and content through her schooling, there is an overlap with her students' school experiences. She said the following when I asked her if her experiences impacted her teaching,

Absolutely. And that's one of the reasons why I chose these kids because even though they can't identify with me, I don't think they really identify with me, I identify with them. And I thought I would, this is the population that I selected because that's, their history is not different than mine.

It was interesting to see Ms. Bowsher often comparing herself with students in terms of schooling experiences, however, she believes that the impact of these experiences have reflected the opposite, while she was successful to the point of obtaining a college degree, the expectations for her students are that they may not even finish high school. One of the main reasons to which she attributes the differences is the fact that she is Asian and it was part of her culture, compared to her students who are mostly of Mexican background. Even though Ms. Bowsher often talked to her students about herself, she did not see her students identifying with her.

Interestingly, Ms. Heath holds the same expectations of her students as Ms. Bowsher does. She does a similar comparison regarding her students in terms of going to college,

I'd really like to see these kids go to college, um, but, you know, it's not stressed in their culture, I think, because I've asked them before, you know, "How many of you are gonna go to college?" and only like three of

them raised their hand... It's just not, like with, with growing up in my house, it wasn't, "Are you going to college?" It was "What college are you going to?"... So, I mean, it was set; "You're not taking a year off. You're going from high school to a university" So, I think as long as... I, I would be really happy to see them all graduate high school.

There is no comparison between Ms. Heath's experiences and her students regarding language learning. In her case, learning a language was more of a choice even though she felt forced to do it. In the case of her students, they were learning language and content at the same time. However, she compares them with students, who are proficient in English,

Well, they speak Spanish when they're not in the classroom, obviously. Um...They struggle a lot more in school...Oh, well, these kids, you know, a lot of poverty, and, uh, you know, a lot of their dads aren't around, a lot of their moms don't work and, you know...

Ms. Heath definitely understands the language struggle of her students, which makes her believe that if they speak their mother tongue in the classroom it gets in the way for learning. In addition, similar to Ms. Bowsher, she believes that poverty and issues around it is one of the strongest determinant factors for academic achievement.

The lack of communication between teachers and parents leads to deficit models and misconceptions. While still doing data collection, one of the two students that tested out of the ELD/SEI classroom, Daniela, whom I interviewed, and according to Ms. Heath struggled with English because she was schooled in Mexico. This was not the case, as I

found in the interview, this student happened to visit her father in Sonora, Mexico for a few days, and visit a school for the length of her stay. However, at that time Daniela did not know how to write or read in Spanish, which made me think Ms. Heath did not know her student's education background well enough. When asking Daniela *How many times her teacher had met with her mother?* She said "none."

Both Ms. Bowsher and Ms. Heath expressed very low expectations of their students for pursuing higher education, they do not even see their students finishing high school. These addressed the self-fulfilling prophecy that students become what teachers expect from them. These expectations are often nurtured with the actions or practices taken in the classroom. They also compared themselves with the students in terms of the support to attend college, as if it is part of the student's families not to give them the opportunity to further their studies beyond high school.

Teachers' Perceptions about their Students' Families and Home Support

The teachers' perceptions of parents [of Mexican background] are closely related to the low expectations they hold for their children. These perceptions lead to beliefs that parents do not participate in their children's education. It is important to make a distinction between how parents of Mexican background and teachers in the U.S. define education. For these parents, the support is not only related to help with homework or school-related tasks. Mexican parents often tell their children about the importance of school, but more than that, for them it is very important that their children are well-behaved and have good manners, all these is comprised in the term "bien educado" or well-educated . "Bien educado" in Spanish is not directly related to school, but to what is

thought and learned at home. On the other hand, it seems that the term “education” for the teachers in my study is directly related to what is learned in the classroom or in the context of school.

In the following quote, Ms. Bowsher addressed some issues she sees related to the limited participation of parents in school related tasks,

...their parents only ask me about behavior, but no specifics about school, many of these parents do not care about school. They don't come to school when we call them, and sometimes they don't even answer the telephone, it is frustrating...I expect them to be more involved, they only ask “how is my son doing?”. It's only about behavior, but they do not ask specifics about how to help homework, they don't come and see what they do in class. In conferences they don't ask, they only move their heads approving what I say, they could do more... and we always say, like I have the kids, take their work home, and, you know, make sure you go though this with your parents, and if parents actually look at their work, and if they read with them 20 minutes as they suppose to, then we would see huge gains, and that's something we don't have control over but I feel like a lot of times it is the missing piece, but sometimes they don't know how...

Due to a lack of knowledge about the culture of her students and their parents, for Ms. Bowsher, parents' participation helping with homework or attending school was very limited. They only attended for teacher-parent conferences and only asked about behavior problems and approved everything she said. Ms. Bowsher did not realize that

the way these parents support their children if they cannot help with school related-tasks, is by making sure they [children] are behaving well and paying attention. In the quote above, Ms. Bowsher mentioned that parents asked “how is my son doing”. It is interesting that she did not realize that they are asking overall how children do in school. It seems that her beliefs get in the way of only thinking or seeing that is about behavior and not about everything children do in school, including their academic experiences and performance.

Ms. Bowsher also talked about “a big disconnection” between parents and their children for not making efforts to learn English, which limits them from being able to help their children with school-related tasks. Nevertheless, she acknowledged that sometimes they [parents] don’t have the means to help. A practice that could be implemented to help parents be more involved with their children, since she acknowledged that parents sometimes cannot help, is to send instructions for homework in Spanish. In many cases, such practices are not taken into consideration because of misunderstandings around *Proposition 203*, which limits what teachers can do to help their students and families.

Despite the similarities with her students in experiences learning a language and content, as well as being poor, for Ms. Bowsher the difference of not making it to college remains,

See, I grew up really poor and my only difference between these kids is when my parents said you had to go to college. That was the only difference. My parents were never home, they worked all the time, we had

nothing, um, but the only difference was my parents always said you had to go to college. They didn't say how you're gonna get there, they didn't say what you're gonna do but it wasn't an option.

In her words, it seems that the parents of her students (Mexicans) don't have the desire for their children to go to college. Again, Ms. Bowsher's lack of knowledge of the culture of her students gets in the way and she does not see that the parents of her students really care about their children's education addressing the myth that "Mexicans do not care about education (see Valencia and Black, 2002)." In our work (Acosta-Iriqui, Civil, Díez-Palomar, Marshall, and Quintos-Alonso, 2011), we addressed the deep commitment that Mexican parents had towards their children's education, which challenges this myth or perception that Latinos [Mexicans] do not care about education. For example, logistic issues such as work, daycare, schedules, and transportation, among other ones interfered in the participation of parents in workshops. However, they expressed how if they are not able to help, they seek for different ways in which they can participate.

When asking Ms. Heath if she sees any difference between children of Latino/Mexican background and children from other ethnic groups she had the following to say

I think a lot of it, like I said, has to do with the poverty. You know, um, their, their families are struggling, so, you know, they're oftentimes working a lot, so they're not home with their kids saying, "You need to read this book," "You need to do your homework." There's not, you know,

they don't stress school like possibly they do in other cultures and other, uh, at other schools. So I know a lot of my kids, you know, their parents will just sign the homework saying that they read but they didn't read.

