

*Third National Research Symposium on Limited English Proficient Student Issues:
Focus on Middle and High School Issues*

**Project THEME:
Collaboration for School Improvement at the Middle School for
Language Minority Students**

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Abstract

The University of California, Santa Cruz, with the Pajaro Valley Unified School District has participated in a collaborative research and development project. The project was conducted in the Pajaro Middle School, whose students population is 90 percent Hispanic (of which 60 percent are limited English speakers), with academic achievement one to two grades below statewide averages.

This project's theoretical and empirical foundations in cognitive science, language development, and effective schooling predicted that the academic competence of typically underserved minority students—like those in Pajaro Middle School—would be enhanced significantly through instructional strategies which emphasize cooperative learning, maximize heterogeneous skill groupings, and focus on higher order thinking and communication skills. The project worked to maximize academic learning by integrating instruction in reading, writing, social science, science, and mathematics and using appropriate technologies, such as computers, while de-emphasizing ability tracking.

The intervention was begun in 1988 and was expected to enhance student academic outcomes in the following areas: (1) reading, writing, mathematics achievement; (2) academic self-worth. Pre-/post-test data in the first year of the project regarding reading, writing, and math have indicated the program had an academic advancement effect. Project THEME students scored significantly higher on these academic measures than a comparative group of similar students. Moreover, qualitative (ethnographic and interview) data regarding students' perceptions of the program were highly positive. Parent and child interviews revealed that the social identities of parents and students were highly similar, favoring a familial dimension. In addition, data collected on these same students four years after completion of Project THEME, as the students completed their sophomore year in high school, indicate highly positive long-term effects. This program has been adopted by the school district for continuation and expansion.

Project THEME

Relevant Problems of Practice

There is little need to document the American educational system's failure to secure the academic success of California's minority students: 40 to 60 percent of Hispanic students do not complete high school. Recent studies (Garcia, 1983; Garcia, Lomeli, and Ortiz, 1984; Matute-Bianchi, 1986; Hakuta, 1986; McLaughlin,

1987; Garcia, 1992) indicate that several factors bring about this regrettable state of affairs. Research on the effective instruction of minority populations—Hispanic students in particular—has yielded conceptual understandings and empirical findings which could be included in a practical, multi-faceted instructional plan to enhance the academic learning of minority students at the middle school level (Garcia, 1988, 1991; Moll, 1988). Specifically, the research brought together university faculty and middle school administrators and teachers to implement a restructuring in the seventh grade. The project incorporated instructional strategies including heterogeneous groupings (limiting "level/tracking" practices) and an integrated curriculum with an emphasis on higher order cognitive and linguistic skills across reading, writing, mathematics, science, and social studies. Fifty-four students participated in the project along with eight teachers. Measures of academic achievement and academic self-confidence for these students were compared to those for students in the regular curriculum.

Background of the Study

For Hispanic and other language minority students, little is known of the factors which result in "successful" or "effective" education at levels beyond elementary school (Carter and Chatfield, 1986). During the past twenty years, however, researchers have compiled a significant body of data on school practices that are effective for minority students (Purkey and Smith, 1983). With respect to instructional strategies, studies of effective schooling have yielded findings relevant to limited English proficient (LEP) students (Tikunoff, 1983; Wong-Fillmore et al., 1985; Carter and Chatfield, 1986; Garcia, 1991, 1992), minority students in general (Edmunds, 1979; Chall and Snow, 1988), and Hispanic students in particular (Garcia, 1988). Although these recent findings require additional investigation, the present study brought together university faculty and seventh grade teachers to design and implement an instructional intervention to enhance academic learning opportunities for Hispanic "at-risk" students.

