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ABSTRACT

This report describes a program for improving bilingual students' learning and thinking skills using the constructivist theory. It targeted bilingual high school students in a middle class, suburban Illinois high school. Students' learning and thinking behaviors were documented using methods that showed when and how they employed new learning and thinking skills. Analysis of probable cause data chronicled an extensive history of academic frustration for language minority students. Behaviors contributing to their educational difficulties and high dropout rates included low socioeconomic status, lack of English language proficiency, little previous exposure to formal education, segregated education programs, and parents with low levels of education. Reviews of curricula studies and instructional planning strategies revealed a lack of appropriate instruction and intervention methods and diminishing numbers of teachers suitably trained to meet students' needs. A review of research-based solution strategies, combined with analysis of the problem setting, resulted in the development of a two-strand intervention strategy: one to heighten students' awareness of their current learning and thinking behaviors and one to teach them new learning and thinking skills during authentic learning situations. Post-intervention data indicated increased student awareness of learning and thinking skills when placed in an authentic learning situation, although students' content assessments did not reflect dramatic growth. (Contains 43 references.) (SM)

IMPROVING BILINGUAL STUDENT LEARNING AND THINKING SKILLS THROUGH THE USE OF THE CONSTRUCTIVIST THEORY

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ABSTRACT

This report describes a program for improving bilingual students' learning and thinking skills through the use of the Constructivist theory. The targeted population consisted of bilingual high school students in a large, middle class suburban high school, located in northeastern Illinois. The students' learning and thinking behaviors were documented through methods and strategies that showed when and how the students were employing new learning and thinking skills.

Analysis of probable cause data chronicled an extensive history of academic frustration for language minority students. Behaviors most often reported as contributing to their educational difficulties and high drop out rate included low socioeconomic status, lack of English language proficiency, little previous exposure to formal education, segregated education programs, and parents with a low level of education. Reviews of curricula studies and instructional planning strategies revealed a distinct lack of appropriate instruction and intervention methods, as well as a diminishing number of teachers who are suitably trained to meet the needs of this large and growing population.

A review of solution strategies suggested by knowledgeable researchers, combined with an analysis of the problem setting, resulted in the development of a two-strand intervention strategy: one to heighten students' awareness of their current learning and thinking behaviors and the other to teach them new learning and thinking skills during authentic learning situations.

Post intervention data indicated an increase in the students' awareness of learning and thinking skills when placed in an authentic learning situation, although their content assessments did not reflect dramatic growth.

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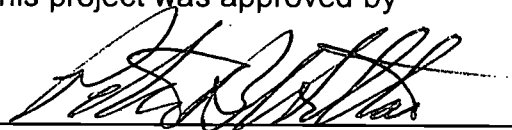

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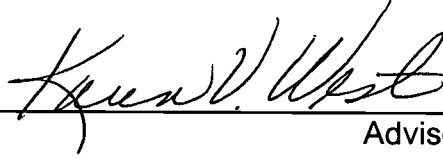

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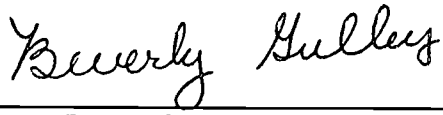

Dean, School of Education

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CHAPTER 1

General Statement of the Problem

The Hispanic bilingual students in the targeted high school classroom exhibit learning and thinking habits that are not conducive to academic success. Evidence supporting this behavior includes anecdotal information that documents students' inadequate understanding, assessments that indicate poor student performance, and observable student behavior that demonstrates a lack of previous educational experience or a general lack of formal education. The targeted research area is a high school near a major midwestern city. The 2001 State School Report Card was a source of statistical information for this site.

Immediate Context of Problem

School

The year 2002 heralds the 30th anniversary of this large suburban high school. For the past three decades, this school has been an institution of comprehensive and progressive teaching and learning. It is a nationally recognized U.S. Department of Education Blue Ribbon School, and as such provides worthy professional development, community involvement, and multiple opportunities for students as learners and as responsible civic members. It fosters an atmosphere of energy and excitement for

learning. This site is staffed by a group of dedicated professionals who ascribe to the common goal of nurturing life-long learners.

The physical building itself typifies the construction style popular in the 1970s, a sprawling two-story building. The main entrance is tucked into a well-hidden alcove, referenced only by the flagpoles. During the past ten years, the school has been retrofitted to accommodate state-of-the-art technology, and is currently slated for further remodeling construction. Future construction includes new classroom spaces and a more efficient redesign of many existing classrooms and hallways to provide for better traffic flow. The north and east sides of both floors are carpeted. Located on the first level are the main offices, the library, community outreach services, the technology and computer sciences areas, and the Fine Arts and Humanities Division. The Foreign Language, Social Sciences and ESL Division, the Math and Science Division are located on the second floor. The student services offices, the nurse's office, and the counselors' offices are also on the second floor. On the first level of the south and west areas of the school are the cafeteria commons area, the theater, band and orchestra rooms, art classrooms, and a large gymnasium and field house. The second floor's south and west areas are the locker commons. The basement houses the faculty offices for the Physical Education Division. Also located here is a climbing wall and a modern weights and work-out equipment room for student and staff use, and the students' gym lockers. In addition to providing a learning environment for 9th through 12th graders, the school also provides an early childhood education program. This program serves as both a day-care facility and an opportunity for instruction in this field of interest. The early childhood program area

is located on the first floor, where there is safe and convenient outside access on the east side of the building.

All grade levels use all available classrooms. With some exceptions in the special education department which has self-contained classes, the students travel from class to class. This school operates on a block schedule that divides the academic day into four 90-minute class periods, with 10 minute passing periods between classes and two 50-minute lunch periods. Although the school is very large, a student can get to any classroom in the building on time within the 10-minute passing period.

Classroom size varies. Some of the rooms are relics of the days when student enrollment was so high that classroom spaces had to be shared by maneuvering temporary, thin metal classroom walls within a given room or area. This type of mobile wall can be easily re-routed as classroom size fluctuates. Temporary walls along hallways admit a great deal of noise and can actually be pushed in by students during passing periods. Those classrooms or offices on the perimeter of the building have windows that can be opened. Classrooms located in the center of the building have no windows other than perhaps a narrow safety glass window set in the classroom door. Each classroom is wired for email and Internet access and each has a television monitor. In addition, all classrooms have an emergency call button.

This air-conditioned site is equipped with a foreign language laboratory, three computer labs, as well as a writing lab and a technology center. All labs have email and Internet access. The school provides an in-house technology systems support staff, a sophisticated audio/visual department, as well as an assessment center that offers testing services and analyses. Teacher work areas are equipped with computers, television

monitors, and a copy machine. There is also a large copy center located on the first floor of the building.

Along with the academic opportunities, there are many clubs and activities offered at this school. The school has a football field, a baseball field, a running track and outdoor tennis courts. It also has access to a swimming pool. The sports teams include football, baseball, basketball, soccer, cricket, wrestling, track and field, cross-country, swimming, tennis, badminton and bowling. The Fine Arts Division offers band, jazz band, marching band, symphonic band, flags, orchestra, a dance troupe, choir, and a photography club. Other clubs include journalism, yearbook, debate, and theater. There are also inter-scholastic sports, student government and hobby-related clubs. Because this site places a strong emphasis on civic responsibility, it offers several opportunities for students to volunteer their time and service in the surrounding community.

The researcher's classroom is remarkable only because of its size: it is very small, with a narrow rectangular footprint. The walls are an institutional shade of ivory. Two of the walls have white boards covering nearly the entire wall surface. This color combination is very bland and lackluster, rendering the room visually uninspiring. The room only just accommodates 21 student desks, a small table, computer cart and teacher's desk. One wall is flanked with tall bookshelves, filled with books. In another corner, three file cabinets provide sufficient storage space for extra supplies and materials. The light switches are split in order to offer three different lighting intensities. The room has no windows and suffers from inadequate air circulation. During the winter months, the room is very cold and during the spring and fall, it is uncomfortably warm. A ceiling fan helps to distribute the air.

The 2001 State School Report Card indicates a current student enrollment of 1,756 students. This enrollment comprises a broad range of racial backgrounds. The racial and ethnic analysis of the student body includes five classifications: 69.3% White, 18.1% Hispanic, 9.6% Asian/Pacific Islander, 2.8% Black, and 0.2% Native American. Furthermore, the student body represents the following economic standings and attendance patterns: 93.4% attendance rate, 17.6% mobility rate, and 12.4% low income (eligible for free or reduced lunches). The Limited English Proficient rate is 9.6%, the high school dropout rate is 3.4%, and the chronic truancy rate is 2.5%. Class size average is 21.3 students. At the district level, the staff-to-student ratio is 12.7, and the administrator-to-student ratio is 151.5. In both of these instances, the targeted school closely reflects these ratios. According to the Profile Data for 2001-2002 School Year, there are a total of 150 certified staff members. Of those staff members, 79% have a master's degree, 18% have a bachelor's degree, and 3 % have a doctorate degree. The school reflects a gender make-up similar to that of the district's, that being 50.6% male and 49.4% female.

Academic assessments are administered throughout the year. Among these are the American College Test (ACT), the Illinois Measure of Annual Growth in English (IMAGE), the Prairie State Achievement Examination (PSAE), and the Scholastic Aptitude Test (SAT). The ACT, administered to Juniors, provides results on student performance in the areas of English, Mathematics, Reading and Science Reasoning, as well as a composite score for overall achievement. The research site scored 22.5 in Mathematics, 22.3 in Science Reasoning, 21.3 in Reading, and 20.7 in English. Its ACT composite score is 21.8. The IMAGE is an assessment given to high school students who

are enrolled in an approved transitional bilingual education program, and is administered in place of the ISAT or PSAE instruments. The IMAGE reports growth in the areas of reading and writing abilities in the following four manners: Percent Beginning, Percent Strengthening, Percent Expanding, and Percent Transitioning. Its 2001 IMAGE results for reading are: 57% Beginning, 36% Strengthening, 8% Expanding, 0% Transitioning. Results for writing are: 43% Beginning, 29% Expanding, 26% Strengthening, and 2% Transitioning. The PSAE reports scores for the areas of reading, mathematics, writing, science and social science. The PSAE scores for 2001 were as follows: mathematics: 163, writing: 163, science: 162, social science: 162, and reading: 161. In every area, site scores are higher than state scores. The school's 2001 SAT scores indicate a math score of 573, and a verbal score of 543, the middle 50% in both cases.

District

This school is one of six four-year high schools within a township high school district. According to the 2001 State School Report Card, this district serves a total student population of 11,245. There are 724 teachers in the district, 97.7% of whom are White. The remaining 2.3% for racial and ethnic breakdown is as follows: 1.0% Hispanic, 0.6% Black, 0.6% Asian/Pacific Islander, and 0.1% Native American. The average teaching experience for this district is 17.4 years. Master's degrees or beyond make up 75.6%, and 24.4% of teachers have a bachelor's degree. The average administrator's salary is $110,428 and the average teacher's salary is $74,047. The district Pupil-Administrator ratio is 151 to 5, considerably less than that of the state's 233 to 7 ratio.

The academic assessments reported for the district are the ACT and the PSAE. As reported in the 2001 State School Report card, this district scored 23.1 in mathematics, 22.5 in science reasoning, 22.3 in reading, and 22.1 in English. The ACT composite score is 22.6. The district's PSAE scores are: 164 in mathematics, 164 in writing, 163 in science, 163 in social science, and 162 in reading.

Surrounding Community

Student enrollment at this site draws from three surrounding towns. The school is situated in a quiet residential locale, which exudes a definite small-town atmosphere. The immediate neighborhood includes a church and an adult special needs educational center to the north, a road commission garage to the northwest, 1950's-style ranch homes stretching off to the east and west, and two apartment/condominium complexes to the south. An elementary school borders on the southwest edge of the property. The nearest commercial buildings are two blocks away: two small strip malls and a senior citizens' center. The community maintains its peaceful environment despite being only 30 miles away from a metropolitan city, 12 miles away from a busy airport, and two miles away from a large shopping district.