Similar to Ms. Bowsher, according to Ms. Heath, in the Mexican culture, poverty and the lack of stress for education, compared to other cultures, limits what parents should be able to do to help their children. The reality is that their [teachers'] knowledge about what happens in their students' home is very limited, which leads to develop perceptions about these families. I noticed that Ms. Heath did not know any of the parents of her students when she asked me to be the translator for the teacher-parent conferences, after two and a half months classes started. It was interesting that Ms. Heath acknowledged that the families of her students struggle and that there are logistic issues that interfere, however, in her mind, for the parents of her students "education is not a priority, they don't follow up on messages from the school or from her, consequently, parents do not help with homework or check if their children behave well; and if they do not check they do not help."

For Ms. Heath these parents do not have systems of punishment so their children would think twice if they misbehave. The following excerpt talks about what Ms. Heath thinks parents should embrace regarding language at home

...yeah, um, what I'd like to stress to them is that I want them speaking English at home, so, you know, maybe I could ask them, you know, "Is there any way you could, you know, encourage your children to speak English at home?" That way, you know, they'll feel more comfortable with

it, 'cause, specially these kids, they'll speak English, you know, to me, in class, but when I hear them out at lunch or in the playground, or even in conversation in class, they're speaking Spanish, and, I don't know, there's just that disconnect, you know, they're speaking Spanish, but then they're learning in English, and I know it's confusing. A lot of them can't read in Spanish, but they speak in Spanish.

As I addressed earlier, Ms. Heath's training is limited to what the school offers when it comes to ELLs or students whose first language is not English. One of the premises of bilingual education is that students should keep speaking their native language at home; one reason is for maintenance, another is that a strong foundation in their first language makes the process of learning the second one easier. It is somehow evident that she does not have this knowledge and ignores the fact that many of the parents of her students do not speak English, in addition to not knowing of other limitations that hinder the desire to learn English. Her perception of parents, as it relates to math, is that they do not help either. When I asked Ms. Heath what would she tell the parents in regards to their children's math education, she responded with the following,

Mmm... Just if it's possible for them to, you know, run through the basic facts with their kids, like, I remember my parents doing flashcards with me, you know, every night, and I knew my multiplication tables, you know, multiplication facts by the time I was in third grade. These kids, they don't have that help...

The comparison between what her parents did to help her and what the parents of her students do not do was often brought up. Again, the limited communication with parents and lack of knowledge about what happens at home opens a possibility to develop misconceptions around students and families.

Somehow, for both teachers not speaking English at home creates a *disconnection* between home and school. They don't see their students' first language as the *connection* for academic success. Again, this may be related to limited training around students' diversity and background and not knowing much about theories around second language acquisition. Both teachers fall in the misconception that poverty in Mexican families compared to other ethnic groups has a strong impact in their children's academic achievement, and that they do not care about their children's education. Their actions run counter to the misconception deficit models. There are many similarities in how these two teachers think of their students and families. Several times, as shown in the quotes above, Ms. Bowsher and Ms. Heath expressed similar ideas about their students and parents. A reason for this may be the fact that they [teachers] got together every Wednesday to discuss the lessons and planning for every week feeding off each other ideas about their students and families.

Differentiated Treatment

Despite the fact that there is no observable obvious structure in Ms. Bowsher's classroom for discipline, she sometimes used a colored card system implemented in Saguaros Elementary School. This was used when a student was not paying attention, was not engaged in class, or was disruptive. This system consisted of colored cards

(green, yellow, orange, and red). Students started every Monday with green and if they got in trouble or were disrespectful, they were asked to flip the card. If the students got to the red color (yellow and orange in between), then their parents were called or they were put in detention (punished by not going to recess or by being isolated during lunch, etc).

In the first part of this chapter I mentioned an incident in Ms. Bowsher's classroom in which her students were very disruptive, and she angrily told the students that their actions and decisions have consequences and jail in many cases is the result of those decisions. This was the only time I heard her telling this to her students during data collection. The same day in an informal conversation she told me the stories of a few students whose parents were in jail, on drugs, and students who were living with their grandparents because of their parents' actions. Similar conversations were often raised with me. Most of this information was drawn from the students' personal journals; however, this was by deduction, since students did not explicitly address these problems. Even though this was an isolated incident, there seems to be a relationship with Ms. Bowsher's perceptions of her students and families.

In Ms. Heath's case discipline and structure appeared to be major components in her classroom. She checked for behavior problems during each period of time students finished a different activity throughout the day. Students evaluated themselves with thumbs up, straight, or down. Depending on the level of noise during class, students would get a super happy face, a happy face, a straight face, or a sad face as shown in Figure 7.1. When asking her about her expectations from her students, she responded with the following:

I think, especially with this group [ELLs], they need structure, they need organization, they need discipline, they need, uh, they need a schedule that they follow, because a lot, I, I find that, specially these kids, they really like the fact that I have a schedule up everyday and that they know exactly what we're gonna be doing at what time of the day, and a lot of them don't have structure, like, their lives are just, you know, whaaa, (*makes hand gesture showing disorganization*), and they, I mean, I've had many of their parents come to me and say, "You know, my kid really listens to you. How do you get them to listen?" you know, so they don't have, they don't have that. They don't have the structure and the discipline and their parents oftentimes don't know how to deal with them. So I feel like they get that here.

In the quote above, Ms. Heath talked about her ELLs particularly needing structure. She said that since she knew she was going to be the "ELD teacher," she knew she had to work in some kind of structure for her future ELLs because she did not want to deal with issues of discipline as Ms. Bowsher [next door] did the previous year when which she volunteered to be the ELD teacher. In the excerpt, she also stated that she had to have a structure because it is something that her kids [ELLs] do not have at their homes, and that even the parents of her students asked her how is it that she achieved that. It was interesting to hear from her that "many" of the parents asked her about it when the communication was quite limited. In the six months that I visited her classroom, either to help or for data collection, I only saw her talking to the parents of her students

during parent-teacher conferences. The presence of parents in the classroom was limited, if not absent.

Ms. Heath acknowledged not wanting to be the ELD teacher. It seems that there was some predisposition to work with ELLs, because she said she knew she had to do something different with her future students, and she believed she was right since students, according to her, liked having the schedule to follow and having to check themselves for behavior problems (Figure 7.1) every time before they changed to a new task.



Figure 7.1. Wednesday schedule with faces after check for discipline

It was also common during instruction to see Ms. Heath stopping and calling for attention if students were talking. At the end of the day Ms. Heath gave students a marble for each happy face they got, which are accumulated until a jar was full. As shown in the figure above (left upper corner on the whiteboard), she sometimes took marbles away if students were disruptive, according to her. In addition, Ms. Heath used the colored cards (green, yellow, orange, and red) system, which was implemented differently by each teacher. In her case, Ms. Heath used it when students were disrespectful to her or

classmates, and often after SFA/stations if they did not meet her expectations in terms of how much work they should have done. All students started in green, and if they got to the red color (yellow and orange in between), Ms. Heath called the parent of the student. These students sometimes got detention, and did not go to recess, depending on the circumstances.

When asking Ms. Heath “What would someone see if they come to your classroom?” she said the following:

They would see the students sitting at their desks. They'd see me, um, you know, teaching the lesson and then us getting together and then me turning (incomprehensible) ways to do it on their own. So “I do, we do, you do.”