Cognition and Thinking

Current advances in understanding how students learn and think, and learn about thinking, also can be applied in the design of instruction. Nickerson (1981) reports that successful students use thinking strategies analogous to those of individuals commonly identified as "experts," use previous information systematically, and transform problems by using devices such as diagrams, verbal descriptions, or contrived numerical or lexical formulas. Pellegrino and Glaser (1982) suggest that students who perform well on intelligence tests, as well as those who are generally successful academically, demonstrate particular cognitive patterns: these students have acquired large information bases, they can recall information readily, and they have knowledge of a large set of strategies and the ability to use those strategies when they are needed (Brown, Bransford, Ferrara and Campione, 1983).

Classroom applications of such recent understandings of cognition are important for all students, and particularly important for minority students whose instruction typically has been focused more on "basic" academic skills than on higher order thinking abilities (Chall and Snow, 1988). High priority should be assigned to understanding how Hispanic students (whose linguistic and cultural diversity is acknowledged) acquire and use knowledge (DeAvila and Duncan, 1983; Moll, 1988).

Metacognition

Research in cognition, which is being pursued from various perspectives (DeAvila and Duncan, 1983), has identified several issues of relevance to academic learning. Metacognition, as one focus of this research,

apparently has particularly strong implications for the design of instructional strategies.

Metacognitive development refers to the acquisition of "knowledge concerning one's own cognitive processes and products" (Flavell, 1976). Much research in metacognition has been focused on memory (Brown, 1975). Flavell (1976) has hypothesized, however, that metacognition is involved in a diversity of activities: oral communication, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, problem solving, social cognition, and other forms of self-control and self-instruction. Metacognitive strategies (i.e., executive and control processes) include estimating task difficulty, self-interrupting, self-testing, monitoring uses of specific strategies, adjusting a strategy to task demands, and possibly incorporating implicit feedback (Meichenbaum and Asarnow, 1979).

Collaborative Learning

Theoretical contributions to understanding of the role of schooling in the development of thinking and learning recently have been receiving much attention. Vygotsky's (1978) perspective suggests that, when children learn in groups (which might include more able peers or an expert, teacher, or coach), they can accomplish tasks they could not accomplish on their own. Over time, they acquire the skills and knowledge originally possessed by the group (Tharp and Gallimore, 1989; Garcia, 1991; Moll, 1988).

Academic Tracking

Although tracking can be initiated in the elementary school, it is most often initiated at the junior high school, where class assignments often are driven by perceptions (accurate or inaccurate) of the student's level of academic achievement. Oakes' (1985) analysis of low income and minority populations in middle , junior high, and high school settings demonstrates the practice of tracking minority students in terms of their access to higher order cognitive experiences; once minority students enter a track identified for low achievers, their opportunities for academic success are significantly limited.

In summary, the team of researchers and teachers identified aspects of "effective" instruction that have been identified as relevant to minority populations in general and Hispanic students in particular. The study incorporated these conceptual understandings and empirical findings in an instructional plan which was designed to enhance the academic experiences of minority students in middle school. It was our express intent to augment the present understanding of the educational experiences of the minority student at this critical educational period.

The Educational Intervention

Overall Strategy

The project's approach was guided by a set of instructional principles extracted from research literature demonstrated as effective in promoting the linguistic minority student's literacy, mathematics, and English language development in school. These principles are articulated in Table 1.

Table 1

Principals of Intervention Related to Diverse Populations

- Any intervention, especially one for "diverse" students, must address all categories of learning goals.
- The more linguistically and culturally diverse the students we serve are, the more content should be related to the child's own environment and experience.
- Vertical relevance is preparation for the next stage of life.
- Horizontal relevance means that knowledge and skill are relevant to the child's everyday life.
- The more "diverse" the students are, the more the intervention should address learning through active endeavors rather than passive ones.
- First hand experiences are major sources of learning.
- The more "diverse" the students are, the more important it is for the intervention to offer opportunities to apply what they are learning in a meaningful context (practice devoid of context is not meaningful).
- The more "diverse" the students are, the more likely it is that excessive practice and drill of specific skills will endanger the dispositions to use them (one reason for the student "washout").
- In general, the more the intervention emphasizes performance goals, the more likely it is that students will distance themselves from the school.
- Performance goals mean pressure to get things right as opposed to learning the goals that emphasize how much one can progress.
- The more "diverse" the students are, the more integrated the intervention should be.
- The more "diverse" the students are, the larger the variety of methods that should be used.
- In a mono-dimensional intervention program, children are at greater risk of having to deal with low self-esteem.
- In a multidimensional system, children find a place for themselves and can enhance their self-esteem.
- Variable temporal structures, student grouping (cross-age, cross-ability), etc.