For the past 30 years, the surrounding community has taken root and flourished. According to the U.S. Census Bureau, the population for this area in 2000 was 22,792. The population trend for the past 20 years has been steadily rising. The racial distribution is 83.7% White, 11.2% Hispanic, 3.7% Other, and 1.5% Black. The community has a strong employment rate of 76.1%, and an unemployment rate of 2.2%. Those not in the labor force make up the remaining 21.7%. Christian churches are the predominant religious denomination. Of this community, 53.9% of the population is married with

spouse present, 30.0% has never been married, 7.5% is divorced, 4.7% is widowed, and 3.8% is married with spouse absent. The median family income is $84,738 annually, and the median age is 36.9 years. Housing in this community is classified into single-family units and multifamily units, 71.3% and 28.7%, respectively. The median home value is $145,000. The U.S. Census Bureau also reports 14.0 as the median years of school completed for this community. This is broken down into the following percentages: 27.4% high school graduate, 24.0% some college, 19.7% Bachelor's degree, 8.0% graduate degree, 7.6% 9th-12th grades, 7.0% Associate's degree, 6.3% less than 9th grade.

National Context of the Problem

Although bilingual education has been in place for decades, the debate over bilingual student success continues to generate discussion at both the state and national levels. Bilingual education is an often-misunderstood concept. Furthermore, it is often confused with English as a Second Language (ESL). The basic premise of bilingual education is to teach content in native language with English language support. The goal of bilingual education is to provide the learner with comprehensible input (hence native language instruction) so as to facilitate the learner's acquisition of English. A learner who has background knowledge in one area of study will have a much greater chance of understanding that same area of study taught in English (Krashen, 1999). ESL, on the other hand, is the explicit instruction of reading, writing, listening and speaking in English to speakers of many different languages.

Many public misconceptions about bilingual education and bilingual students themselves continue to exist. However, some researchers believe that much of the public opinion is based upon erroneous correlational arguments: "Hispanic students have a

large dropout rate. Hispanic students are the biggest customer [*sic.*] of bilingual education programs. Therefore, bilingual education causes dropouts" (Krashen, 1999). Any attempt to clarify the pros and cons of bilingual education demands that many factors be considered: what, precisely, does "drop out" mean and how is that term being used? How are numbers acquired and interpreted? For what purposes are statistical data being used? Before a real debate about the efficacy of bilingual education can be conducted, both sides need to scrutinize their perceived underlying causes to verify the validity of those causes.

The number of students who experience failure is a point of significant national concern. The Hispanic student dropout rate is alarmingly high. Hugh Mehan (1997) indicates a significant inequality in the makeup of the dropout population. Of the approximately 86% of students who completed high school in 1993, Latinos represented 63%, a difference of nearly 30% compared to that of white students, and a difference of almost 11% compared to that of African American students. The corresponding concern here is the increasing number of indigenous minority and recently arrived immigrant students, particularly in urban areas.

Many mitigating factors contribute to the negative Hispanic academic trend, among them stereotypes of Hispanics and schooling conditions. By continuing to foster the concept that Hispanic students are intellectually and socially inferior, the likelihood of designing effective intervention strategies is minimal. Additionally, if educators do not work to change their own current concept of Hispanics, they will continue to labor under the misconceptions that Hispanics do not want to succeed, do not care about school, are unable to achieve, or engage in violence or gang activities. In terms of

equitable schooling, many Hispanic students are tracked into dull and uninteresting classes. Any student put into a class where the content is unchallenging and irrelevant will certainly not flourish academically. And even the most well designed curriculum will net disappointing results of the teachers who teach it do not excel at instruction (Lockwood & Secada, 1999). Bilingual teachers need to be expert in a number of contents areas as well as be proficient in two languages. This is a tall order to fill. As the number of bilingual school-age children increases, so does the call for competent bilingual teachers who can deliver educationally challenging curriculum.

The issue takes on an even greater degree of urgency when considering the effect it will have on society. Anne Turnbaugh Lockwood reports that Hispanic students are the largest-growing portion of the population and they have the highest dropout rate compared to any other major portion of the U.S. population (Lockwood, 1996). If these students continue to drop out at the high school level or to merely scrape by, attaining only the basic requirements, they will not be able to contribute to the demands of society. Achievement at the lowest level of the academic spectrum does not generate people who are fast and straight readers and thinkers, who can make sound predictions and exercise good judgment. The United States continues to evolve as a country that requires civically responsible, higher-order thinkers. The need to produce students who have those characteristics is paramount, regardless of their ethnicity.

Chapter 2

PROBLEM DOCUMENTATION

Problem Evidence

The researcher's students are enrolled in a class that is being team-taught. The researcher is responsible for teaching study skills and strategies, and the teaching partner is responsible for teaching the subject matter. This is accomplished by dividing the 90-minute period between the two class loads. Class time is divided up according to the activities of the day. Because only the researcher's students are involved in the classroom research, the term "students" refers to the researcher's students.

Before any research could begin, the students received and returned letters of intent and permission for their parents (Appendix A) and for themselves (Appendix B). In order to document the type and pattern of learning occurring with the students, reflective journals (Appendix C) and two surveys, one for parents (Appendix D) and another for students (Appendix E), were used. The surveys were completed and returned to the researcher by the second week of classes. The parent survey elicited an overall impression of the parent/student scholastic interaction at home. The student survey targeted the students' perceptions about the school climate and their general attitude towards learning. The reflective journals were assigned on a weekly basis for three weeks. These journals were designed to clarify the manner in which students were

preparing for and engaging in learning. The first quiz (Appendix F) administered by the content teacher was also included in the baseline data, as well as reflective pieces known as P/M/I responses (Appendix G).

Of the 16 students in the class, 14 were involved in this research (two of the students did not have parent approval letters). The parent survey was developed by the researcher to aid in the recording process. A summary of the parent survey response is presented in table one.

Table 1

Categories and Responses to Parent Survey

Category	No	Sometimes	Usually
My child talks with me about his/her school day.	2/14	6/14	6/14
My child regularly brings homework home.	2/14	4/14	8/14
My child does homework independently.	1/14	3/14	10/14
My child makes time to write at home.	5/14	5/14	4/14
My child makes time to read at home.	5/14	8/14	1/14
My child shows responsibility by preparing his/her materials for class.	0/14	1/14	13/14

It appears that a positive correlation could be supported between the amount of time that parents talk with their students (86% talk with their student at least sometimes) and the visibility of homework at home. Of the 14 parents who responded, 36% percent indicated that their student does not read or write at home. Conversely, significantly more than half, up to 93%, indicate that their student focuses on his or her homework assignments and demonstrates personal responsibility.

Table two is a summary of the student survey. This survey was designed to elicit student responses to both the learning climate and their personal approach to academic preparation.

Table 2

Categories and Responses to Student Survey

Category	Strongly Disagree	Disagree	Agree	Strongly Agree
School is a safe place to be.	0/14	0/14	5/14	9/14
School is a fun place to be.	1/14	1/14	9/14	3/14
School will help me have more opportunities in my future.	0/14	0/14	5/14	9/14
I like my teachers.	0/14	0/14	8/14	6/14
I think my teachers like me.	0/14	1/14	11/14	2/14
I study at least 30 minutes a day.	0/14	1/14	12/14	1/14
I study 30-60 minutes a day.	1/14	8/14	5/14	0/14
I study more when I have a test.	1/13	4/13	6/13	2/13*
I review my notes after each class.	0/14	7/14	5/14	2/14
My notes help me to understand the class lesson/activity better.	0/14	0/14	4/14	10/14

*One student did not answer this statement.

The first five statements address the socioemotional climate. The students' responses strongly indicate that school is a pleasant and welcoming place to be, with the overwhelming majority of response in the Agree and Strongly Agree columns. The Disagree or Strongly Disagree columns indicate a combined total of 25 responses. Three of these responses reflect that some students seem to be unhappy at school.

In response to their academic preparation, 93% of the students indicated that they study at least 30 minutes a day. This percentage decreased dramatically to 36% as the time increment increased to 30-60 minutes a day. The majority of student responses, 57%, indicated more preparation when studying for a test, and 100% of the students indicated that their notes led to greater understanding of the class lesson or activity. However, only 50% indicated that they reviewed those notes after class.

The survey information also supports the statement that studying is not a priority for some students. In responding to studying 30 minutes a day, 7% indicated that they disagreed. This amount jumped considerably when the studying rose 30-60 minutes a day, to which a combined total of 64% indicated that they disagreed or strongly disagreed.

The researcher also developed a reflective journal to be used in gathering information as to how the students were thinking and learning. The students did not indicate that they demonstrated use of any specific higher order thinking strategies or study skills. Instead, the students' journals reflect a pattern of parroting their original responses, with very little variation. For example, in response to the question, "How can you improve your results on this activity?," nearly every student answered "study" and "pay attention" as methods of improvement throughout the three weeks of reflective journaling. Of the 45 reflective journals over the three week time period, 41 replies were interpreted: 31 responses, 69%, indicated "study" or "pay attention" as a method of improvement; eight responses, 18%, indicated "prepare more" as a method of improvement. Only two students, 4%, indicated specific methods of improvement:

(1) respond orally to the information and (2) ask about subject. Four student responses were not included because they did not address the question.

Baseline data collection included the quiz scores from the first content quiz (Appendix F). The total possible points were 18 points. The mean score was 5.5 points and the median score was 7.5 points. Mode was unable to be established as students scored two of the following point values: 3, 7, 9, and 10 points. The highest score was 14 points and the lowest score was zero points.

Given the problem, as stated in Chapter 1, it seems that although the students desire to do well, they are currently not achieving academic success. Their responses to the surveys indicate that they do not have specific learning and thinking skills that will support their academic pursuits.

Probable Causes

A review of the professional literature suggests several underlying causes for lack of Hispanic student academic success. Any discussion involving academics and Hispanic students invariably revolves around the themes of bilingual education and the concern of school readiness for language minority students. Such discussions tend to belabor the point that this group of students yields disappointing academic results. Tragically, this is quite often the case. Research confirms that the Hispanic student population does have difficulty achieving educational equity in public schools. Some reports indicate that the dropout rate for Hispanics is twice that of non-Hispanic students and double those of other Americans at every income level (Lockwood, 1996).

In fact, the Hispanic dropout rate is so high that it has captured a nationwide audience. The Improving America's Schools Act (1994) indicates in its findings that

language minority students must overcome numerous obstacles when getting an education that will equip them to fully participate in today's society. The report enumerates several areas of concern including segregated education programs, improper placement in special education and other specialized programs due the use of inappropriate assessment procedures, the parents' level of English proficiency limiting interaction with their children's educational experiences, and a paucity of teachers and staff who have adequate professional qualifications to serve language minority students. Any one of these areas can compromise a student's academic achievement. Together, these issues establish a formidable barrier for the language minority student.

Although the number of Hispanic students who drop out of school has been a problem for many decades, national concern has increased due to the fact that this population is currently the fastest growing minority in the country. As the Hispanic population increases dramatically, language minority students will represent a larger proportion of the student body. If the current academic trend for Hispanic students continues, a larger percentage of the United States work force will not have a high school education.

In a report prepared for the Hispanic Dropout Project, Professor Walter Secada (1996) of the University of Wisconsin-Madison, points out the inherent danger of such climbing numbers. His research indicates that both the American economy and the non-Hispanic sector will feel the negative impact of the high Hispanic dropout rate. Such a high dropout rate guarantees a growing number of undereducated and underskilled Hispanics in the workforce (Secada, as cited in WCER Highlights). The agrarian and factory driven economy of the past, wherein language minority immigrant workers could

more easily interface, has been replaced by a global, high-tech economy. Low-skill factory jobs are becoming obsolete, and students with low competency and skill levels will not be empowered to compete. Lockwood and Secada (1999) amplify this concern by pointing out that, due to the smaller pool of highly skilled employees available, the number of entrepreneurs will suffer and poorer economic markets will result. The economic picture of the United States continually transforms itself as it evolves to meet global economic demands. This continuous evolution requires that the American population be able to perform at an ever-increasing level of competency. Students who are already in danger of dropping out enter the workforce unable to participate successfully. This perpetuates a cycle that serves to keep them at a lower socioeconomic status.