Later in the same interview, she said that classroom management and keeping her students on task is her strength as a teacher. She also added in the interview:

I think I'm strict, um, but I'm loving, and the kids know that they can approach me about things, Um, they know they follow the rules or else, you know, there will be consequences. Um, I think I'm an effective teacher. I got the classroom management and, um, you know, I, I always teach to the objectives, so...

In the excerpt above, she addressed as part of her classroom management, the strategy of making objectives explicit, which she adopted with the implementation of Media and More (MM). One of the premises of MM, is that teachers work in collaboration to promote academic achievement through different classroom practices.

In summary, in this chapter I explored the teachers' perceptions of their students and families of Mexican background, and differentiated treatment as directly related to these perceptions, which also seem to be promoted by the classrooms' context. While teachers' experiences are different, they hold similar expectations and perceptions of their students and families that reflect deficit models regarding Mexican and Mexican-Americans. Both teachers addressed poverty, lack of parental involvement and lack of interest regarding education, which leads to low expectations for students nurturing the self-fulfilling prophecies often linked to Mexican and Mexican-American students. In the following chapter [Chapter 8], I discuss the implications of my findings reported in this chapter and the preceding ones.

CHAPTER 8

DISCUSSION AND CONCLUSION

The preceding three chapters provide the analysis of the data addressing the four specific questions that guide my study. In these chapters I described in detailed the classrooms (teachers [backgrounds and formal training and professional development], students, and classroom settings and routines), the teachers' personal experiences around second language learning and mathematics and their impact in school practices, and finally in the last chapter of findings (Chapter 7) I addressed the teachers' perceptions of their students and families of Mexican background and treatment of these students. In these past three chapters, in order to immerse the reader in the two different classrooms I studied, I chose to be descriptive and rarely alluded to the theoretical concepts and literature that influence my study.

In this chapter I summarize the main themes from my findings and I discuss the implications for teachers, school administrators, and further research in relation to PBLs and mathematics teaching and learning, with focus on students of Mexican heritage in an English-only context. This discussion speaks to all the four following questions: (1) What types of support do teachers in two different classrooms in an English-only context, mainstream and SEI/ELD, receive, and what additional resources do they look for to address the needs of their students for English language development and learning of mathematics? (2) What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful for students of Mexican Background in Particular? (3) How do the teachers'

learning experiences around mathematics and language learning inform their classroom practices towards these areas? and (4) What are the teachers' perceptions of their students and families and how do they compare themselves in relation to their student's backgrounds?

The discussion of my findings is divided into three sections followed by implications for teaching PBLs of Mexican background particularly around language and mathematics. The first one addresses support and resources for teachers, including training and professional development; in the second section I discuss the impact of the teachers' experiences on their practices; and in the last section I focus on the teachers' perceptions on their students and the impact on the classroom.

Support and Resources Teachers Draw from to Address the Needs of their PBLs

In this section of the discussion I address the first question: (1) What types of support do teachers in two different classrooms in an English-only context, mainstream and SEI/ELD, receive, and what additional resources do they look for to address the needs of their students for English language development and learning of mathematics?

To answer this question, In Chapter 5, within the description of both classrooms and teachers I addressed the following two concepts:

- Training/Professional Development (PD); and
- Participant Structure

Teacher training becomes an important component for the education of PBLs, yet more attention is needed to optimize it. Tellez and Waxman (2006) state that political imperatives have pushed the issue of teacher quality to the top of the reform agenda in

U.S. education. Preparation, recruitment, and retention of good teachers are an ongoing concern with the increasingly diverse student population. Gándara (2010) argues that there must be a focused effort to determine the specific skills needed by qualified teachers to teach ELLs. She mentioned that it is evident that many credentialing and certification programs have failed to address this issue. She also stated that many programs attempt to train teachers in a matter of 45 to 90 hours, which is the case of Arizona with the implementation of *Proposition 203* and *HB 2064*. In regard to teacher preparation that addresses ELLs, Tellez and Waxman (2006) indicate that up until the 1980s the preparation of these teachers was largely ignored in the teacher professional development literature. This suggests that in a historical context PBLs of Mexican background have been left behind in this regard also.

Despite the growing diverse population and ELLs, teacher preparation programs in universities and two-year preparation colleges seem to fail in addressing a more inclusive environment for students whose primary language is other than English. The school demographics are rapidly changing, and school principals and administrators need constantly to be prepared to provide proper training on how to address the changes.

Even though Ms. Gaona, the school principal, has addressed the training of teachers at Saguaros Elementary School in regards to ELLs and mathematics, the teachers in my study have limited PD to address the needs of their students. Given the sociopolitical context and classroom demands for all teachers, it would not be fair to place the entire responsibility on the teachers. In the case of Ms. Bowsher, the teacher in the mainstream classroom, she took advantage of PD offered by CEMELA not only to

teachers of her school, but also to other teachers from a different school district. This PD that focused on both ELLs and mathematics education of Latinos [workshops of eight sessions per semester during the academic years of 2008-2009 and 2009-2010] seemed to have had an impact in her teaching practices. A few times during the interviews and informal conversations with Ms. Bowsher, she addressed strategies or practices suggested by this training that she has tried and would like to implement in her classroom to address the needs of her students, regardless of their proficiency in the English language. In addition, by the time I conducted this study Ms. Bowsher had taken only half of the training (45 hours) required to all teachers by the state of Arizona due to *Proposition 203 and HB 2064* and the *Flores v. Arizona* case.

In Ms. Heath's case, her PD around ELLs and mathematics seem to be less than what Ms. Bowsher has taken. She mentioned attending a few sessions of PD that the principal offered to the teachers in the SEI/ELD classrooms at a local hotel. However, she stopped attending these sessions due to family responsibilities. Like Ms. Bowsher, she only had the 45 hours of ELLs training required to work with ELLs, but addressed that even though she felt well trained to work with this population it would be very helpful to have additional training. Nevertheless, she felt somewhat limited because of the number of students was too high (28) and they had different levels of English proficiency. Her PD around both mathematics and ELLs was more limited. Even though she admitted not enjoying teaching mathematics as she enjoys teaching other subjects, she stressed that she has to work harder in that subject but time is limited having such a large group of students with diverse needs (academic and personal).

In the six months of data collection neither Ms. Bowsheer nor Ms. Heath talked or addressed their students' bilingualism as being positive or negative, which made me think that their knowledge of the influence of the students' primary language having positive effects in English language development and learning content (Cummins, 1991; Collier, 1995; Ovando et al, 2007) was absent. While Ms. Heath obtained her teaching certificate from a regular teacher preparation at the local university, Ms. Bowsheer obtained it through a masters' degree, in a two-year program.

A theme that came across in the interviews with the principal and the teachers was that of "collaboration." This concept is suggested by John-Steiner (2000) as a framework to better the educational practices of teachers. She states that in collaborative work, its members learn from each other by teaching what they know; it implies engagement in mutual appropriation. She added that solo practices are not sufficient to meet challenges and new complexities of the classrooms, parenting, and the changing workplace. This suggested framework is based on Vygotsky's cultural-historical ideas *that creative activities are social, that thinking is not confined to the individual brain/mind and that construction of knowledge is embedded in the cultural and historical milieu in which it arises* (p. 5).