Because the proposed project was concerned, ultimately, with students learning how to learn, particular significance was assigned to strategies drawn from cognitive science and effective schooling research, which support the achievement of basic skills and the acquisition of higher-order linguistic and cognitive processes, and use linguistic, analytical, cognitive, and metacognitive processing to maximize academic learning.

Strategy #1: Use of thematic, integrated curriculum such that academic objectives are achieved through content-integrated instruction;

Strategy #2: Emphasis on small group activities incorporating heterogeneous language grouping and peer tutoring, and emphasizing higher order linguistic and cognitive processes (in which learning proceeds from the concrete to the presentational and then to the symbolic);

Strategy #3: Emphasis on literacy activities such as interactive journals, silent reading followed by small group discussion, interactive literature study, individual- and group-authored literature, and mathematics logs;

Strategy #4: Use of cooperative learning strategies emphasizing the systematic participation of each student in processing curriculum materials;

Strategy #5: Documentation of interpersonal inequities related to gender differences among middle school Mexican-descent students with a focus on strategies which would foster equal status interactions and support effective learning in general.

The project reorganized the seventh grade instructional environment at the middle school for fifty-four students. Specifically, an instructional intervention was implemented for two heterogeneous groups of approximately thirty students each. One group was made up of English Only (EO) and reclassified bilingual (Spanish and English) students in the seventh grade, while the second group included EO and Fluent English Proficient (FEP) students with higher level LEP students who are near the transition level or are already in transition English reading. These students are with the same classmates for four or six periods

Eight teachers worked collaboratively with university faculty to implement an interdisciplinary, collaborative curriculum for these two groups (“Theme students”). The content area subjects taught were reading, English, science, mathematics, and social studies (science is taught for one semester and social studies for the other). The two groups of students were integrated with other students from the rest of the school for two periods a day, during which they took physical education and an elective.

A comparison group (“comparison students”) was established consisting of 48 students in the regular middle school program. They changed classes throughout the day and experienced six different combinations of students from six different, nonintegrated content area subjects.

Recall that the Theme students were heterogeneously grouped in two strands, one bilingual and one English only, in which they remained through math, reading, language arts, and social studies/science. Within the first week of school, Project THEME's instruction began using the Olympics as the first thematic unit. Using that theme as a springboard, the four content areas were taught. The teachers met in order to share their individual areas of curriculum focus with the Olympic theme and to integrate lessons across the curriculum.

The eight middle school staff and university faculty met weekly during lunch at the school site. The purpose of these meetings was to share briefly, update, and relate pertinent information (e.g., needed resources and materials, student involvement, the theme's progress, assessment scheduling, classroom visitations, planning collective field trips, parent meetings, and other business relative to the project).

The overflow of business and actual instructional/collaborative planning time was handled during the monthly release time meeting. The school staff and university faculty met to review teaching issues, share

assessment data, and basically expand on, in depth, the actual mechanics of the project. These meetings provided the needed additional time to problem solve concerns and to build collaboratively instructional strategies and actual lessons that crossed the four content areas.

Organizing the meetings and facilitating and handling Project THEME business was delegated to the project's half-time site coordinator, who also taught one of the classes in the two strands. The coordinator maintained communication between the university and middle school, arranged field trips and substitute scheduling, ordered materials, disseminated information, arranged instructional support, dealt with problems that arose, and served as the project's contact person.