This negative trend is not entirely unexpected, as language minority students often come from economically compromised families. Research examining contextual factors surrounding at risk students confirm that a high number of these students are living at the poverty level (Mehan, 1997). Lockwood (1996) concurs with these findings, adding that two out of five Hispanic children live in poverty, double the poverty rate for all children. She also reports that low-income Hispanic students have the highest dropout rate among all Hispanic students. Krashen (1999) illustrates that a consistent positive relationship exists between socioeconomic status (SES) and English language development. Children who come from a higher SES tend to have more and better education in their primary language. These children also have the luxury of living with caregivers who are able to support them in their native language by helping with homework and school projects. Additionally, the absence of printed materials in the home has a dramatic effect on

literacy development. Children from a higher SES tend to have more access to print. Children who grow up in a print rich environment develop literacy at a faster rate. For those children living in poverty, access to printed materials is low on the line item list of daily needs and demands.

Students who are classified as at risk usher in another possible contributor to language minority student failure: school readiness. Current prevailing arguments surrounding the dropout problem maintain the theory that the at-risk child suffers from deficiencies that are brought on by social factors. By arguing that the child is a product of social, economic and cultural conditions, the student (or the family) is to blame for any lack of school readiness and subsequent inability to advance socially and economically (Mehan, 1997). This position neatly eliminates any accountability on the part of educational institutions. The problem, however, requires more a complex explanation. The National Association for the Education of Young Children (NAEYC) addresses the issue of school readiness in its 1995 position statement. In their statement, NAEYC explains that the term "school readiness" embraces not only the assumption that students enter school with grade level competency, but also recognizes that an individual's early learning and development is a complex series of events which have both cultural and contextual variation. These variations will affect a child's readiness. NAEYC believes that early life interventions addressing inequalities such as health care and economic concerns are critical to establishing a fair playing field for language minority children. Further, that by recognizing and supporting cultural and individual diversity among the students, education programs will produce more efficacious results. Finally, the NAEYC points out that it is critical to establish appropriate student expectations upon school

entry. These expectations must be reflective of the individual student; otherwise, both the student and the teacher will strive in vain to accomplish the impossible. Unless educators seriously consider these three factors, language minority students will be faced with obstacles that put them at a distinct disadvantage.

While the reasons listed above are compelling grounds for academic difficulties, further investigation reveals that other reasons Hispanic students experience academic inequity are much more insidious. Language minority students are unwitting victims of a veiled social agenda. Given enough exposure to an educational environment that promotes cultural bias, language minority students find themselves in a no-win situation. Because he or she either does not know the social expectations or does not want to sacrifice his or her own sociocultural agenda, the student cannot make successful decisions and ends up withdrawing from the scholastic situation. A Hispanic student's decision to drop out of school is not a random act. Dropping out is perceived as wrong in the Hispanic culture. Nonetheless, some researchers affirm that dropping out is a logical outcome of surrounding societal factors that affect Hispanics and their roles in society (Secada, 1998). Attaining a high school diploma does not guarantee the language minority graduate the entrance into society as she or he had planned or been assured by teachers and counselors. The continuing societal bias against Hispanics prohibits valid acceptance into society. Because of this, many Hispanics do not perceive America as the land of opportunity. Pursuing the ever-elusive goal of the American dream is not an option for the language minority student. Thus, the resigned student shrugs and drops out of the race (Lockwood & Secada, 1999).

One group in particular, Latina students, experiences tremendous dropout rates. Recent data indicates that Latina girls represent the single-most likely minority group to drop out of high school. In fact, they have the highest dropout rate of all female students (Galindo, 2001). There are many factors that contribute to this devastating trend: teachers' attitudes and methods of instruction, lack of support at home, lack of proficiency in English, lack of role models, peer pressure, lack of self-esteem and teenage pregnancy (Moody, 1999, and Romo, 1998). Ana Maria Salazar, the highest ranking Latina in the U.S. Department of Defense, laments that fact that on one occasion during a classroom activity, ten-year-old Hispanic children could not name one human, Hispanic or otherwise, as an ideal role model. Instead, their suggestions revolved around comic book superhero figures. Another group of Hispanic children named many non-Latino role models. Not even Hispanic parents were considered as worthy of being a role model. She urges all Hispanic professionals, male and female, to become involved with Hispanic youth because these children have nothing towards which to aspire (Salazar, 2001).

Other contributing factors for the high Latina dropout rate include gender roles, family demands and economic status (Vives, 2001). Both Vives' and Romo's (1998) work highlights the attitude that Hispanic families have toward gender roles. Romo, in particular, found that Latina mothers have a profound influence over their daughters' choices as to education and careers. Although Latina mothers may value education, the distant goal of a diploma is far outweighed by their immediate concern for today's needs. Thus, they do not encourage their daughters to pursue an education, but instead urge them to help support the family. Because many Hispanic families live at or below the poverty

level, the reality of financial demands interferes with academic plans. Many Latinas feel pressure to contribute to the family (Trevino, 2001). This pressure is exacerbated by the traditional gender role orientation in Latino families. Traditionally, it is the woman who raises the children and runs the household. A Hispanic female, living under this mindset, would have no need for education.

The language minority student also faces difficulties due to the school atmosphere itself. For decades, curriculum and other programs for instruction and intervention have overlooked the needs of the language minority population. Some of these needs are evident in the distribution of funds and resources. Others include educationally demanding classes with high academic standards. Still others are appropriate staffing, both in terms of preparation and availability. The number of language minority students is increasing while the number of educated and trained professionals is diminishing. National statistics indicate a critical shortage of trained staff that is prepared to teach language minority students (Crawford, 1998/99). Teachers need a highly developed understanding of the learning environment necessary for language minority students. They need both a sophisticated knowledge of subject matter as well as the latest methodological teaching skills. Furthermore, teachers need to be able to critically analyze pedagogy and curriculum so as to not inadvertently encourage tracking or segregation (Trueba, 1997). Without adequate training, language minority students suffer because their teachers are not able to teach well.

A disproportionate allocation of resources and curriculum also adds to the bleak picture for language minority students. Tracking language minority students into low-ability groups is common, often as a result of inappropriate language evaluation.

Curriculum that is not relevant to society's demands needs to be up-dated in order to prepare students for true educational achievement. Romo (1998) reports that Hispanic students are frequently enrolled into general education courses, not courses designed for the college-bound student. This practice sustains the cycle of low expectations on the part of educators culminating in low student achievement. Curriculum for language minority students needs to be rigorous and have the same high expectations as for all other students. Furthermore, if denied the chance to enroll in courses that are educationally stimulating, minority students cannot even begin to break the negative cycle. Without high academic expectations, academic achievement suffers. Achievement gaps are widening between White, Black and Hispanic students. One theory suggests that this expansion is a direct result of the lack of challenging scholastic options available to minority students (Madden, 2002). Placing language minority students in vocational courses and/or preventing them from partaking in college bound courses do not represent academic parity.

School administrators must face the reality of increased minority students in their schools. Curriculum as well as staff training and support must meet the needs of those students. The social hierarchy of schooling must be reevaluated to reflect the classroom processes that are most helpful for the language minority student. Thomas and Collier (1997) studied school effectiveness for language minority students over a 14-year period. Their findings illustrate that, although some schools do try to supply academic interventions, their vision was often too limited. Instructional programs are instituted with the best of intentions but fall short of expected results because they are insufficient

in duration or their design is based on invalid diagnostic information. Additionally, the programs are hampered by time limits, funding limits, and high student mobility rates.

Bilingual education itself is often perceived as a contributing factor to language minority students' academic failure. Describing bilingual education defies a fixed definition, since the perception of bilingual education is as individual as the school system in which it is practiced. It is important to understand that the basic premise of bilingual education is to provide content teaching using comprehensible academic input for the students, while supporting the students' emerging English language ability at the same time. Without comprehensible input, a student cannot gain knowledge. Comprehensible input, then, would be information provided in a language that the student could understand: his or her native language. By providing the students with content in a manner they can understand, they will be able to learn and apply that knowledge successfully. Bilingual education is a strategy through which students can be taught academic subjects in their native language while simultaneously acquiring English instruction.

In theory, bilingual education provides the student with academic opportunity without penalizing him or her for lack of English language proficiency. Once the student is fluent in English, he or she is transitioned into an English only content class (Rothstein, 1998). This transitioning period can be dangerous. Often, regular education teachers and administrators assume that because a student has demonstrated success in a class taught by someone who is a certified bilingual teacher, that student is ready to transition smoothly into an English only class. This assumption raises two areas of concern: first, the successive courses will increase in difficulty, and second, those courses will be taught

by teachers who are not qualified to manage students who must communicate in their second language. In both cases, the student is practically set up for failure. Educators must allow for the fact that now the language minority student will be in a class that is not only more difficult, but will be taught in English. Because of this, mainstream or regular education teachers will be unable to meet the needs of language minority students unless they have appropriate training and can supply comprehensible input in English.

Comprehensible input by itself is not sufficient. A student must acquire literacy skills as well. Krashen (1996) explains that by developing native or primary language literacy skills, the student will be able to transfer those literacy skills to the second language. It is easier to learn to read in a language that is understood. Once a student can read in his or her primary language, he or she can more easily transfer those literacy skills to another language. Research confirms the premise that by providing meaningful text, reading fluency will result. Any reading task will be more meaningful when its content draws on the cultural experiences of the reader (Ramirez, 2000). When comprehensible input is combined with literacy skills, the student is able to embark on the third component, that of acquiring English as a second language. Until this has happened, students are not, technically speaking, *bilingual*. They have not yet achieved proficiency in a second language. If any one of these components is missing, the "bilingual education" a student is receiving will not be effective, and the student will be unable to perform successfully, furthering the belief that bilingual education does not serve the needs of language minority students.

In light of the research presented here, it is clear that the problem of Hispanic bilingual students achieving academic success is complex and in-depth. The causes

represent a vast range of variables. If educators are determined to provide educational equity for all students, they must be ready to confront personal and professional ideologies that have been in place for decades. Administrators and educators must be willing to reach out and disturb the status quo if they hope to experience effective change. In order to have schools that work for everyone, the entire school community must demonstrate a high value for children, encourage high academic expectations, create support systems and include the community (Montecel, 2001). Missing any one of these components will render the school environment ineffective for a large number of students.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

Educators are working in classrooms that embrace a wider and more diverse range of learning styles than ever before. This is partly due to increased class sizes, higher enrollment of language minority students, and inclusion of students with disabilities into mainstream classrooms (Meyer and Rose, 2000). Teaching the processes of learning and thinking are necessary components for student success, and these processes are inextricably intertwined. When creating a learning environment that fosters learning and thinking, an effort must be made to understand how the brain functions organically and how the brain responds to the environmental stimuli found in the classroom. Educators are expanding their search for knowledge to include methodology and materials that helps to generate successful learning episodes for all students. Subsequently, educators must incorporate that knowledge into their lesson designs so students experience learning environments that ensure academic achievement.

Researchers are providing new insights as to how the human brain functions. In response to the "nature vs. nurture" issue, recent research has shown that nature has a far more potent role than previously believed. In order to truly understand the function of the human brain, the definition of nature must expand to include the assemblage of nerve

cells and their related molecules, as well as everything that makes up one's interior state: that which makes up one's entire self-concept (Sylwester, 1995). Heredity, physical and mental development, and experience all serve to shape the human brain. Each of these events provides data for the brain to absorb in its effort to find meaning. Every individual is born with the drive to seek meaning in one's world. The brain's innate search for meaning cannot be stopped, although it can be inhibited. It can be channeled and focused. The search for meaning occurs through a process called "patterning" which means that the brain automatically attempts to categorize and organize stimuli into an identifiable structure. Yet, the brain will not absorb information that is isolated and/or unrelated. If a pattern cannot be identified, the brain lets go of the unintelligible information and continues sifting and sorting until it encounters a recognizable pattern. Patterns cannot be imposed on the brain—the brain has to be allowed to naturally extract a pattern. Meaning is established once the brain has found a pattern. Learning occurs when the brain has established recognizable structures from among the incoming data, and it is able to make a connection between itself and the outside world (Caine and Caine, 1994, and Genesee, 2000). Thus, learning is not a fixed, linear entity, but rather an active, constant search for order from among chaos.