My findings suggest a lack of collaboration between the two teachers, even though one of the implications and premises of the Media and More (MM) curriculum, recently implemented at Saguaro Elementary School, is that teachers across the same grade level work "collaboratively" to make their teaching more effective and meaningful for their students. However, an attempt to promote collaborative work was identified on

Ms. Bowsher's side. Again, it is important to mention that the demands and pressure on teachers in ELD/SEI classrooms as well as that challenges they have is larger than on teachers in regular-mainstream classrooms. As I addressed in Chapter 5, Ms. Bowsher was always active and looking for additional resources for all third grade classrooms. She even participated in activities to raise money for the school. This attempt to collaborate with the other three teachers, which I addressed earlier, brought to the other three third-grade classrooms in some way an avenue for community collaboration. At the beginning of the school year, Ms. Bowsher arranged with members of the community to visit her school (all four third grade classrooms) and give presentations and talk about their role in the community, which most students seemed to enjoy. All community members did a great job with the presentations, providing the teachers with additional resources to expand and develop on the topics they presented, which I observed only in Ms. Bowsher classroom.

In regards to parental participation, there is a vast amount of research that documents the ways in which Latino [Mexican/Mexican-American] parents engage in their children's education, and also all logistics that get in the way for more active parent participation. Epstein (1991) for instance, defines parental involvement as "parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community." These concepts form part of the framework for parental involvement. Civil and colleagues argue that there is a need for schools to recognize the experiences and backgrounds of families as resources towards their children's schooling experiences (Civil and Andrade, 2002, 2003; Civil and Bernier, 2006) for a more inclusive

participation. González, Moll, and Amanty (2005), through the theoretical concept of *Funds of Knowledge*, also highlight the interactions between school and families, and beyond that the interactions between community background and knowledge in the learning process.

My data also provide evidence of limited parent participation in the school in both classrooms. By no means am I stating that parents were not involved or reinforcing the myth that they do not care about their children's education (Valencia and Black, 2002). In both Ms. Bowsher's and Ms. Heath's classrooms, most parents attended the parent-teacher conferences (parent presence in the second parent-teacher conference was less attended because s teachers were not required to attend if their children did not have behavior or achievement problems); however, teacher-parent interactions were short and mediated by a translator in Ms. Bowsher's classroom, or by me in Ms. Heath's classroom. A few times I observed parents volunteering in Ms. Bowsher's classroom, which I never observed in Ms. Heath classroom. In the case of Ms. Heath, when I helped her organize the Christmas party, only a few parents attended.

Rather than creating a more participatory, collaborative environment for parents, both teachers in my study held strong perceptions about their students' parental participation in school in a negative way, as I addressed in Chapter 7. Within these perceptions the teachers in my study often referred to the culture of poverty as an indicator for student achievement and parental participation. In regards to this topic, Ortiz-Franco (1999) reports that in 1995 the National Center for Educational Statistics

(NCES), reported that Latino parents get involved equally and in some respects more so than white parents, despite the enormous differences in education and family income.

The Influence of Learning Experiences on Classroom Practices

To address question (2) What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful for students of Mexican background in particular? and question (3) How do the teachers' learning experiences around mathematics and language learning inform their classroom practices towards these areas? I started the analysis based on the teachers' learning experiences.

The themes that emerged from second language learning experiences and practices around language in the classroom are:

- Experiences as learner of a second language;
- Language ideology; and
- Teaching practices (language of instruction and role of students' primary language).

In regards to mathematics learning experiences and practices around this subject, the themes that emerged are:

- Experiences as learner of mathematics
- Attitudes towards mathematics
- Use of strategies during mathematics instruction

My overarching research goal was to document the practices in the two different classrooms for English language development and the teaching of mathematics.

However, the teachers' language and mathematics autobiographies expanded the scope of my study as it provided me with data to look at the influence of their experiences on their attitudes and ideologies towards these two different subjects, which influences their practices in the classroom.

Students' Use of Primary Language in the Classroom

Because of the physical context of Saguaros Elementary School, located in a Mexican neighborhood, and despite the fact that neither Ms. Bowsher nor Ms. Heath speaks their students' primary language –Spanish in this case–, I expected to hear the students' primary language more often than what I did in both classrooms. Nevertheless, the current sociopolitical and historical context (Rogoff, 2003; Vygotsky, 1978) of Arizona has done its work pushing teachers to comply with the English-only regulations. Both teachers in my study experienced learning a second language. In Ms. Bowsher' case, as a newcomer at the age of 10, she was immersed in English-only classes having to learn content in a language she did not understand. In addition, her father took the drastic decision of not speaking their native language at home even though none of the family members was proficient in the new language –English. Her father's decision was made in order to easier their process of mainstreaming into the new culture of the United States – Americanization. These facts led her to have from positive to negative experiences throughout her schooling; meanwhile she lost her first language. Her experiences impacted her way of thinking and attitudes towards schooling in this country, particularly around English and the use of the students' primary language.

On the other hand, despite the fact that Ms. Heath did not have to learn content in a language she did not understand and her experiences learning Spanish were more of a choice, she felt forced to select this language in both high school and college. However, in both cases the sociopolitical context was a factor. In high school, her decision of taking Spanish was because her father told her that living in Arizona it would be beneficial regardless of her career path. Once in college majoring in education, she thought that because she had some background knowledge of Spanish and would be teaching in Arizona, it would be something she would definitely need. She minored in Spanish. Yet, fluency in the language has not been accomplished.

The literature around second language learning for schooling addresses a wide variety of instructional strategies and techniques that form a strong primary language support component in English-only environments. Some of these instructional practices include parental support, cross-age and peer tutoring, primary language cooperative learning groups, computer and multimedia technology, bilingual paraprofessionals integrated primary language activities, and status of the language (Cline and Necochea, 2004). Cummins (1981) and Krashen (1981) state that by incorporating the students' primary language in the classroom, the formation of cognitive academic language proficiency (CALP) is promoted because students would better understand the concepts that later can be transferred to academic learning and understanding. Khisty (1995) adds: *it is only reasonable that when new meanings are being developed, the language that the child comprehends the best should be the one used.*

Ms. Bowsher's and Ms. Heath's limited training around second language learning and lack of understanding of how much their students can achieve by using their primary language has led them to believe that it [students' primary language] gets in the way to learning. This is a misunderstanding that laws such as *Proposition 203* and *HB 2064* promoted in the broader teaching community, impacting negatively teaching practices, in addition to ideologies and attitudes held by teachers based on their learning experiences. In chapter 6, I provided a more detailed description of the students' primary language use in both classrooms. As I mentioned, there were several factors that influenced the teachers' approach to the use of the students' native language. On one hand, Ms. Bowsher's language learning experiences shaped her attitudes about language use in the classroom. However, these beliefs have been slightly changing since her participation in the Teacher Study Group (TSG) offered by the Center for the Mathematics Education of Latinos/as (CEMELA) two years before I started this project. For a few times, before and at the beginning of my presence in hers and Ms. Heath's classroom, I heard her mentioning phrases such as "speak English, you live in America". Nevertheless, towards the end of data collection I heard Ms. Bowsher talk to the students about the importance of being bilingual and the "jealousy" she felt for not speaking another language after she lost her mother tongue. As I addressed in Chapter 6, there were few instances in which students felt that it was okay to speak their primary language. Some of them did it without being reprimanded or told anything.