At the end of the project's second theme, The Arts, a Parent Potluck with student presentations took place. This provided an opportunity to involve and further inform parents about the project. The staff was available to present rationale and answer questions. Students presented a description of their Theme classes and shared completed projects.

Specific Activities

Professional Enhancement of Teachers

- Project teachers participated in preservice and in-service training activities specific to LEP effective instructional strategies particularly related to cooperative learning; peer tutoring; literacy as a socio-psycholinguistic phenomenon; and the cognitive foundations of literacy, mathematics, and science. This was accomplished at a week-long institute held at the university in two preservice workshops.
- Project teachers met monthly to network regarding the implementation of instructional strategies.
- Project teachers observed each others' classrooms and participated in discussions regarding their observations.

Assessment of Classroom Practices

- Project teachers and research team members collaborated in the development and implementation of specific academic assessment strategies.
- Previous effective schooling measures were reviewed, assessed, and used to develop a specific assessment of the instructional character of the program.
- Members of the research team participated in training relevant to assessment techniques, including student, parent, and teacher interview techniques and conducted interviews with students, teachers, and parents.

Enhancement of Students' Academic Learning

- Project Theme students were pretested in September/October using the California Test of Basic Skills (CTBS) and Spanish Assessment of Basic Education (SABE); a comparison group of 48 students in the same school with matching academic achievement were identified, pretested, and posttested.
- Target students were placed in heterogeneously structured learning groups which maximized effective communication and learning. Comparison group students followed the present curriculum and scheduling program.
- Target students participated in a core integrated curriculum that promoted increased opportunities for

language and literacy development and integrated content-related instruction. The integrated instruction was organized around themes. The themes were: (1) The Olympics; (2) The Fine Arts (Popular Music, Art and Fashion); (3) The Ocean; (4) Crime and Non-Violence; (5) Careers; (6) Gender; (7) Aids; and (8) Ethnic Identity. Students and teachers together negotiated selecting these themes.

- Students worked in collaborative learning groups characterized by academic heterogeneity and an orientation to positive interdependence.

Improvement of Students' Self-Esteem

- Students were recognized for both their individual achievements and their contributions to group products.
- Students worked in cooperative learning structures—particularly the “Tribes” process—to develop skills in leadership and cooperation.
- Students in cooperative groups discussed specific situational conflicts and utilized problem-solving skills to determine solutions.
- Teachers implemented programs that recognized student improvement and success across a range of abilities.
- Teachers integrated lessons that promoted understanding and appreciation of individual and cultural differences.

Results

Recall that pre- and post-testing in areas of language, reading, writing, and mathematics were given to Project THEME students and a comparison group of students in the same schools. In addition, survey data regarding the students' academic self-concept and social identity were gathered, as were interviews from students' data on these same domains. This last set of data was gathered at the end of the students' sophomore year in high school. Moreover, parents were interviewed regarding their social identities and their perceptions of schooling. What follows is a brief overview of results that were obtained in these specific domains:

1. academic achievement in language, reading, and writing;
2. academic achievement in math and math attitudes/self-concept;
3. ethnographic data related to academic self-concept;
4. social identity of students and parents; and
5. long-term effects.

Language, Reading, and Writing

The following analysis was conducted to address the effects of academic achievement on the instructional intervention in the domains of language, reading, and writing. Academic achievement measures in English and Spanish were obtained for the various groups of the study during the spring semester of the academic year. For EO and bilingual students in the Theme group and the comparison group, six subtests of the English version of the CTBS along with seven subtests of the English version of the Language Assessment Scales Reading/Writing (LAS) were used for this analysis. The subtests for the CTBS included the following:

1. Vocabulary;
2. Language Mechanics;
3. Reading Comprehension;
4. Reading Total;
5. Language Expression; and
6. Language Expression Total.