The successful acquisition of knowledge can be defined as an individual establishing "meaning", an individual having "learned" something previously unknown, or an individual creating new knowledge or meaning. By establishing meaning, the brain has determined a recognizable pattern and has categorized the new information into its existing memory banks. When "learning" occurs, an actual electrochemical event has taken place in the brain. The human brain is mostly made up of nerve cells called

neurons. Neurons receive messages from the senses, muscles or other neuron cells in the form of electrical impulses. These electrical impulses travel through the neuron toward the dendrite branches. As the electrical impulses near the dendrites, they trigger the release of chemical neuro-transmitters into the synapses (small gaps between neurons). Neurons communicate with each other through these chemical neurotransmitters. Thus messages are sent back and forth, at speeds of one hundred miles per hour, while the brain is engaged in seeking patterns. This almost instantaneous relaying of connections between neurons is called the neural network. Furthermore, the research affirms that when learning occurs, there is greater neurochemical communication between neurons, requiring less input in order to activate established connections (Fogarty, 2002). As the learner acquires more experience or practice, less and less input is required in order to make a strong connection. These connections between neurons are reciprocal in nature, connecting from simple to complex circuits and from complex to simple circuits. Connections are also made between both adjacent neurons and distant neurons (Genesee, 2000). The more connections an individual can make, the more patterns he or she can recognize.

Because the brain does seek patterns, new knowledge should be built on old learning. Doing so will assist in establishing a stronger understanding (...teacher today, 2002). As the brain seeks patterns of understanding, it relies on previous experiential episodes to help it attach meaning to new information. Comprehension occurs when one can relate data to one's prior knowledge and background. Both prior knowledge and background are significant factors in learner's ability to construct meaning (Cooper, 1993). Learners use their existing schemata to help interpret meaning from novel

concepts. Cultural background and prior experience are as individual as each student, and each affects the manner in which a person learns. This makes it impossible to lump students together and teach them all in the same manner. Doing so results in high frustration levels for both the teacher and the students. It may also lead many educators to erroneously assume that the student or students in question are in need of repair. Such assumptions are flawed because in reality the students are not broken. "Broken" implies that a crucial piece of the machinery (in this case, the brain) is not working, when in fact the brain is functioning. The students are receiving data and their brains are naturally seeking patterns. However, either there may not be enough prior knowledge or the student may be ineffective in demonstrating his or her comprehension.

A more accurate deduction may be that the brain is not functioning in a recognizable manner. Research reveals that each brain is a uniquely organized organism. The brain operates by way of three brain systems: recognition systems, strategic systems, and affective systems. Recognition systems allow learners to identify patterns such as objects or voices, words or author style. It is with these systems that students learn to recognize color, location, or word recognition. Often, recognizing patterns is easier when information is relayed in a variety of manners, such as diagrams, charts, videos, or illustrations. Differences in the recognition systems are often determined to be a learning or sensory disability. Either type of disability may inhibit learners in their ability to successfully learn information from more traditional methods of instruction, such as lecture or texts. Strategic systems generate patterns: speaking and reading patterns, shooting a basketball, or planning a trip. Students can differ significantly in their ability to learn routine activities, and they can exhibit a large variation in fine motor skills,

ability of expression, physical coordination, or capability to think strategically. Affective systems are responsible for feelings such as food cravings, a fear of heights, or experiencing elation or sadness. Through these systems, an individual learns patterns of emotional response from experiences over time and repeats those experiences that are satisfying (Meyer and Rose, 2000).

Although each brain has the same set of systems, they are integrated differently. Each brain is customized and no two brains learn in the same way. Even though brain activity occurs in roughly the same areas of the brain, each individual has a distinctive signature of brain activity for any given task (Caine and Caine, 1994). Even a student who exhibits special needs has a unique brain that is continually functioning to establish meaning. Research indicates that the functions of specific areas of the brain are not fixed at birth but are in formed and reformed by experience and learning (Genesee, 2000). The significance of this statement is that a certain area of the brain is activated based on the stimuli received. Thus, if a student has difficulty in decoding written information, a teacher can offer alternative ways for the student to learn by providing him or her with pictures or sounds that convey the same information. This provides encouragement for classroom teachers, because even though a student may be struggling, the brain's natural function to categorize input permits the continual process of seeking patterns and establishing meaning.

In order to assist the brain in learning by seeking meaning, it is important to understand that the brain is a social organism. D'Arcangelo's research explains that built-in learning episodes that are social and experiential in nature are critical. Instruction that emphasizes interaction with others helps to create meaningful relationships within

the classroom. The social interaction meets both the intellectual and the emotional needs of the learner. Emotions are a critical element because the brain's patterning is emotional. Created meaning is actually experienced or felt as a sensation, in addition to being an intellectual understanding (D'Arcangelo, 1998). These social and emotional relationships strengthen the patterns the brain continually seeks.

The role that emotions play in the brain's search for recognizable patterns is essential. Emotions are vital to patterning. Emotions based on the sum total of that individual's self-concept help or hinder the reception of information. Each learner responds, not reacts, to experiences. Learner response is the emotional "head's up" to any learning episode (Caine and Caine, 1994). This factor takes on greater meaning when coupled with the fact that complex learning is enhanced by challenge and inhibited by threat. Clearly classroom environment has a great influence on student learning. Students continually respond to emotional challenges and threats throughout their school day. As learners are consciously trying to learn new information, they are unconsciously seeking to sort out the new information into a recognizable, usable pattern. Because learning is developmental, students may exhibit different rates of learning, depending on their current emotional state (Sylwester, 1995). Students who come into a learning situation with a high affective barrier will experience greater difficulty in establishing patterns. Other research finds that understanding and promoting student self concept has a positive influence on student achievement. A student who feels alienated in his or her learning environment experiences an unwillingness to participate in the classroom and sacrifices the freedom to learn (Pena, 1997). A greater possibility of experiencing

academic success exists if students are part of a learning environment that is low in threat and high in personal acceptance and a sense of belonging.

Environment: climate and stimuli

Historically, the classroom environment has been described as an area wherein the teacher disseminates knowledge to the students. Under these circumstances, the only recipe for academic success lies in the perfect mix of an expert teacher conveying information to equally receptive students in patterns that are recognizable to all. Current brain research flies directly in the face of such a scenario. Brain-based education goes beyond the pitcher-pouring-into-vessels scenario. Classroom learning environments need to satisfy both a person's natural intellectual curiosity and the need for discovery. A classroom that addresses the actual processes of thinking and learning is described as a brain-compatible classroom. It endeavors to integrate not only the process of thinking into the daily academic experience, but also the behaviors that accompany thinking. This is sometimes known as a "four-corner framework," which advocates teaching for thinking, of thinking, about thinking and with thinking, all of which revolve around the axis of maintaining standards for high achievement. This type of learning environment sustains a climate for thinking, while explicitly teaching thinking skills and concepts, and incorporates strategies of metacognition and interaction with thinking (Fogarty, 2000). Educators need to create learning environments that engage students in complex experiences. Sensory input is one of the principles of constructing meaning. Learners must have opportunities to engage in sensory input in order to construct meaning. Also, because brain does not store information that defies a recognizable pattern, the learning opportunities need to be contextual and not abstract in nature (Hein, 1991). Classrooms

need to have a low threat threshold and abound in intellectual challenge. These classroom realities permit students to become actively involved in constructing their own meaning and understandings (Bruer, 1999). Research also affirms the concept that human beings learn to learn as they are actively engaged in the process of acquiring knowledge. While the learner is busily engaged in a learning episode, he or she is constructing meaning as well as a system of meaning. For example, a student who needs to construct a time line will learn about the events placed on the time line as well as understand how chronological order functions (Hein, 1991). This inherent ability to develop more than one thinking process at a time is known as parallel processing, that is, the simultaneous use of circuits in different regions of the brain (Genesee, 2000). The process of constructing one's own conceptualizations and solutions naturally provides opportunity for parallel processing.

By refocusing the academic aim from dispensing information to that of cognition, the learner is presented with opportunities that encourage and support the natural, innate process of establishing meaning. One theory that ascribes to this is the constructivist theory of education.

The constructivist theory of education is comprehensive, and includes cognitive psychology, philosophy, and anthropology. Constructivism is the belief that learning is achieved through hands-on manipulation of materials and instructional methods that encourage exploration and active learning. This theory emphasizes the learner rather than the instructor. The constructivist approach espouses the belief that learning is the direct result of mentally constructing meaning. This is accomplished when students integrate new information with that which they already know (North Central Regional

Educational Laboratory). Students are urged to think and explain their perceptions, and clarify connections that exist between the themes or concepts being taught. The teacher becomes less didactic in a constructivist classroom. In effect, the teacher surrenders his or her perceived control of the classroom, handing it over to the students. The students then demonstrate their knowledge and understanding with the auxiliary aid of their teacher. This theory of knowledge and learning helps to explain the complex intellectual processes going on in any given classroom at any given time. Constructivist practices provide an avenue for students to organize their experiences in such as way as to internalize new information. This makes further understanding possible because once the brain has internalized the information, it establishes a working, identifiable pattern: meaning has been verified (Holloway, 1999). Students establish an event as authentic or meaningful once is has become internalized. The event is stored in the brain and can be retrieved and manipulated as needed.

Constructivism begets authentic experiences. Authentic experiences result in authentic learning and assessment, and promote the negotiation and construction of knowledge and meaning. This provides a common experiential base that serves students in future learning episodes. Each time an authentic experience occurs, students strengthen the inter- and intrapersonal relationships they are forging with their learning environment (Lambert, 1995). Guided classroom events that are designed to fully engage students can accomplish several goals: they provide active learning events, spark learners' natural curiosity, and incite the innate desire to direct one's own learning. The need to create meaning out of the surrounding world invokes a total, intense response from the learner. Carefully designed instruction motivates students to participate in an

entire mind/body learning experience, thereby activating students' natural learning capacities. Guided instruction combines the intellectual aspect of a particular subject with compelling emotional content. By using the emotional content to capture the students' attention, they are quickly drawn into an experiential learning event. Because students try to understand that which they care about, this combination naturally motivates students to ask questions that have a personal meaning for them (Caine, Caine and McClintic, 2002). Once students place a personal value on the new learning, they can begin to construct meaning by using critical questioning and thinking skills.

Similarly, authentic assessment becomes a meaningful event when it relates to student concerns and problems (Brooks and Brooks, 1993). Assessment should parallel instruction, so if authentic experiences are to be measured, authentic evaluation practices should be administered. This approach yields data that is relevant and informative as to the nature of what information or processes the students have internalized. Authentic assessment invites students to reveal their newly constructed meaning or learning which has been integrated into their existing realities.

A person's entire self-concept influences his or her perceptions of reality. Constructivism provides a way for students to challenge their current worldviews that result in learning. Until that has happened, a student does not truly know what he or she believes nor why. Asking students to challenge their current worldviews encourages them to construct meaning because the search for understanding inspires students to learn (Brooks and Brooks, 1999). Constructivism offers an environment that celebrates and challenges learners' philosophies of reality. Research supports the belief that, in order to experience reality, people develop structures of knowledge. This knowledge is

individually constructed and is centered on the intellectual development of the person. The intellectual development is in turn cultivated as the individual participates in physical and social activities (Gibson and McKay, 2001). Every thought and action is interrelated; learning episodes need to incorporate both social and physical aspects in order to address the entire intellectual development.

Brain-compatible classrooms require participation by both parties: the teachers and the students are involved in a relationship that requires a paradigm shift regarding learning and thinking. Teacher readiness is vital aspect in any learning environment that celebrates authentic learning and thinking. Teachers need to be trained in instructional design that results in authentic learning. They need to design instruction so that the students are able to get involved and construct their own meaning. The teacher's role also undergoes a transformation, expanding to provide support, serve as a coach or a model, and stimulate the students' thinking (Crotty, 2000). Current concepts of teaching and learning must be reconsidered if these teacher roles and responsibilities are taken into account.

Students need to realign their concepts of instruction and learning because the responsibility of learning is placed on the student. A student's learning is a result of his or her own interaction with objects or events (Learning styles and CAE). The interactive element aids the student in understanding the features of the activity or object and leads the student in constructing his or her own explanations and solutions.