On the other hand, in Ms. Heath's classroom, she consistently reinforced the idea that students should not speak Spanish in the classroom. The one instance in which I

observed students speaking Spanish (just numbers), Ms. Heath ignored it and told students it was not time to be silly. In less than a minute several students who were saying numbers in Spanish switched to English. Ms. Heath also talked about a *disconnection* when listening to her students speaking Spanish in the classroom. However, the students' primary language could have been a resource instead of a problem (Ruiz, 1984), *connecting* to the learning of academic language as suggested by Cummins (1981), and Krashen (1981). Ms. Heath's discourse around language, when talking about students, was that they should speak only English in the classroom; she even mentioned that parents should encourage English at home. It is obvious that Ms. Heath ignores the benefits for students whose primary language is other than English to keep developing their language at home and in school as suggested by Cummins (1981). Khisty (1995) suggests that in regard to mathematics, the use of the child's primary language may be very important to clarify confusions that result because of the difference of many mathematical terms between English and Spanish. She also suggests that the use of students' primary language is particularly important when Spanish is the dominant language spoken at home by parents, siblings or other adults. If English is the language of instruction, children may develop certain understandings that are not necessarily the same as those of school.

A known issue raised with the implementation of *Proposition 203* and *HB 2064* is the segregation of students by language ability. Gándara (2010) talks about Latino students being triple segregated: by race, by socio-economic status, and by language. Regarding *linguistic segregation*, she argues that most Latino students, which is the case

of Mexican and Mexican-American students in Arizona, attend linguistically isolated schools in addition to being linguistically isolated within a school. This happens to fit the characteristics of Saguaros Elementary School, a school with close to 100% Mexican-origin population that had to adopt the implementation of the ELD model, where students are separated by language proficiency based on the AZELLA test. Regardless of how this model is implemented, students are separated from more fluent speakers of English all day long.

Legislation that make English the official language, as well as *Proposition 203* and *HB 2064*, do nothing but send the message that English is superior to other languages. Heath (1986) suggests that when schools implement such policies in the school system, the message goes a step further, telling children that other languages than English has less value as a tools of learning. This has been the case for decades, as Sheridan (1986) documented extreme cases of students being mouth washed for speaking Spanish in classrooms in Arizona at the beginning of the past century. Nevertheless, the students in my participants' classrooms have had exposed to the message that English is the language of school, and the language of the United States. In Chapters 6 and 7, I documented and discussed some of the practices that send these kinds of messages and discouragement towards students' first language if it is other than English.

Teachers' Implementation of Strategies during Mathematics Instruction

As I did in the connection around language (learning experiences-ideology-classroom practices), I did a similar analysis for mathematics (learning experiences-attitudes-classroom practices). Even though there are several factors that impact teaching

practices, training and PD for example, I argue that the mathematics learning experiences shape the attitudes towards this subject impacting the teaching and classroom practices. Both teachers had different experiences, from neutral to negative. However, in the case of Ms. Bowsher, her context and background made smoother her learning experiences. She often addressed that being Asian led her teachers to assume she had a strong knowledge of mathematics regardless of her proficiency in English. On the other hand Ms. Heath's experiences were not pleasant at all; she talked about mathematics not being easy for her in all levels of her education –primary and secondary– which led her to develop a negative attitude towards the subject. Nevertheless, it is very important to address that the context for teaching for both teachers were very different. It would not be fair to compare what teachers do in their classroom without looking at the broader and specific contexts of English-only state policies, teachers' training and PD (Tellez and Waxman,2006), implementation of programs that segregate students with different English proficiencies (ARS, Title 15, 751-756.01), number of students, and other decisions taken by the school Principal.

Specific to teaching strategies, the developers of a model that addresses the needs of ELLs, Echevarria, Vogt, and Short (2004) state that lessons carefully planned make learning more *meaningful* and relevant by including a wide range of strategies and materials that promote real-life application of concepts studied. In the federal case, *Lau v. Nichols* (1974), Judge Douglas addressed *meaningful education*, ruling in favor of the plaintiffs [approximately 1,800 ELLs of Chinese origin that]. He argued that by not providing students with adequate instructional procedures, it denies students a

meaningful opportunity to participate in the public educational program, which violates section 601 of the Civil Rights Act of 1964. In this case, students were provided instruction in a language they did not understand; therefore the activities and materials were not meaningful for the students. Similar practices are promoted by the anti-bilingual regulations in Arizona.

Krashen (1981) suggest that with appropriate strategies and techniques (comprehensible input $-i+1$) concept and language mastery can occur. Krashen's concept of comprehensible input $-i+1-$ (1981) supports the idea that instruction (i) should be one level more complex (+1) than the proficiency of the student, allowing students to understand the language while challenging proficiency. Both teachers in my study controlled their own speech appropriately and explained the academic tasks to the students clearly in mathematics. However, the use of instructional techniques and strategies that are important for comprehensible input, varied in quantity and quality. Ovando, Combs, and Collier (2006) state that a variety of strategies such as modeling, use of simplified language, visuals and graphics, cooperative learning, and hands-on experiences implemented in classrooms in a particular context or class provide *scaffolding*. This term [scaffolding] has its roots around Vygotsky's concept of *Zone of Proximal Development* as pointed out,

...in studies of children's mental development it is generally assumed that only those things that children can do on their own are indicative of mental abilities... On the other hand, if we offer leading questions... what children can do with the assistance of other might be in some sense even

more indicative of their mental development than what they can do alone. This difference... the zone of proximal development... is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (Vygotsky, 1978, pp. 85-86).

Despite the fact that all third-grade teachers met weekly to plan their lessons for their PBLs as required by the implementation of the Media and More (MM) curriculum, Ms. Bowsher and Ms. Heath differences implementing a variety of strategies and ways to address the needs of their students providing them with meaningful activities were visible. Echevarria, Vogt, and Short (2004) argue that multiple opportunities to practice in meaningful ways, including hands-on activities and/or manipulatives, provide students with a greater chance to master content concepts and skills.

In summary, by not using the students' primary language in the classroom and seeing it as a problem rather than as a resource (Ruiz, 1984), teachers limit their repertoire of strategies in the classroom for language development and the learning of mathematics making their instruction less meaningful for their students. Program models such as SEI/ELD do not fulfill the requirements of the "Castañeda, three-part-test", a part of the *Castaneda v. Pickard* decision in regards to the education of ELLs. Under this ruling, founded on the Fourteenth Amendment and the Equal Education Opportunities Act of 1974 (EEOA), schools with a large number of ELLs must provide a program for these students that is (1) based on a sound educational theory, (2) implemented with

adequate resources and personnel, and (3) evaluated and proven to be effective.

ELD/SEI, which is part of state of Arizona policy regarding ELLs, does not meet any of the requirements of the Castañeda three-part-test, however, other programs, for instance the SIOP Model, which even though does not require instruction in the child's native language. It encourages that students can use their primary language as a resource promoting academic achievement. In the best-case scenario, if the teachers speak their students' native language, it can be used for clarification, which is allowed by *Proposition 203* but not clearly stated.

The Influence of Teachers Experiences and Context on their Perceptions of their Students and Families

Finally in this section, I address the fourth research question that guided my study: (4) What are the teachers' perceptions of their students and families and how do they compare themselves in relation to their student's backgrounds?