The subtest on the LAS included:

1. Synonyms;
2. Fluency;
3. Antonyms;
4. Mechanics and Usage;
5. Reading for Information;
6. What's Happening; and
7. Let's Write.

For LAS subtests one through five multiple choice items were presented to students, while in subtests six and seven, students were requested to write a description of a scene, create a description of their own identified scene, or both. In addition, bilingual students were administered the vocabulary and reading subtests of the SABLE.

On each subtest, the Theme EO students performed higher on these measures of academic achievement (see Figure 1). Moreover, the Theme bilingual students did not differ significantly, from the EO comparison students on any of these measures. The Theme bilingual students had been identified by their need for further academic development; the group was made up of English dominant students who participated in bilingual classrooms with their Spanish dominant peers. It was academically significant that this group did not differ from a group of EO curriculum students.

Figure 1

Mean Raw Scores for Bilingual Theme (THBL), English-Only Theme (THEO) and English-only Non-Theme (NTHEO) students on the vocabulary (VOCAB), Language Mechanics (LNGMC), Reading Comprehension (RDMCP), Reading Total (RDTL), Language Expression (LNGXP), and Language Expression Total (LNGXPT) subtests for the CTBS.

[image not included]

Other results indicate that Theme groups consistently performed higher on other measures than their appropriate comparison group cohorts (see Figure 2). This is particularly the case for bilingual students. On six of the seven subtests, Theme bilingual students scored significantly higher than comparison bilingual students. Of particular interest were the significant differences found between these groups in the sixth and seventh subtests, which obtain a measure of written language ability.

Figure 2

Mean Raw Scores for the Bilingual Theme (THBL) Bilingual non-THEME (NTHBL),

English-Only THEME (THEO) and English-Only non-THEME (NTHEO) students on the seven sub-tests of the English Language Assessment Scales.

[image not included]

Figure 3 presents the mean raw scores of the Theme bilingual group and the non-Theme bilingual group on the two subtests of the SABE. Differences on these measures favor the Theme bilingual group on each of these measures.

Figure 3 Mean Raw Scores for Bilingual THEME (THBL) and Bilingual non-THEME (NTHBL) students on the SABE Spanish academic achievement subtests of Vocabulary (VOC) and Reading (ROG).

[image not included]

Tables 1, 2, and 3 present the means and standard deviation for each group for English CTBS subtests, English LAS subtests, and Spanish SABE subtests respectively. These means were subjected to a series of independent t-test analyses for each of these subtest measures. These analyses produced a pattern of significant difference ($p < .05$), which are evident in Tables 1, 2, and 3 and Figures 1, 2, and 3. Specifically, on CTBS subtests, Theme EO students significantly outscored both Theme bilingual and non-Theme EO students on four of the six subsets. (Vocabulary, Language Expression, Language Expression Total and Reading Comprehension) No significant differences were found between Theme bilingual and non-Theme bilingual students on these CTBS measures. On the LAS subtests, a pattern of significant results favoring the Theme groups was also identified. On six of the seven subtests, Theme bilingual students significantly outscored non-Theme bilingual students only on the fourth subtest, Mechanics and Usage and Reading Comprehension, of the seven subtests.

On Spanish measures, a pattern of differences favoring Theme students was found. This difference was not statistically significant on the SABE Vocabulary subtest. However, this difference was statistically significant for the SABE Reading subtest.

In summary, the results of the above analysis indicate a consistent pattern of achievement outcomes that favor the Theme group students. This consistent pattern was evident for bilingual as well as EO Theme students.