Constructivism requires that both teachers and students reevaluate instruction, learning, assessment, and academic achievement. As mentioned earlier, the traditional approach to classroom instruction has varied little in our society. The teacher is the

possessor of knowledge, the expert. The students are the inexperienced, empty vessels, awaiting enlightenment. Constructivism fundamentally alters that scenario. Classroom learning environments need to satisfy both a person's natural intellectual curiosity and the need for discovery.

Implications for second language learners

Second language learners have the same intellectual and emotional needs as any other classification of student. Hispanic students endeavor to make sense out of their world by organizing incoming data in the most rational way available to them. In order to help these students achieve academic parity, bilingual and LEP (Limited English Proficient) classrooms can be designed and managed in order to capitalize on what the students bring to the learning environment. Constructivism clearly provides a teaching and learning platform that satisfies the need to enhance their learning and thinking skills, and should be incorporated into any bilingual or LEP instructional design. However, there are other aspects to be considered when developing classroom environments and routines for bilingual students.

Both administrators and teachers need to address several areas of concern as they proceed in redesigning existing learning environments. Care must be taken to accurately assess the actual range of student cognition and students' learning styles, select effective pedagogy and curricula, and determine where the school's overall learning environment needs reform (Hein, 1997). Furthermore, greater efforts need to be undertaken to establish a relationship of understanding between the school's culture and the students' cultures.

Often, bilingual students arrive at the high school classroom with a history of limited and/or interrupted formal education. These deficits make it difficult for bilingual students to practice an academic routine that has any relevance for either the student or the teacher. One solution is to establish classroom procedures. Classroom procedures establish parameters for students. Setting up classroom procedures is helpful for students when they are adjusting to a new school while also focusing on learning to read, write, and learn content material (Freeman and Freeman, 2001). A daily routine provides predictability as well as opportunities for both language development and academic content acquisition, all within an authentic context of learning.

Because culture is such an integral part of the bilingual student's make-up, culturally and linguistically relevant learning environments are also encouraged. Use of native language, materials and activities that have particular relevance to the students can be incorporated into learning episodes (Prince and Lawrence, 1993). The goal is to present the learners with a setting that invites authentic interface between their current world and the school's environment.

Care must be taken to directly teach and develop learning skills. Research confirms the premise that content which is relevant to the life and experiences of the learner greatly increases comprehension (Ramirez, 2000). Bilingual instruction can be designed to include such strategies as cooperative learning, using graphic and semantic organizers, answering and generating questions, and summarizing. Any relevance that the teacher can interweave into the learning activities and strategies will heighten the authenticity of those lessons. Instruction and content that fail to consider these elements will not provide authentic learning episodes for bilingual students.

Traditional classroom teaching and learning practices are becoming increasingly obsolete as the sheer quantity of information grows by quantum leaps. Greater problem solving abilities are needed as world issues take on a more personal aspect with the development of a global community. Educators must heed recent research concerning constructivism, authentic practices, and the growing population of second language learners in the classroom. In doing so, they will be able to meet the students' academic, social, and emotional needs. Teachers who prepare themselves for tomorrow's classrooms are equipping the students of today with the ways and means to succeed in future accomplishments.

In light of the current research, the following action research plan has been designed in order to address the specific learning and thinking skills the Hispanic students require in order to experience academic success.

Project Objectives and Processes

As a result of increased instructional emphasis on learning and thinking strategies, during the period of September 2002 to December 2002, the sophomore students from the targeted class will increase their ability to acquire knowledge and employ thinking strategies in social sciences, as measured by teacher- and student-constructed learning episodes, and reviews of student reflections.

In order to accomplish the project objective, the following processes are necessary:

1. Materials that foster cognition in social sciences will be developed.
2. A series of cooperative grouping activities that address cognition will be developed for social science.

3. Materials that foster thinking and learning strategies in social sciences will be developed.

4. Lesson units reflecting these decisions will be constructed.

Project Action Plan

Week 1 will introduce the research being conducted during the first semester. This week will be devoted to explaining any tasks pertinent to the research and administering three data collection tools: the Parent Survey, the Student Survey, and the writing prompt.

Beginning with Week 2, the routine for the following 15 weeks of research will be established. Project interventions and data collection tools will be integrated with the social science curriculum units. The researcher is team planning with another social science teacher who teaches the Limited English Proficient class. As this is a new assignment for both teachers, concrete lesson plans have not yet been established. However, all lesson plans will accommodate research interventions and data collection tools.

Two data collection tools will be administered on an on-going basis. The first, observation checklists, are used while students are working in cooperative groups. When students work in cooperative groups, each member of the group (four-five members, four being ideal) is responsible for a specific role or duty. In this manner, the whole group is able to complete a given project or activity in a setting that allows for every student to be engaged. Students are responsible for the learning and the teacher role becomes one of monitoring and coaching. Cooperative grouping allows the teacher the opportunity to

observe classroom/individual student behaviors. Observation results will be compiled at the end of the research period.

The second on-going data collection tool is the P/M/I reflection. P/M/Is allow students to reflect on a topic or an activity in three specific manners. P represents the plus, or the positive, of the activity. Here the student describes what he or she feels was enjoyable about the activity. M represents the minus, or the negative, of the activity. This is an opportunity for the student to indicate what he or she did not like about the work. Finally, the I represents interest. In this final section, the student describes what he or she feels is interesting and transferable to other areas of his or her life. These may be social or academic transfers. P/M/Is are not graded. Teacher comments on student P/M/Is will be recorded at the end of each week.

A third data collection tool, the SABE native language assessment, is a nationally normed assessment. The SABE is administered two times a year, once in October, and again in March. The researcher will be using the SABE during the research period, collecting baseline data at that time.

Week 1:

1. Explain research component of our class, answer any student questions. Display Parent Survey and parent letter of consent. Explain purpose and importance of these documents and deadline for returning them (by the end of the week).
2. Display Student Survey and explain purpose and importance.

* Allow the students about 10 minutes to complete and return the survey.

3. Establish class procedures and expectations, including how the

research will be integrated into our class time. Review major concepts from last year, in particular that of cooperative groups.

4. Students will write on a selected topic for 30 minutes to assess their current knowledge base. This information will be used as baseline data.

* Administer writing prompt.

5. Collect baseline data from Parent and Student surveys and from writing prompt.

Week 2: 1. Learning Intervention: listening/reading activity; students will be working on activities designed to foster learning of unit topic.

* 2. P/M/I of listening/reading activity.

Week 3: 1. Learning Intervention: cooperative group activity; students will be designing a time line. Focus: logical/mathematical processes. An introduction and practice of desired cooperative group skills will begin the activity. No observation checklist at this time.

* 2. P/M/I of cooperative group activity.

Week 4: 1. Thinking Intervention: Reflective activity at end of week. Cooperative group work developing the question *"How is this unit similar to the first unit we did?"* Focus: critical review and making connections.

* 2. Observation checklist of cooperative groups.

* 3. P/M/I of reflective activity.

Week 5: 1. Learning Intervention: reflect on personal experiences of similar

nature. Focus: reflection & deeper comprehension.

* 2. P/M/I of personal reflective activity.

Week 6: 1. Thinking Intervention: cooperative groups for presentations.

* 2. Observation checklist of cooperative groups.

* 3. P/M/I of presentation preparation.

Week 7: 1. Thinking Intervention: Reflective activity. Paired work developing the question *"As you prepare for your presentation, are you becoming aware of any problems that need attention?"* Focus: problem identification and problem solving.

* 2. P/M/I of personal reflective activity.

Week 8: 1. Learning Intervention: Reflective activity. Cooperative group work developing the question *"Categorize the work your group has done so far. Title each category group."* Focus: analyzing and categorizing.

* 2. Observation checklist of cooperative groups.

* 3. P/M/I of summit cooperative group.

Week 9: * 1. Administer SABE assessment.

* 2. P/M/I of SABE.

Week 10: 1. Learning intervention: Synthesis activity. Individual work highlighting evaluation level of understanding. Focus: parts to whole, developing judgment.

* 2. P/M/I of evaluation activity.

Week 11:	1.	Thinking Intervention: debate activity. Cooperative groups develop debate positions.
*	2.	Observation checklist of cooperative groups.
*	3.	P/M/I of debate activity.
Week 12:	1.	Thinking Intervention: student-generated questions. Focus: higher-order thinking.
*	2.	P/M/I of student-generated questions activity.
Week 13:	1.	Learning Intervention: Reflective activity. Cooperative group work developing the question *"Examine this issue from four different points of view. Report your findings to the class."* Focus: clarifying thoughts by examining other points of view.
*	2.	Observation checklist of cooperative groups.
*	3.	P/M/I of reflective activity.
Week 14:	1.	Learning Intervention: using Inspiration to construct concept Webs. Focus: analysis of component parts.
*	2.	P/M/I of Inspiration activity.
Week 15:	1.	Thinking Intervention: cooperative groups for final exam review process. Focus: study skills, test preparation, questioning techniques.
*	2.	Observation checklist of cooperative groups.
*	3.	P/M/I of final exam review activity.
*	4.	Administer Parent & Student surveys (Parent survey to be returned by Week 16).

Week 16: 1. Thinking Intervention: Reflective activity. Paired work developing the question *"As you look back on these 16 weeks of research, can you identify any changes in your academic practices?"* Focus: issue identification.

* 2. P/M/I of personal reflective activity.

* 3. Administer writing prompt.

Methods of Assessment

In order to assess the effects of the interventions, tests covering the content and skills identified for social sciences will be developed. In addition, teacher anecdotal comments of student reflections in both areas of research (learning and thinking skills) will be collected throughout the intervention period. Scoring rubrics will be developed and also be used as part of the assessment process.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

For the purposes of this historical narrative and the conclusions, this section is written in first person. The objective of this project was to improve bilingual high school students' thinking and learning abilities through the use of the Constructivist theory. Due to unforeseen circumstances, the original Action Plan had to be abandoned. Initially, I was to teach the course as a normal bilingual social science class, although I would be paired with another Limited English Proficient (LEP) content teacher. In teaching together, we were to emphasize language acquisition in the content areas. All classroom instruction and action research planning were designed based on this understanding. However, a week before the school year was to begin, I was informed that the LEP instructor would be responsible for teaching the content, while I would teach only study habits and strategies designed to support and enhance the content material. In order to meet academic requirements, each of us would teach one half of the class period (a 90 minute block of time), and then we would switch students and repeat the same lesson. In this manner, each class would receive the same content and strategies instruction, but would not sacrifice any academic time. This arrangement precluded opportunity for most of the originally scheduled research intervention activities due to the tight time frame.

Additionally, both courses (bilingual and LEP) had to maintain the same course content pace as the mainstream sections of the social science classes. Very quickly into the school year, it became obvious that maintaining the same rate would be a challenge. At the sophomore level, the required reading is quite demanding and the bilingual students were not able to match the pace needed to keep up with the LEP students. After four weeks, the LEP teacher and I decided that switching students hampered both classes. It was it disruptive to both time and attention, and really worked against any kind of continuity in either classroom. And although the LEP students were able to manage the content, keep up with the mainstream pace, and employ the study skills and strategies, the bilingual students were unable to do so. First, their English reading level prevented them from reading with sufficient comprehension. Then, their weaker academic preparation made acquiring new information very time-consuming. Finally, they were unable to take in and manage the extent of content that the mainstream curriculum demanded.

During the four-week period that the content teacher and I were sharing our class loads, I was able to administer the parent and student letters and surveys. However, except for some of the P/M/I reflective pieces, all other proposed intervention instruments and timetables were forsaken. One of those instruments, the SABE test, is the Spanish language-testing instrument used to determine native language proficiency. Because the course was not designated as a 'bilingual' course, the district no longer required the SABE to be administered. (The LEP classes complete a different instrument, taken in the spring of the year.) Original research plans called for a writing sample, a weekly learning or thinking intervention, followed by a reflective piece. This plan assumed that the students would be on target with the curriculum schedule. It

became increasingly clear that the students' English reading level would be a major difficulty in meeting the course outcomes, as well as my research goals. The time factor became the critical element. I had to selectively abandon certain portions of curriculum in order to go sufficiently in-depth with other, more complex subject matter.