The themes that emerged from my data that address this question are:

- Teachers' expectations of their students;
- Teacher's perceptions about their students' parents and home support.

However, within this section I discuss how I answered in part my second question [(2) What classroom practices take place in the two classrooms for English language development and the teaching of mathematics, and how are these practices meaningful for students of Mexican Background in Particular?] since teachers decided to address the needs of their Mexican background PBLs differently of what they normally do in the classroom. The theme that I address here is:

- Differentiated treatment

My motivation to explore the classroom practices, to which Mexican and Mexican-American students are exposed, was guided by the sociopolitical-historical context of the State of Arizona. This is a context that has been shaped by education and non-education policies since the Mexican-American War, having a direct impact on the teachers' own experiences, their ideologies and attitudes towards language and the subjects they teach, on classroom practices, and how they perceive their students and families. Policies such as *Proposition 203*, *HB 2064*, and the recent passage of *HB 1070* seem to have had an impact on the classrooms of the teachers in my study.

No matter what, all teachers hold perceptions regarding their students and how children learn, influencing how to approach their practices towards their students. Not only that, teachers also develop perceptions about the parents of their students. This also resonates with what is addressed historically in the education of Mexicans and Mexican-American students (Sheridan, 1986). For instance, in Chapter 7, I documented the teachers' perceptions and expectations of their students regardless of their good intentions to educate these children (Sheridan, 1986).

In regards to the teachers' expectations of their students, it has been documented that the expectations of teachers for their students often becomes true. Robert Merton (1968) named this fact as *self-fulfilling prophecy*. This term has been often used in relation to the education of Mexican-American students. For instance, Nieto (2000) states that when educators perceive their students as destined to fail, there is a large probability that students will fail. She adds that students frequently perform based on the teachers'

expectations. Losey (1995) suggests studying classroom interactions because it is the medium by which teachers express their expectations for students through a differential treatment of students often based on race, ethnicity, and socioeconomic status. In relation to differential treatment, he found that a frequently cited study was published by the U.S. Commission on Civil Rights in 1973. This study was part of a larger study examining inequalities in Mexican-American education and the societal position of this group. This suggests that historically Mexican and Mexican-American students have often been educated under practices that lead to self-fulfilling prophecies of students.

Both Ms. Bowsher and Ms. Heath talked about wanting their students to go to college in the future, but their own cultural stereotypes about Mexicans seemed to be in the way, oftentimes impacting how to properly address the available resources in their classrooms, impacting as well their students' desires to further their education. Ms. Bowsher and Ms. Heath held strong, similar expectations about their students. They both mentioned that they would be happy to see their students attending college, but doubt they will be finishing high school. According to them, college is not a priority for the families of their students as it was for their families [Ms. Bowsher's and Ms. Heath's]. These expectations are somehow linked to the perceptions these teachers have of these Mexican families as being poor.

It was interesting for me to hear that Ms. Bowsher chose to teach the students she teaches [at Sagueros Elementary School], because she identifies herself with them even though the students do not identify with her. Often times, she talked about herself being very poor but that was not an impediment for her to attend college. She stated that in her

household, going to college was not an option; she and her siblings had to attend college. Her perception is that Mexican/Mexican-Americans do not value education (Valencia and Black, 2002). It was also interesting to hear about when she came to the United States, she often talked about her teachers' perceptions of her being Asian. She said that the perceptions of her teachers for being Asian made her schooling easier to some extent, particularly in mathematics because she did not know English. To her, all teachers assumed she "knew things" for being Asian. This is interesting because she holds strong perceptions of her students, but does not see the impact of *perceptions* on her students.

In addition to linguistic segregation Gándara (2010) states that Latinos often face racial and socioeconomic segregation. This is also the case for students attending Saguaros Elementary School. Close to 100% of the student population is of Mexican origin and qualifies for a free or reduced lunch. The *de facto* segregation in Tucson as documented by Sheridan (1986) in the early 1900s still prevails in the Tucson community. Because of the large concentration of Mexicans/Mexican-American students in certain areas, they are to attend schools with large Mexican background population, which often are less equipped than schools in rich neighborhoods where this population is not concentrated. An example that I observed in the two classrooms that support the fact that schools in poor neighborhoods are less equipped, is that students have access to very old computers that oftentimes do not work properly or do not work at all. This often brings about other issues around students' participation in the classroom.

Based on the sociopolitical context, it is reasonable to say with certainty that the education of Mexican-origin students has not changed. As I mentioned, students in

Saguaros Elementary School are triple segregated (Gándara, 2010) like Sheridan (1986) found with students in the early 1900s, when they were placed in special classes called “1C” programs to address their language needs. Despite the fact that *de jure* segregation [legal racial segregation] *ended* in 1954 with the Supreme Court decision in *Brown v. Board of Education*, one can argue that it still prevails in Arizona and in other states in the United States where students whose first language is other than English and they are separated from their English-speaking peers by laws such as *Proposition 203 and HB 2064*.

Implications of this Study in the Teaching of PBLs of Mexican Background

The classroom practices described in my study highlight areas that need to be refocused in schools when teaching PBLs of Mexican background with diverse abilities (ELLs and non-ELLs). These areas that suggest a more inclusive and meaningful education for students such as the ones in the teachers’ classrooms in my study are addressed in the following themes:

- Teacher training and professional development
- Participation Structure

With the implementation of *Proposition 203 and HB 2064*, students whose primary language is not English and students in mainstream classrooms, continue to experience differences in their education creating a larger achievement gap between students who are proficient in English and ELLs. These initiatives that require now a specialized training of 90 hours to address the needs of ELLs from different English proficiency levels and diverse backgrounds is by far not enough to provide a more

meaningful education to these students. Both teachers in my study had taken the required training to work with ELLs and some extra training not mandated by the school that addresses this population of students and mathematics. *They* indicated that they feel somehow prepared to work with these students. Téllez and Waxman (2006) state that research on in-service teachers education suggest that “one shot” in service programs are unlikely to alter teaching practices.

My results suggest the need for increased preparation and professional development around PBLs and mathematics. The results clearly showed that my participants had limited knowledge on theories of second language acquisition, and also that some strategies they implement in their classroom do not meet the needs of their PBLs, which impact the teaching in content areas. However, both Ms. Bowsheer and Ms. Heath are eager to receive professional development to help their students succeed academically and in their personal lives. Téllez and Waxman (2006) address that the following standards for teachers of PBLs should be included in teacher preparation programs: Language, culture, planning, implementing, and managing instruction, assessment, and professionalism. These standards suggested for initial teacher preparation and beyond were developed for ELD teacher education by Teachers of English to Speakers of Other Languages (TESOL) and National Council for Accreditation of Teacher Education (NCATE).

More training on instructional models and strategies to use with PBLs is needed regardless of the teachers’ backgrounds. In addition to this, teachers need to be more familiar with the principles or theories of second language acquisition. Training that

addresses how students learn a second language and includes the students' backgrounds leads to better communication with their students and families, reducing and/or eliminating negative expectations/perceptions about their students and their families, which can be detrimental to students' academic achievement. However, a PD of this kind implies the use of additional resources and time that many schools may not be able to afford.

Schools also have implemented curricula that may not be appropriate for the population they serve to balance the negative results that state mandated programs have carried, or curricula that requires intensive training and collaborative work among teachers and the school community. This is the case of Saguaros Elementary School with the implementation of the Media and More (MM) curriculum, which has been successfully implemented in other school districts that have a totally different student population in terms of socioeconomic status and number of ELLs.