Ethnic Data on Student Self-Concept

Several themes emerged from the participant classroom observations, student interviews, and teacher interviews. These themes were categorized in four separate domains:

Ethnic Identity

Mexican-origin and Anglo students did not use a wide range of ethnic labels when referring to themselves and other students at the school. When we asked students to identify the different types of students at the school in terms of specific ethnic labels commonly heard in the community, they used only a few terms, usually “Mexican,” “Mexican/American,” and “American.” Very few students were familiar with the term “Chicano.” When asked what distinguished individuals within a generic category of “Mexican,” such features were expressed in terms of language ability, physical appearance, and country of birth. One Anglo girl discussed differences among Project THEME students in terms of those “...who are bilingual and those who are straight.” Most of the Mexican-origin students were familiar with other ethnic labels (e.g., “Cholo,” “Pocho”) but did not feel they applied to the Mexican-origin student population at the school. When asked to categorize themselves, students of Mexican-origin most frequently chose “Mexican” or “Mexican-American.” The most commonly used ethnic labels for the Anglo students among both groups were “White,” “American,” and occasionally, “Anglo.”

Despite an awareness of differences within the Mexican student population, most of these students stressed commonalities across people, especially the groups in the school. They gave responses like, “It doesn't matter if you're Mexican or American, people are people.” This is not to say that students do not perceive differences among students at their school or even within categories of students. However, distinguishing features did not necessarily reflect differences in ethnic identification. When asked to identify different groups in school, without any prompts for ethnicity, all but two students distinguished students in other ways (e.g., “athletes versus nerds”, “popular versus not popular”, “good students versus bad students”).

We observed that a handful of students, girls in particular, appeared to exhibit a certain amount of tension in discussing specific ethnic labels carrying a negative connotation (e.g., Cholo), especially if these labels indicated behaviors that could be linked to ethnic identity. One girl in the bilingual strand discussed how she had changed in the last year. She described how just a year before she was an “angel,” someone who did her homework regularly, listened to her mother, did what her older brother told her to do. Now she says that her friends have “changed” her: She now dresses differently, doesn't do her school work, and gets into fights with family members. She says this is both “good” and “bad.” It is “good” that she no longer lets her overbearing brother boss her around, but “bad” that she talks back to her mother and that her work is lagging. In many ways her description of herself contradicts her grades and teachers' perceptions of her as a student. From this different vantage point, she appears to be one of the stronger students in the bilingual strand.

Positive Sense of Self-Esteem

Mexican-descent students exhibit a positive sense of self and express pride in their Mexican heritage.

In a variety of different contexts students expressed pride in being Mexican, giving examples of different holidays and special occasions when they felt particularly proud. At this point, we are not sure in what specific ways, if any, this positive sense of self is linked to ethnic pride, a particular ethnic label, or students' positive attitudes towards Spanish-English bilingualism, and/or in what ways it is linked to other social experiences in the school, family, and community. With regard to the positive sense of self and ethnic pride, we were particularly interested in finding out if any of the Mexican-descent students wanted to change places with any of the Anglo students in the class or in the school, especially those who were identified as popular, attractive, and/or high academic achievers. Very few of the students we interviewed expressed any desire to change places with anyone else, frequently responding with surprise that such a question would even be asked: “Why would I want to do that? I like being me.” We also asked the students

to identify which aspects of their physical appearance they would change, if any. There were some important gender differences here, especially among some of the darker-skinned Mexican-descent girls. Although the boys, with several exceptions, did not identify any changes they would make in their physical appearance, many of the girls said they would change the shape of their nose, remove freckles, or lighten the color of their hair or skin. This preliminary finding bears more careful scrutiny, especially as the girls mature and go on to high school. Furthermore, it will be important to explore in greater detail any relationship between elements of ethnic pride—both positive and negative—and feelings of self-worth and confidence in one's appearance, especially among the Mexican-descent girls.

Future Aspirations

1. All students, regardless of ethnicity, aspire to professional careers. All students were interested in pursuing a profession. In the case of the survey data, the most commonly chosen categories were law (45.7 percent), medicine (40.6 percent), and careers in the arts (over 30 percent). When presented with a choice of careers, students often chose a range of possibilities that included professions as well as service-related jobs. For example, one student responded to being interested in becoming a scientist, mechanic, doctor, waitress, photographer, and beautician.