The topics we covered spanned exploration and colonial history, up to preparing for and taking the U.S. Constitution exam. The students were excited about the idea of being part of an experiment designed to help them achieve, and were very willing to participate. I wanted to establish a mutual working relationship with the students as soon as possible, so they were involved from the beginning in selecting themes, topics, time use and how to divide the work and prepare for assessments and evaluations.

Although all of my students and their parents signed the consent letters, three students were dissatisfied with the proposed arrangement. One student in particular was extremely uncomfortable with the thought that he would be responsible for "teaching," as he called it. He saw that as my responsibility and it would not be right or fair for any students to step into that role. I wanted to honor their concerns, so we worked out a plan: they could choose not to participate in any student-driven activity and instead work on something I planned that coincided with the students' activities. The three students would meet outside of the classroom with the teaching assistant. This pattern supported the traditional teacher/student roles with which the students were more comfortable. He and two other students readily agreed to this. I let them go for the first five weeks of class. What I hoped would happen did occur: they began to see how much more involved their classmates were and how they were enjoying their time. Eventually, the three students asked to be back in the classroom so they could participate also.

As the semester progressed, an informal yet effective classroom procedure developed. I wanted to guide the students to become more self-governed regarding classroom learning. I would present them with a goal and have them decide how to accomplish the goal. The students determined the length of time needed for a topic, divided up the classroom time, and formed groups according to the way in which they decided to tackle a project. They developed wholly authentic learning and thinking situations. For example, when we came to the unit covering the events leading up to the American Revolution, they divided the text and materials into different areas to study. These were later shared in whole-class presentations. The students developed study guides, dictated and took notes, designed their test, and planned study sessions outside of class time in order to be prepared for each succeeding class. There was a high expectation to perform well and they enjoyed themselves while they did so.

As they became more confident in their abilities, they began to volunteer for various tasks. Students would appoint themselves as timekeepers for their groups; others would monitor the noise level in the classroom or be responsible for recording information, and some would type or make copies of materials. All made sure that each student was involved: no one was left out of a group. While there were times when one or two would slacken off on their work, the positive energy of the group encouraged the students to get back on track. It seemed as if no one wanted to be left out of the excitement.

Our classroom *was* an exciting place to be. The students often remarked how much they liked the atmosphere and the expectations of the class. They felt as if they were really doing something of worth. Several times throughout the semester, different

students would come up to me at different times and thank me for providing an opportunity for them to "use their minds." This feeling continues today. The students feel a strong sense of ownership in this course.

Because of the dynamics of this group, my perception of my role as a teacher changed radically, as did my students' perception of my role as their teacher. Little by little, it became clear to me that these students were becoming self-directed and were motivated to work. I knew that I had to trust their judgments and let them learn by experience. I removed my influence more each day, while theirs, in turn, grew and flourished in the classroom. These young adults began to see each other not as students per se, but as colleagues working to achieve something beyond taking a quiz. The bleak aspect of taking a quiz became lost in the authentic experience of *preparing* a quiz. As they began to read and discern information more critically, their innate ability to reason began to respond and unfold. The students came to realize, at least in our classroom, that they did not need me for every little assurance and answer. I became ornamental; they, instrumental.

Presentation and Analysis of Results

Instead of the weekly learning/thinking format I originally envisioned, a lesson guide (Appendix H) was designed to emphasize learning and thinking with a focus on a variety of factors: multiple intelligences, cooperative groups, individual effort, native and target language usage (both oral and written), presentation and teaching episodes, and study/classroom skills. This became a helpful reference tool for me, as I could quickly see which elements were being included in any assignment. The students did not use this guide in their planning; it was strictly for teacher use. I later used that tool to develop a

second survey (Appendix I) so the students could indicate their knowledge and use of learning and thinking strategies. I developed this survey because it became clear that the original student survey I designed did not target the areas I wanted to research. This new survey directly related to the students' awareness of their own learning and thinking skills. This survey was administered a week after the research period ended. Their responses are presented below in table three.

Table 3

Survey of Learning & Thinking Strategies*

	Don't know it and/or don't use it	Know it, but it's not my favorite to use	Know it and will use it occasionally	Love this and use it whenever I can!
Silent individual work	0/13	5/13	4/13	4/13
Small (2-3) group work	0/13	2/13	5/13	6/13
In-class work	0/13	1/13	7/13	5/13
Large (3+) group work	0/13	5/13	3/13	5/13
Class presentation	0/13	4/13	6/13	3/13
Class teaching	0/13	3/13	7/13	3/13
L1 reading skills	0/13	1/13	5/13	7/13
L1 writing skills	0/13	0/13	7/13	6/13
L2 reading skills	0/13	0/13	10/13	3/13
L2 writing skills	0/13	0/13	10/13	3/13
L2 speak/listening skills	0/13	0/13	8/13	5/13
Test/quiz practice	0/13	4/13	7/13	2/13
Class participation skills	1/13	5/13	5/13	2/13
Graph interpretation skills	0/13	4/13	6/13	3/13
Knowledge skills	2/13	4/13	6/13	1/13
Comprehension skills	0/13	3/13	9/13	1/13
Application skills	0/13	5/13	5/13	3/13
Synthesis skills	0/13	3/13	9/13	1/13
Multiple intelligences	1/13	3/13	3/13	6/13

*One student did not take this survey.

Table four analyses the total number of responses to the students' projected use of the learning and thinking strategies.

Table 4

Responses to Learning & Thinking Strategies Survey

Use Category	Total Number of Responses
Don't know it and/or don't use it	4
Know it, but it's not my favorite to use	52
Know it and will use it occasionally	122
Love this and use it whenever I can!	69

The above results strongly suggest that, now that the students have had opportunities to try out many different learning and thinking strategies, they will attempt to use them in later learning episodes. The four "Don't know it and/or don't use it" responses were from two students; I feel that these survey results represent an overwhelming majority vote of confidence in their abilities on behalf of the students.

Another tool I used during this research was a quiz. To help establish a baseline for score comparison, a short quiz was administered in September. The quiz was designed by the content teacher and was about economic conquest. It was worth a total of 18 points. It had several short answer questions and one essay question. The same quiz was administered at the end of the action research period. A comparison of the average scores of these quizzes indicated an overall increase of 3.4 points. In September, the average points scored were 7.13; in February, the average points scored were 10.53, an increase of 48%.

Two things had taken place by February that help to explain this increase. First, the students had had several months during which they were reading and writing in

English. Additionally, the students were working in groups that they had designed in order to accomplish a learning goal. By nurturing an atmosphere where the students took responsibility for their own learning, they strengthened their learning by refining their knowledge acquisition skills. Their learning skills were improved by working with students who had differing levels of understanding, much like iron sharpening iron. Also, by producing an artifact that they would actually use in the classroom, such as designing their own tests, the students had a vested interest in the quality of their work, and this was reflected in the way in which they prepared for an assessment.

P/M/Is were also implemented in the research. The students reflected on their classroom involvement using these reflective pieces. Initially, the P/M/Is were interesting for the students. They enjoyed filling out the form, knowing that information would be used in a research project. As they progressed into the semester, however, they began to merely repeat the same descriptive phrases. Once they had identified a learning event, they would use whatever descriptions they came up with for that first learning event for the subsequent P/M/Is. It seems that once they had a phrase to use, this phrase became their only form of communication. The result was that they did not record any new learning. They also quickly became tired of filling out the forms—possibly because they were not really analyzing what learning or thinking had transpired. The students demonstrated that they were obedient in following my instructions and dutifully completed the P/M/Is, but they did not submit information that was useful to the research. The reflective element was to be one of the most informative, but it didn't work out that way. I found that the students' own enthusiasm was far more informative than their P/M/Is. While their enthusiasm was not predictive of better grades in the short run, it has

resulted a much healthier outlook to academics. The students' grades did not improve dramatically across the board, although several did very well. But what did change was the students' perception of what it meant to work hard, to think hard, to learn, and to come to a class prepared to participate or to help someone else participate. I believe this to be a far better academic situation.

I administered the same student survey at the end of the research period that the students had taken the first week of the research project. I wanted to see what, if any, changes would be reflected after many weeks of focused research work. Table five is a summary of the second student survey. This survey targeted student responses to both the learning climate and their personal approach to academic preparation.

Table 5

Categories and Responses to Second Student Survey

Category	Strongly Disagree	Disagree	Agree	Strongly Agree
	Sept '02/Feb '03	Sept '02/Feb '03	Sept '02/Feb '03	Sept '02/Feb '03
School is a safe place to be.	0/0	0/1	5/9	9/4
School is a fun place to be.	1/0	1/3	9/9	3/2
School will help me have more opportunities in my future.	0/1	0/0	5/0	9/13
I like my teachers.	0/0	0/2	8/4	6/8
I think my teachers like me.	0/1	1/2	11/7	2/4
I study at least 30 minutes a day.	0/1	1/6	12/4	1/3
I study 30-60 minutes a day.	1/2	8/8	5/3	0/1
I study more when I have a test.	1/1	4/0	6/10	2/3
I review my notes after each class.	0/1	7/7	5/5	2/1
My notes help me to understand the class lesson/activity better.	0/0	0/1	4/5	10/8

A comparison of the total responses shows the following results: Strongly Disagree rose from 3 to 7, an increase of 133%. Disagree climbed from 22 to 30, an

increase of 36%. Agree decreased from 70 to 56, a difference of 25%. Strongly Agree rose from 44 to 47, an increase of 7%.

Of the four columns, Strongly Disagree reflects the greatest difference. To me, the most informative categories of increase for Strongly Disagree were the categories about studying. As the time progressed, the students' consciousness of their own study habits increased so that they gained a much clearer understanding of what they actually did to study and prepare for class. They were able to see more realistically how they were studying and how much time they dedicated to their studies. This new perception was reflected in their responses the second time they took this survey.

Additionally, the second survey responses indicate three categories that reflect considerable variances from the September survey: (1) students strongly agree that school will help them have more opportunities in their future, (2) students agree that their teachers like them, and (3) students agree that they study at least 30 minutes a day. The first category, more future opportunities, made a substantial increase of 44%. However, the other two categories actually decreased, the second by 64% and the third by 33%. I believe that the students came to believe that the first category, more opportunities for the future, could be a reality for them. They affirmed this belief in their responses to the survey, with an overwhelming 13:1 vote.

The second category, that of agreeing that their teachers liked them, indicates a decrease by five in the Agree column, but an increase by two in the Strongly Agree column, with 11 of the 14 students agreeing that they believe their teachers like them. While this was not necessarily an area I was considering as a significant factor in the research, I have come to appreciate its worth. These students blossomed in the caring

and welcoming environment of the classroom. The fact that the work was demanding did not diminish their enthusiasm. More significant to their participation was the way in which they were treated and respected.

Finally, I believe that the students realized the reality of studying 30 minutes a day was different in actual practice than in the initial assessment of their study habits. Initially, 13 of the 14 indicated in the Agree column that they studied at least 30 minutes a day (with one in the Strongly Agree column). By the time the research was completed, seven of the 14 students disagreed (with one being Strongly Disagree) to that time frame. In my opinion, their second survey of their study skills is more informative, because the students based their self-evaluation on the previous weeks' work with the research project, not simply reported an opinion based on supposition.

Conclusions and Recommendations

The efficacy of my chosen solution was never proven due to the fact that I had to completely change my action plan. However, I will comment here that as the research progressed, it became clear that my original plan was far too aggressive and had too many features. My original project plan accounted for each day of a sixteen-week period. I had scheduled an explicit learning or thinking activity every class period. Also sprinkled throughout the weeks were other assessments, such as the SABE, P/M/Is and student journals. I had taken great care to design and include many assessments but did not provide any time in which to do them! I had no reflective element in the original project action plan. Additionally, the features that I had planned to implement were not germane to what I wanted to see happening in the classroom. I reviewed my original action plan and was astonished to see all the busy work I had planned—so much so, that I

would have lost sight of what I was trying to accomplish. I began to see, as the project evolved, that my plans would not have engaged the students' minds in the manner necessary to effect any real change in their perceptions of themselves and how they prepared for our class. Very likely, my original plan would have resulted in a series of spurious worksheets for them to fill out and return.