An important finding in this study is limited collaboration among different school participants, which can also be addressed with more quality training and PD. Teachers should work more collaboratively, rather than getting together to divide their planning and tasks based on what teachers like to teach the most. This fact has an impact on the teaching practices, again making schooling not meaningful for students if a teacher is not prepare to deliver a lesson in a subject she/he is not comfortable teaching. Through a framework of collaboration, John Steiner, Weber, and Minnis, (1998) call for a more inclusive education in which the school participants (teachers and the school principal) generate resources to address the students' needs based on each one's expertise.

Valenzuela (1999) states that as long as educators are not properly trained on the needs of culturally marginalized students, their schooling experiences will continue to subtract meaningful resources from them. It seems to me that the many demands on teachers to address their students' needs is pushing for a more specialized degree in teaching that goes beyond bachelor's degrees, like many other professions require.

Limitations of this Study

Because of the nature of my study, using a case study approach and ethnographic tools, I was very cautious about not making broad conclusions. The instruments used for this study can be modified to address other factors that may impact teachers' language ideologies and attitudes towards mathematics, as well as their practices.

I developed a friendship with both teachers; however, I limited my participation to the school setting even though my presence in both classrooms was beyond data collection. Both Ms. Bowsher and Ms. Heath often asked me to help with tasks that any other volunteer would be able to do. None of the teachers had a teacher's aide to help with basic classroom tasks. In addition the students' needs were very diverse.

Directions for Future Research

This study was distinctive in that it looked and addressed the connection between the teachers' learning experiences around language and mathematics, their language ideologies and attitudes towards mathematics, and their practices in the classroom around both language and mathematics. Most studies have been focused on teachers' ideologies and attitudes and fail to address the learning experiences of teachers and the role of the sociopolitical-historical context on these.

An important contribution of this study was the use of the “Second Language Learning Autobiography” and the “Mathematics Learning Autobiography.” As such, this study presents more opportunities for teachers’ own self reflection in connection to future action research. The following recommendations are presented for further consideration.

First, educational studies need to be conducted using teachers’ autobiographies, or modifications to the instruments employed in this study. It appears that the instruments adequately provided information relevant to the teachers’ language ideologies and attitudes towards mathematics. Prompting answers while reporting about their past experiences encourage educators’ deeper responses.

Second, it would be important to conduct similar studies to confirm and compare the conclusions drawn from this study. This study was conducted in two different classroom environments;. the SEI/ELD class seemed to be different from other SEI or ELD classrooms across Arizona school districts (Rios-Aguilar, González-Canché, and Moll, 2010. Further research should include other classroom environments implementing the ELD model as required by the new policy, *HB 2064*.

Finally, researchers could also use longitudinal studies to investigate changes in the ideologies and attitudes of teachers and how their practices are impacted over time. Beyond conducting similar studies, there is a need for a qualitative more detailed information about the experiences of English Language Learners in English Language Development classrooms, to strengthen this body of research.

APPENDIX A

PARENT CONSENT FOR CHILD

Understanding the sociopolitical-historical context and its impact on teachers of students of Mexican background: A closer look in a mainstream and in an English Language Development (ELD) classroom

(cover letter)

Classroom Observations & Videotaping

Dear Parents,

Your child's classroom has been invited to participate in a study from The University of Arizona that will look at the teaching and learning of English and mathematics. This study focuses on various factors and the classroom community: students and their teacher. As part of the Study I want to **observe** the teacher and students participating in English and mathematics lessons, discussing concepts, asking questions, and in their conversations around English and mathematics with other members of the class. Also I would like to **video-record** some of this English and mathematics lessons.

Please sign the consent form attached to this letter if you give permission for your child to participate in this study. If you have any questions, please contact me directly; I am the principal investigator for this study and can be reached at (520) 248-7613.

Sincerely,

Jesús Acosta-Iriqui, M.Ed .
College of Education
The University of Arizona
4949 E. Alta Vista St.
Tucson, AZ. 85712

APPENDIX B

PARENT CONSENT FOR CHILD (Spanish)

Carta a los padres y forma de consentimiento para su hijo-a

Comprendiendo el context sociopolítico-historico y su impacto en maestros de estudiantes de origen Mexicano: Enfoque en un salón de clases con estudiantes competentes en inglés y otro con estudiantes aprendiendo inglés

(portada)

Observación y Grabación de Video en el Salón de Clase

Estimados padres y/o madres de familia,

La clase de su hijo/a ha sido invitada a participar en una investigación que es parte de La Universidad de Arizona acerca de la enseñanza y el aprendizaje del idioma inglés y las matemáticas. Este estudio se enfoca en los diversos factores y miembros del salón de clases: los estudiantes y su maestra. Como parte de este estudio, me gustaría observar a los estudiantes y a su maestro/a mientras participan en las clases del idioma inglés y matemáticas, discuten conceptos, hacen preguntas, participan en las actividades de las clases, y participan en diálogos sobre el idioma inglés y las matemáticas con otros miembros de la clase. Además, me gustaría graban en video algunas de las clases del idioma inglés y matemáticas.

Por favor, firme la forma de consentimiento de padres que se adjunta a esta carta si le da permiso a su hijo/a para participar en este estudio. Si tiene alguna pregunta, me puede llamar directamente. Yo soy el investigador principal de este estudio y me puede localizar en el (520) 248-7613.

Atentamente,

Jesús Acosta-Iriqui, M.Ed .
Colegio de Educación
La Universidad de Arizona
4949 E. Alta Vista St.
Tucson, AZ. 85712

APPENDIX C

TEACHER BACKGROUND PROFILE



CENTER FOR THE MATHEMATICS EDUCATION OF LATINOS/AS

The University of Arizona • University of California, Santa Cruz • University of Illinois at Chicago • The University of New Mexico

Name:	
School:	District:
Current Position:	Email Address
Gender ___Female ___Male	
Grade level(s) you have taught (circle all that apply): Pre-K K 1 2 3 4 5 6 7 8 9 10 11 12	
Grade level (s) you currently teach (this school year): Pre-K K 1 2 3 4 5 6 7 8 9 10 11 12	
How long have you been a teacher? ___ years	How long have you taught at this school? ___ years
Indicate the highest level of formal education you have completed <input type="checkbox"/> Completed bachelor's degree <input type="checkbox"/> Completed graduate level courses <input type="checkbox"/> Completed master's degree <input type="checkbox"/> Completed doctorate degree (Ed.D., Ph.D.)	
How would you describe your mathematics background? <input type="checkbox"/> Completed high school level courses to <i>meet graduation requirements</i> <input type="checkbox"/> Completed high school level courses <i>above the graduation requirements</i> <input type="checkbox"/> Completed required college level courses for a bachelor's degree <input type="checkbox"/> Completed some courses beyond those required for bachelor's degree <input type="checkbox"/> Minored in mathematics <input type="checkbox"/> Majored in mathematics	

APPENDIX D

TEACHER INTERVIEW

Biography (Focus on Mathematics and English)

1. To start, could you tell me some background about yourself. Where were you born, where did you grow up, and where did you go to school?
2. What was going to school like for you and what kind of memories do you have of when you were going to school?
3. What were your experiences as a learner of English in school? Do you have experiences that stand out in your mind about your English language acquisition? Did you see any purpose for English learning back in school?
4. Did English in any way, stick out as being more important?
5. Did anybody stress English to you? Outside of school or any other kind of teachers, or counselors?
6. Can you tell me how do you think English is important?
7. What were your experiences as a learner of mathematics in school? Do you have some experiences that stand out in your mind about your mathematical biography? Did you see any purpose for math courses?
8. Did math, in any way, stick out as being more important?
9. Can you tell me how do you think math is important?
10. Can you tell me how do you think math is important?
11. How much confidence do you have in your math ability?
12. How do you think your experiences affect your teaching now particularly around English and mathematics?
13. What do someone needs to be good at mathematics?