Among the Mexican-descent students, there was no interest in becoming a farm worker or cannery worker, the jobs that were commonly held by their parents. They were aware of the difficulties of these occupations, as revealed in the following comments:

"A mi no me gusta trabajar en el campo porque asi aprende uno como se cansan los padres para mantenernos y comprarnos lo que queremos."

"If I played professional football, I wouldn't have to work as hard as my parents. They sweat for hours working in the fields. I wouldn't like that."

2. Finishing high school and/or college is in everyone's future plans. Students link schooling to future success. They feel getting a good job in a profession necessitates a college career, although they believe they could get adequate jobs (e.g., mechanic, beautician, and so on) with four years of high school. Moreover, everyone reported a similar attitude among their parents. With very few exceptions, all students said that their parents would be moderately to greatly upset if they quit school before high school graduation. Some talked about how their parents set forth in very realistic terms their options—the fields or something better. For them, the "something better" meant an occupation that could be attained by staying in school and hopefully going on to college. The survey data revealed one distinction between Anglos and Mexican-descent students: Mexican-descent students were evenly divided in terms of pursuing two years of college and four years, while Anglo students overwhelmingly favored finishing four years of college.

3. Mexican-descent students lacked specific instrumental knowledge on how to prepare for the careers they wanted to pursue. This theme emerged from our interviews. Though Mexican-descent students knew college was a prerequisite to many of the professions they expressed interest in, they lacked specific knowledge about the different types of post-secondary education, the different credentials and opportunities each offers, and the number of years required to complete particular levels of training. This is in marked contrast to many of the Anglo students we interviewed who had a much clearer, although sometimes inaccurate, picture of the differences between a community college and a four year institution of higher education. Most of the Anglo students understood the connection between higher-status occupations (e.g.,

teaching, nursing, and architecture) and the need to complete at least four years of college. In contrast, many of the Mexican-descent students felt that a two year education at the local community college would be sufficient to enter these occupations. One girl said that to be a doctor "...you have to have five years of something before you can get out of the university." Very few of these students knew the names of colleges other than one or two of the local community colleges, and none knew where to obtain this information. Many assumed that this information would be presented to them at some later point in their education career. A point we observed in these discussions is the extent to which these students conceptualized the pursuit of a college education as something one sets out to acquire in much the same way one purchases an expensive car or other concrete object. What is lacking in their comments is any substantive knowledge of the instrumental behaviors, attitudes, motivations, orientations, and scholastic achievements required.

Among those Mexican-origin students who did have some idea about the demands of a college education, the pursuit was seen as potentially very difficult, as a struggle. One girl described the obstacles in her way: "getting pregnant and poor grades." Money was also frequently reported as a major obstacle. As one girl noted, "You need lots of money to learn in college." This isn't to say that these students think college is an impossible dream, just that it entails a great deal of hard work and struggle, above and beyond the rigors of the academic requirements. Several explicitly stated that if they worked hard enough they would make it to and through college, noting the experiences of a cousin, aunt, older sibling, or close family friend.

4. Mexican descent students feel being bilingual and biliterate will contribute to their future success.

These students frequently expressed very positive attitudes toward bilingual ability. They feel knowing Spanish and English will benefit them later in the various job opportunities, citing the advantages of being able to communicate with monolingual speakers of each language. Frequently, students gave examples of specific job situations, possibly derived from their own actual experiences, in which a bilingual employee was able to assist a monolingual speaker. According to our survey data, this perceived advantage was also true for half of the non-Mexican-descent students. On the whole, Mexican-descent students in our study are eager to maintain or improve upon their Spanish language skills by continuing to take classes in Spanish.