Another aspect of my research that I must comment upon was the fact that that the students were to develop better learning and thinking skills in the content matter through the Constructivist theory of instruction. The Constructivist theory implies that learners will *generate new knowledge*. Had I been able to proceed with my original action plan, my results would not really have validated the Constructivist theory due to the fact that everything they were learning was new information—they had no schemata for this information. These are Latin American students, studying United States' history for the first time. Everything was new. In that sense, Constructivism could not have failed—nor would it have validated my research.

I realize that my definition of the Constructivist theory has broadened. In a very real sense, the students did generate new knowledge even though it was not all academic. They did increase their learning and thinking skills. Because of the unique structure and expectations of the classroom, they learned how to participate in a classroom setting at a very different, much higher level. Most of the students were completely involved in the entire learning process most of the time. They learned the valuable lesson of being present so as not to let down the other group members; they learned time management; they learned the excitement of writing a lesson or test, and the bittersweet results of not preparing for that same exam. I say bittersweet because they believed that, because they

had written it, there was no need to study; therefore, many students did not do as well as they thought they would. This turned out to be a valuable lesson for them and spurred them on to be more prepared in future assessments.

I believe that the research we conducted in our classroom was a success because it heightened the students' awareness of their need to be prepared if they want to participate. It opened their eyes to the hard work behind preparing a lesson and to the hard work behind doing well on an exam. It opened their minds to the notion that they can take and generate positive power in their own classroom.

I conducted my research in my 2nd block class; I teach another section of that class during the 4th block of the same day. I have not fostered the same environment in this class, and the differences are striking. The students in the 4th block class are not self-starters and do not exhibit a desire to be so in the classroom. The group dynamics in this class are completely different than those of the research class. The students do not volunteer to set up study groups or divide the work, although I offer them these opportunities. They don't arrive ready to participate in the day's lesson. The teacher/student role is clearly defined: I am to teach; they are to sit and passively absorb information. The contrasts of these two classes were set in sharp relief when three of the students from the research class were transferred to the 4th block class at the semester. They were like a breath of fresh air—I could relate to them on a different plane because I knew their background and their training. On their part, they responded to me in kind as a normal course of events. It was enjoyable for me to watch the other students interact with the "research project" students. Their approaches were so completely different. The

"research project" students were like adults on the job; the other students were like students in a traditional high school classroom.

I am well pleased with the results of the project. While the ultimate project did in no way reflect my original plan, the project that evolved was far more relevant and fruitful than the first one could possibly have been. The students and I related to one another on a much more mature and deep level. They demonstrated a heightened sense of respect for themselves and their classmates. They have also opened the doors of their minds to the reality that they are competent to participate in a world that expects and demands their involvement. Their attitude towards grades has become less emotionally based and more fact based. They see a stronger correlation between their preparation and their results. They have a greater understanding that grades are superficial and politically charged.

One true measure of a person's success is how he or she absorbs information, processes it and produces something of value and use. Another true measure of a person's success is how intelligently he or she interacts with the environment and how compassionately he or she interacts with the people living in that environment. We have started this journey of success in my research project class. They realize that it takes more time than they originally thought, but they are not afraid of the effort. In my opinion as a teacher, there can be no greater demonstration of success in the classroom.

One theme I stressed over and over was that they would soon be leaving my classroom and would have to be able to manage in an entirely English-speaking environment. They had to learn learning and thinking skills that would help them achieve in other classrooms. To that end, they were successful. Right now, the students

are like fledgling birds—they know they need to fly, they know they *can* fly, and yet they are hesitant to step off the limb and try it. They have a few more weeks before they need to spread their wings and take off.

Because of this project, I am resolved to begin these procedures from the first day of classes next year. Students seek intellectual stimulation—they want to learn and they want to show us, the adults in their worlds, that they know something. It is a simple matter of realigning the perception of the classroom to allow room for students to grow in responsibility and accountability by providing them opportunities to prove those qualities. These character qualities, as well as learning and thinking skills, must have the right environment to grow. I will take the opportunity to make my classroom that environment.

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Appendices

Appendix A
Parent Letter of Intent & Consent Form
in English and Spanish

Saint Xavier University
Consent to Participate in a Research Study
IMPROVING BILINGUAL STUDENT LEARNING AND THINKING SKILLS
THROUGH THE USE OF THE CONSTRUCTIVIST THEORY

Dear Parent or Guardian,

I am participating in a master's degree program at Saint Xavier University. Part of my obligation to this program is to carry out a research project that will improve the manner in which I teach. I want to study how bilingual students can improve their learning and thinking skills. I am sending this letter to all the parents of my bilingual students, asking for permission to allow your student to participate in my study.

This project will teach me better ways to teach bilingual students. It will help your student because it will teach him or her how to achieve academic success at school.

I will be doing my research project from September to December of this year. All the activities for this project will be done during the regular school day, and there are no risks involved for your child at any time.

Your child is not obligated to be in the study. Participation is completely voluntary. You may decide to withdraw from the study at any time. If you withdraw from the study, I will not include your student in my report. Withdrawing from the study will not affect your student's grade.

By signing the permission form on the next page, I can use the academic results I collect about your student in my project report. I will keep all results confidential.

If you have any questions or would like more information about my project, please call me at 847-718-5698.

To give your student permission to participate in the project, please read and sign the next page and return it to me with your student. I will be glad to give you your own copy if you wish.

Sincerely,

Sra. Thomason

Please return the Permission Form by: _____
(Date)

Saint Xavier University
Consent to Participate in a Research Study
IMPROVING BILINGUAL STUDENT LEARNING AND THINKING SKILLS
THROUGH THE USE OF THE CONSTRUCTIVIST THEORY

I, _____, the parent/guardian of the child named below, understand the purpose of this research project. Mrs. Thomason has told me that there are no risks of any kind involved for my child, and has offered to answer any questions I might have about my child's participation in this project.

I voluntarily give my permission for my child to participate in this project. I understand that all the results of this research will be kept confidential. I also understand that I can keep a copy of this consent form for my own information.

NAME OF CHILD: _____

Signature: _____ Date: _____
Parent or Guardian

PLEASE RETURN THIS FORM TO MRS. THOMASON.

Saint Xavier University
Permiso para Participar en un Proyecto de Investigacion
MEJORANDO LAS ABILIDADES DE APRENDER Y DE PENSAR PARA LOS ALUMNOS BILINGUES CON EL USO DEL TEORIA "CONSTRUCTIVIST"

Estimados Padres/Tutores,

En estos dias, me inscribe en un programa de grado de maestro, de parte de la Universidad de Saint Xavier en Chicago. Una de mis obligaciones en este programa es hacer un proyecto de investigaciones con el fin de mejorar la manera en que enseno. El proposito de mi proyecto es que quiero estudiar como los alumos bilingues pueden mejorar sus abilidades de aprender y de pensar. Mando esta carta a todos los padres o tutores de mis alumnos bilingues, pidiendoles permiso para que su hijo o hija participe en mi proyecto.

Este proyecto me ensenara mejores maneras de ensenar a los alumnus bilingues. Ademas, ayudara a su hijo o hija porque le ensenara como tener exito en la escuela.

Mi proyecto de investigaciones dura de septiembre hasta diciembre de este ano. Hago todas las actividades para este proyecto durante el dia escolar normal, y en ningun tiempo hayan riesgos para su hijo o hija.

Su hijo o hija no esta forzada a participar en este estudio. Participacion es completamente voluntario. Ud. puede retirarse del estudio en cualquier momento. Si se retira, no uso resultados de su hijo o hija en mi informe de resultados. Retirarse del estudio no afectara la calificaccion de su hijo o hija.

Al firmar la forma de permiso en la pagina siguiente, puedo usar los resultados academicos que recogo acerca de su hijo o hija en mi informe de resultados. Guardare todos los resultados confidenciales.

Si Ud. tiene preguntas o le gustaria mas informacion acerca de mi proyecto, favor de llamarme aqui en la escuela, 847-718-5698.

Para que su hijo o hija tenga permiso para participar en este proyecto, fuera tan amable a leer y firmar la pagina siguiente y devolvermela con su hijo o hija. Se le gustaria tener su propia copia de esta carta, se lo puedo dar.

Atentamente,

Sra. Thomason

Fecha de devolver el permiso: _____
(Fecha)

Saint Xavier University
Permiso para Participar en un Proyecto de Investigacion
MEJORANDO LAS ABILIDADES DE APRENDER Y DE PENSAR PARA LOS ALUMNOS BILINGUES CON EL USO DEL TEORIA "CONSTRUCTIVIST"

Yo, _____, el padre/tutor del alumno (la alumna) nombrado abajo, entiendo el proposito de este proyecto de investigaciones. La Sra. Thomason me ha explicado que no hayan riesgos de cualquier tipo para mi hijo o hija, y me ha ofrecida contestar mis preguntas que tenga acerca de la participacion de mi hijo o hija en este proyecto.

De voluntario, doy mi permiso para que mi hijo o hija pueda participar en este proyecto. Entiendo que todos los resultados de este proyecto de investigaciones seran confidenciales. Ademas, entiendo que puedo guardar una copia de esta forma de permiso para mi propia informacion..

NOMBRE DEL ALUMNO: _____

NOMBRE DE LA ALUMNA: _____

Firma: _____ Fecha: _____
Padre o Tutor

PLEASE RETURN THIS FORM TO MRS. THOMASON.
FAVOR DE DEVOLVER ESTA FORMA A LA SRA. THOMASON.

Appendix B
Student Letter of Intent and Consent Form
in English and Spanish

Saint Xavier University
Consent to Participate in a Research Study
IMPROVING BILINGUAL STUDENT LEARNING AND THINKING SKILLS
THROUGH THE USE OF THE CONSTRUCTIVIST THEORY

Dear Student,

I am participating in a master's degree program at Saint Xavier University. Part of my obligation to this program is to carry out a research project that will improve the manner in which I teach. I want to study how bilingual students can improve their learning and thinking skills.

This project will teach me better ways to teach bilingual students. It will help you because it will teach you how to achieve academic success at school.

I will be doing my research project from September to December of this year. All the activities for this project will be done during our regular school day, and there are no risks involved for you at any time.

You are not obligated to be in the study. Participation is completely voluntary. You may decide to withdraw from the study at any time. If you withdraw from the study, I will not include you in my report. Withdrawing from the study will not affect your grade.

By signing the permission form on the next page, I can use the academic results I collect about you in my project report. I will keep all results confidential.

If you would like to participate in this research project, please read and sign the next page and return it to me. I will be glad to give you your own copy if you wish.

Sincerely,

Sra. Thomason

Please return the Permission Form by: _____
(Date)

Saint Xavier University
Consent to Participate in a Research Study
IMPROVING BILINGUAL STUDENT LEARNING AND THINKING SKILLS
THROUGH THE USE OF THE CONSTRUCTIVIST THEORY

I, _____, a bilingual student in Mrs. Thomason's social science class, understand the purpose of her research project. She has told me that there are no risks of any kind involved and has offered to answer any questions I might have about my participation in this project.

I voluntarily give my permission to participate in this project. I understand that all the results of this research will be kept confidential. I also understand that I can keep a copy of this consent form for my own information.

Signature of Student: _____ Date: _____

Permiso para Participar en un Proyecto de Investigacion
MEJORANDO LAS ABILIDADES DE APRENDER Y DE PENSAR PARA LOS ALUMNOS BILINGUES CON EL USO DEL TEORIA "CONSTRUCTIVIST"

Estimado/a Alumno/a,

En estos dias, me inscribe en un programa de grado de maestro, de parte de la Universidad de Saint Xavier en Chicago. Una de mis obligaciones en este programa es hacer un proyecto de investigaciones con el fin de mejorar la manera en que enseno. El proposito de mi proyecto es que quiero estudiar como los alumos bilingues pueden mejorar sus abilidades de aprender y de pensar.

Este proyecto me ensenara mejores maneras de ensenar a los alumnus bilingues. Ademas, te ayudara porque te ensenara como tener exito en la escuela.