Teaching

14. What subject do you like to teach the most? Is this subject somehow related to English? Are there any connections with mathematics?
15. What subject do you like to teach the least? Is this subject somehow related to English or mathematics?
16. What has been your teaching philosophy?
17. What are your teaching goals?
18. How would you describe your teaching?
19. What would someone see if they came to your classroom?
20. How much confidence do you have in teaching English to ELLs of different levels?
21. Do you feel trained to teach these students?

22. Which do you think is your strength as a teacher?
23. Which do you think is your weakness as a teacher?
24. Do you think you have strengths to teach ELLs?
25. Which do you think is your weakness while working with ELLs?

Students

26. Are you satisfied with how your students are doing?
27. What are your expectations from your students in terms of school?
What do you want them to get out of school?
28. What do you think makes the difference between the students with strong math understandings and those who don't?
29. How much schooling do you think they need to get along in the world?
In terms of a job?
30. Do you think that being Latino or Mexican has an influence/does it make a difference in children education? Now or in the future?
31. When one looks at all the different student groups, such as Whites, Asians, Latinos, it turns out that Latino students, for whatever reasons, seem to have lower scores starting early in school and also they don't go into the higher courses. As a teacher of Latino, Mexican background kids, Why do you think that might be that those kids are just not sticking with math or don't do as well?

Parents

32. What do you expect from parents?
33. What kind of support do you think parents should give students for their children to be successful? Is it different for Mexican or Mexican-American students?
34. Do you have a question you would like to pose to parents related to English education?
35. Do you have a question you would like to pose to parents related to mathematics education?

School

36. What kind of resources and support do you (teacher) obtain from your context?
37. What resources do you use to support your students learning of English and Mathematics?
38. What kind of resources and support do you obtain from your school for the teaching on English?

39. What kind of resources and support do you obtain from your school for the teaching on Mathematics?
40. Are there any other resources that you think will be useful in your teaching?
41. What type of resources and support do you obtain from your community for the teaching of English and mathematics?
42. What do you think are the biggest strengths and weaknesses of the school and district?
43. Do you feel that you have some kind of input into the school?
44. That you know of, what are explicit or implicit messages that students receive within these larger contexts about the role and importance of English and schooling?
45. That you know of, what are explicit or implicit messages that students receive within these larger contexts about the role and importance of mathematics and schooling?

APPENDIX E

LITERACY/LANGUAGE AUTOBIOGRAPHY

- How and when did you learn to speak, read, and write?
- In which language did you learn to speak, orally comprehend, read, and write first?
- What literacy/language development experiences have you experienced in your lifetime?
- Were there specific individuals who affected and influenced your literacy/language development (positively or negatively)?

- How did schooling impact your literacy/language development?
- What were the contexts in which you felt you were most successful in learning a second language?
- What circumstances led to maintenance or loss of languages in your family?
- What texts have you found to be influential, and what language(s) were they written?
- How have your feelings about literacy/language development changed over time?

Talk about your own acquisition of a second language (age you acquired it, how well you acquired it; formal or informal methodologies used; means of retaining the language, if any, and finally, your knowledge and understanding of the cultures and peoples associated with that language). If you speak only English, but have traveled outside of the United States, you may write about that experience, concentrating on your exposure to international languages, cultures, peoples, geographies, etc. If you speak only English, and have not traveled internationally, you may write about how you think English language learners are taught, or should be taught, in Arizona public schools.

APPENDIX F

CHILDREN'S INTERVIEW I



CENTER FOR THE MATHEMATICS EDUCATION OF LATINOS/AS

The University of Arizona • University of California, Santa Cruz • University of Illinois at Chicago • The University of New Mexico

Background and Home Activities

Name _____ School _____
 Birth date _____

1. Where were you born?
2. How many brothers do you have?
3. How many sisters do you have?
4. Are you the oldest or youngest child in the family, or are you in between?
5. What language or languages do you speak at home?
6. Which Language do you like to speak the most? Why?
7. Do your parents (other adults, siblings) help you with the mathematics homework? In what ways?
8. Do you help your younger siblings with their mathematics homework? In what ways?
9. In what ways do you use mathematics outside the classroom? [this may need some further probing]
10. What games do you like playing? Why? What does it take to be very good at that (those) game(s)?
11. What do you do in your free time?
12. Think of something that you are pretty good at. What do you think makes you good at that?
13. Think of something that you do not feel you are good at. Why, in your opinion aren't you good at that?

APPENDIX G

CHILDREN'S INTERVIEW II

English learning and use

Name _____ School _____

Birth date _____

1. How do you like this classrooms compared to previous ones (kindergarten, second grade and first grade?)
2. What is your favorite subject in school?
3. What subject you like the least?
4. Do you speak Spanish or English in your classroom?
5. When do you speak Spanish in the classroom?
6. When do you speak English in the classroom?
7. Which language is spoken at home?
8. Do you have brothers and sisters?
9. Which language do you speak with your brothers and sisters? If Spanish, when? If English, When?
10. What are some things that you like about your English classes?
11. What are some things you do not like about your English classes?
12. For how long do you have English classes?
13. Which activity do you like the most (provide an example)?
14. If you were the teacher, how would you teach English?
15. If you could change anything in the English class, what would you change?
16. How would you describe yourself as an English student? [this is to try to get to their perception of themselves as learner... may have to be reworded, especially with younger students]
17. Give an example or something (a topic) you learn in your English class. Was/is it easy or difficult/hard for you to learn. Why? What do you think made it easy or difficult/hard?
18. Which activity do you like the most when you are in school?

APPENDIX H

CHILDREN'S INTERVIEW III



CENTER FOR THE MATHEMATICS EDUCATION OF LATINOS/AS
The University of Arizona • University of California, Santa Cruz • University of Illinois at Chicago • The University of New Mexico

School Mathematics

Name _____ School _____

Birth date _____

1. What is your favorite subject in school?
2. What are some things that you like about your mathematics class?
3. What are some things you do not like about your mathematics class?
4. How would you explain to a child younger than you what mathematics is?
5. If you were the teacher, how would you teach mathematics?
6. If you could change anything in the mathematics class, what would you change?
7. How would you describe yourself as a mathematics student? [this is to try to get to their perception of themselves as learner... may have to be reworded, especially with younger students]
8. Give an example or something (a topic, a problem, ...) in mathematics that was/is easy for you to learn. Why? What do you think made it easy?
9. Give an example or something (a topic, a problem, ...) in mathematics that was/is hard for you to learn. Why? What do you think made it hard?
10. Which activities in mathematics do you like the most?

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