Mi proyecto de investigaciones dura de septiembre hasta diciembre de este ano. Hago todas las actividades para este proyecto durante nuestro dia escolar normal, y en ningun tiempo hayan riesgos para ti.

Tu no estas forzado/a a participar en este estudio. Participacion es completamente voluntario. Puedes retirarte del estudio en cualquier momento. Si te retiras, no uso tus resultados en mi informe de resultados. Retirarse del estudio no afectara tu calificaccion.

Al firmar la forma de permiso en la pagina siguiente, puedo usar tus resultados academicos que recogo en mi informe de resultados. Guardare todos los resultados confidenciales.

Para que tengas permiso para participar en este proyecto, fueras tan amable a leer y firmar la pagina siguiente y devolvermela. Se te gustaria tener tu propia copia de esta carta, te lo puedo dar.

Atentamente,

Sra. Thomason

Fecha de devolver el permiso: _____
(Fecha)

Saint Xavier University
Permiso para Participar en un Proyecto de Investigacion
MEJORANDO LAS ABILIDADES DE APRENDER Y DE PENSAR PARA LOS ALUMNOS BILINGUES CON EL USO DEL TEORIA "CONSTRUCTIVIST"

Yo, _____, un/a alumno/a bilingue en la clase de la Sra. Thomason, entiendo el proposito de su proyecto de investigaciones. Me ha explicado que no hayan riesgos de cualquier tipo para mi, y me ha ofrecida contestar mis preguntas que tenga acerca de mi participacion en este proyecto.

De voluntario, doy permiso para que yo pueda participar en este proyecto. Entiendo que todos los resultados de este proyecto de investigaciones seran confidenciales. Ademas, entiendo que puedo guardar una copia de esta forma de permiso para mi propia informacion..

Firma del Alumno/a: _____

Fecha: _____

PLEASE RETURN THIS FORM TO MRS. THOMASON.
FAVOR DE DEVOLVER ESTA FORMA A LA SRA. THOMASON.

Appendix C
Reflective Journals

NAME: _____ DATE: _____

Activity:

Results of Activity (can be your grade, pass/fail):

How can you improve your results on this activity?

In what other classes can you/have you used this skill?

What have you learned from this activity (name specific skills or strategies, any comments)?

Appendix D
Parent Survey
in English and Spanish

Parent Survey

Thank you for taking the time to complete this form. Please take a few minutes to review and complete the following survey. You may mark an "X" in the box that best answers the statement. Please choose only one option for each statement.

	Not Usually	Sometimes	Yes, most of the time
My son/daughter tells me about the school day.			
My son/daughter spends time reading at home.			
My son/daughter completes homework independently.			
My son/daughter brings homework from school on a regular basis.			
My son/daughter spends time writing at home.			
My son/daughter shows responsibility by getting materials ready for school.			

Adapted from local school district progress report to parents, Form No. 10-10-0692-01 (Rev 8/98)

Encuesta para los Padres

Gracias por tomar el tiempo para llenar esta forma. Por favor, tome unos minutos para revisar y completar el siguiente cuestionario. Marque una X en la respuesta que major le corresponda. Por favor, escoja unicamente una respuesta para cada relato.

	No usualmente	Aveces	Si, la mayor parte del tiempo
Mi hijo/hija me platica acerda de su dia en la escuela.			
Mi hijo/hija hace tiempo para leer en casa.			
Mi hijo/hija hace su tarea independientemente.			
Mi hijo/hija regularmente trae tarea a casa.			
Mi hijo/hija hace tiempo para escribir en casa.			
Mi hijo/hija muestra responsabilidad alistando sus cosas para clases.			

Favor de devolver esta forma con su hijo/hija el 9 de septiembre 2002.

Adaptada de un reporte de progreso para los padres de parte de un distrito escolar local, Forma No. 10-10-0692-01 (Rev 8/98)

4 responses

Parent Survey Tally Sheet

ole 1 Parent Survey	No	Sometimes	Usually
child talks to me about i/her school day	II (2) 14%	++++ I (6) 43%	++++ I (6) 43%
child takes time to read home.	++++ (5) 36%	++++ III (8) 57%	I (1) 7%
child does homework independently	I (1) 7%	III (3) 21%	++++ ++++ (10) 72%
child regularly brings nework home	II (2) 14%	IIII (4) 29%	++++ III (8) 57%
child takes time to e at home.	++++ (5) 36%	++++ (5) 36%	IIII (4) 28% = 101% 28%
child shows responsability preparing his/her things for .s.	(0)	I (1) 7%	++++ ++++ III (13) 93%
	(15)	(27)	(42) (14)

Appendix E
Student Survey

Student Survey

Please take a few minutes to review and complete the following survey. Please be sure to select an option for each statement.

		Strongly Disagree	Disagree	Agree	Strongly Agree
1.	School is a safe place to be.	1	2	3	4
2.	School is a fun place to be.	1	2	3	4
3.	School will help me have more opportunities in my future.	1	2	3	4
4.	I like my teachers.	1	2	3	4
5.	I think my teachers like me.	1	2	3	4
6.	I study at least 30 minutes a day.	1	2	3	4
7.	I study 30-60 minutes a day.	1	2	3	4
8.	I study more when I have a test.	1	2	3	4
9.	I review my notes after each class.	1	2	3	4
10.	My notes help me to understand the class lesson/activity.	1	2	3	4

able 2. Student Survey

	Strongly Disagree	Disagree	Agree	Strongly Agree
hool is a safe place to be.			𝍸 (5) 36%	𝍸 𝍸 (9) 64%
" " fun " " "	1 (1) 7%	1 (1) 7%	𝍸 𝍸 (9) 64%	(3) 21%
will help me have more opportunities in my future.			𝍸 (5) 36%	𝍸 𝍸 (9) 64%
like my teachers.			𝍸 𝍸 (8) 57%	𝍸 (6) 43%
think my " like me.	1 (1) 7%	𝍸 𝍸 (11) 79%		(2) 14%
study 30 mins. a day	1 (1) 7%	𝍸 𝍸 (12) 86%		(1) 7%
" 30-60 mins a day	1 (1) 7%	𝍸 𝍸 (8) 57%	𝍸 (5) 36%	
study more when I have a test	1 (1)/13 7%	𝍸 (4)/13 29%	𝍸 (6)/13 43%	(2)/13÷13 14% ☆ on 21 th
review my notes after ea. class		𝍸 (7)	𝍸 (5) 36%	(2) 14%
y notes help me to understd. the ass lesson/activity.			𝍸 (4) 29%	𝍸 𝍸 (10) 71%

3 22

21%

14 stus

Student Survey

Please take a few minutes to review and complete the following survey. Please be sure to select an option for each statement.

add w

		Strongly Disagree	Disagree	Agree	Strongly Agree	
1.	School is a safe place to be.	1	2	(3)	4	3 HHT IIII 4 III 2 I
2.	School is a fun place to be.	1	2	(3)	4	3 HHT IIII 4 II 2 II
3.	School will help me have more opportunities in my future.	1	2	3	(4)	4 HHT HHT III I I
4.	I like my teachers.	1	2	3	(4)	4 HHT II 3 IIII 2 II
5.	I think my teachers like me.	1	2	3	(4)	4 III 3 HHT 2 II I
6.	I study at least 30 minutes a day.	1	2	3	(4)	4 II 3 II 2 HHT I
7.	I study 30-60 minutes a day.	1	2	3	(4)	4 I 3 II 2 HHT III
8.	I study more when I have a test.	1	2	3	(4)	4 III 3 HHT II 2 0 I
9.	I review my notes after each class.	1	2	(3)	4	4 II 3 HHT 2 HHT I
10.	My notes help me to understand the class lesson/activity.	1	2	3	(4)	4 HHT III 3 HHT 2 I

Revised 071002

Appendix F
First Quiz

Quiz on the Conquest of the New World

Define 4 of the following words. Write about only **four**. Answering more will not improve your grade.

raw material

mother country

trade

missionary

balance of trade

import/export

treasury

Short answers: write a very short paragraph to answer the following question. Remember to use a topic sentence.
How did mercantilism work? Write an answer using the vocabulary: trade, raw materials, mother country, and finished goods.

Appendix G
P/M/I (Pluses/Minuses/Interesting)

P	M	I

P	
M	
I	

Appendix H
Learning Footprint

Footprint for Learning/Thinking Process

Date: _____

1. Topic:

2. Emphasis: Learning Thinking
(Circle one)

3. Student Focus: (Circle all that apply)

- silent individual work
- small (2-3) group work
- in-class work
- large (3+) group work
- class presentation
- class teaching

(L1: native language; L2: target language)

- L1 reading skills
- L1 writing skills
- L2 reading skills
- L2 writing skills
- L2 speaking/listening skills
- test/quiz practice
- interviewing skills
- class participation skills
- graph interpretation skills
- knowledge skills
- comprehension skills
- application skills
- synthesis skills
- multiple intelligences

knowledge: define, repeat, list, name, underline
comprehension: translate, discuss, describe, explain, identify, report, classify, summarize

Appendix I
Survey of Learning and Thinking Strategies

Survey of Learning & Thinking Strategies

	Don't know it and/or don't use it	Know it, but it's not my favorite to use	Know it and will use it occasionally	Love this and use it whenever I can!
silent individual work	1	2	3	4
small (2-3) group work	1	2	3	4
in-class work	1	2	3	4
large (3+) group work	1	2	3	4
class presentation	1	2	3	4
class teaching	1	2	3	4
L1 reading skills	1	2	3	4
L1 writing skills	1	2	3	4
L2 reading skills	1	2	3	4
L2 writing skills	1	2	3	4
L2 speaking/listening skills	1	2	3	4
test/quiz practice	1	2	3	4
class participation skills	1	2	3	4
graph interpretation skills	1	2	3	4
knowledge skills	1	2	3	4
comprehension skills	1	2	3	4
application skills	1	2	3	4
synthesis skills	1	2	3	4
multiple intelligences	1	2	3	4

Survey of Learning & Thinking Strategies

	Don't know it and/or don't use it	Know it, but it's not my favorite to use	Know it and will use it occasionally	Love this and use it whenever I can!
silent individual work	1 0/13	2 5/13	3 4/13	④ 4/13
small (2-3) group work	1 0/13	② 2/13	3· 5/13	4· 6/13
in-class work	1 0/13	2 1/13	③· 7/13	4· 5/13
large (3+) group work	1 0/13	② 5/13	3· 3/13	4· 5/13
class presentation	1 0/13	2 4/13	3· 6/13	④· 3/13
class teaching	1 0/13	2 3/13	3· 7/13	④ 3/13
L_1 reading skills	1 0/13	2 0/13	3· 5/13	④· 7/13
L_1 writing skills	1 0/13	2 0/13	3· 7/13	④· 6/13
L_2 reading skills	1 0/13	2 0/13	③· 10/13	4· 3/13
L_2 writing skills	1 0/13	2· 0/13	③· 10/13	4· 3/13
L_2 speaking/listening skills	1 0/13	2· 0/13	③· 8/13	4· 5/13
test/quiz practice	1 0/13	2 4/13	3· 7/13	④· 2/13
~~interviewing skills~~	~~1 0/13~~	2	③	4
class preparation skills	① 1/13	2· 5/13	3· 5/13	4· 2/13
graph interpretation skills	1 0/13	2· 4/13	3· 6/13	④ 3/13
knowledge skills	① 2/13	2· 4/13	3· 6/13	4· 1/13
comprehension skills	1 0/13	2· 3/13	③· 9/13	4· 1/13
application skills	1 0/13	2· 5/13	3· 5/13	④· 3/13
synthesis skills	1 0/13	2· 3/13	③· 9/13	4· 1/13
multiple intelligences	1 1/13	2· 3/13	③· 3/13	4· 6/13

Survey of Learning & Thinking Strategies Tally Sheet

FL027804

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Sign here, → please

Signature: Juliann E. Thomason

Printed Name/Position/Title: Juliann E. Thomason Student/FBMP

Organization/Address: Saint Xavier University
3700 W. 103rd St. Chgo, IL

Telephone: 708-802-6219 FAX: 708-802-6208

E-Mail Address: crannell@sxu.edu Date: 4/15/03

William Crannell, Ed.D.

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