Academic Strategies and Perceptions about Schooling

1. Doing homework and listening/behaving in class were the features most often linked to doing well in school. Doing homework and behaving are the hallmark of a good student, as reflected in both our interviews and the survey data. When we asked individual students to describe what it takes to be a good student, they responded: "by doing my homework and listening in class"; "by paying attention to the teacher and doing all the work"; and "by not messing around and getting your work in on time." They feel that being quiet in class is also important. Responses to our survey items revealed that 50 percent (N=30) felt that completing schoolwork was the single most important attribute of a successful student (as a choice among the following attributes: asks lots of questions; does all his/her work and doesn't talk much; talks a lot but gets the work finished; is smart). When asked to identify a successful student in their class or describe someone they considered to be a good student, they invariably described or named someone who did homework and was well-behaved. When we asked them how they thought they could improve their own academic performance, nearly everyone said that they should do their work, listen in class, and pay attention to the teacher.

2. Students are not challenged by their school work. In our interviews, as well as in many, but not all, of our observations of actual classroom sessions, students exhibited little enthusiasm or genuine engagement in their classes. In many ways, this assessment is connected to our data substantiating the preceding theme. Two-thirds of students in the EO strand felt classes were boring, while just under half in the bilingual strand

shared this view. Only 15 percent of the 59 students felt that schoolwork was too hard. Moreover, the majority students in both strands (but particularly the EO students) wished that their classes were more interesting.

Social Identity of Students and Parents

Social identity is an intriguing and complex construct. It is simultaneously a *social product*, for it emerges out of a complex set of biological, social, and cultural influences, and a *social force* that emanates from the created product to direct a number of social activities including the processing of personally relevant information (Markus, 1977; Gurin and Markus, 1988), the shaping of political attitudes (Hurtado and Gurin, 1987; Rodriguez-Scheel and Arce, 1982), and intergroup behavior (Tajfel, 1978).

Identity research with Mexican descent persons has focused almost exclusively on ethnic identity—the sense of oneself as a member of an ethnic group. While ethnicity is undeniably significant, it is not the only critical dimension of the social identities of Mexican descendants. Few studies, however, have investigated such potentially important non-ethnic dimensions as occupation, race, family, religion, or language. Yet when asked to select from a series of social labels the one label they felt best described them, a sample of Detroit Chicanos was as likely to choose a non-ethnic as an ethnic social category (Rodriguez-Scheel, 1980).

This aspect of the study examined the social identities of the Project THEME seventh graders and their parents by administering a multidimensional measure of social identity that includes race, class, family, and ethnicity. By comparing the differences and similarities in the social identification of parents and their offspring, an empirical basis can be formed for how social identity, including ethnic identity, is transmitted from one generation to another.

The sample consisted of 110 seventh graders and one of each of their parents. Of the 110 students, 23 were white and 87 of Mexican origin. Of the 87 Mexican origin students, 31 chose to take the interview in Spanish and 56 took it in English. And of the 100 parents interviewed, 77 chose to take the interview in Spanish and 23 chose English (only seven Mexican origin parents chose English for the interview). Over half of the sample (53 percent) had family incomes between \$11,000 and \$25,000; 21 percent were between \$2,000 and \$10,999; 12 percent were between \$25,000 and \$34,999; and 14 percent earned incomes of \$40,000 or more. On the average, parents had a junior high education (6.5 years). Most of the parents were presently married (88 percent).

The results indicate that in comparing the social identities of parents and their children there emerged some similarities as well as some differences. Both parents and children have a familial dimension (which includes gender) to their social identities (sibling, daughter/son, gender, parent, spouse, compadre/comadre). For parents, there is a strong religious dimension (Catholic, Christian, religious person) which is not present in their offspring. As might be expected, while parents identify with their occupations (family breadwinner and farm worker) children still have not developed social identification with occupations. The greatest divergence between parents and children is the manifestation of their ethnicity. While the ethnic dimension of social identity for parents includes such labels as Mexican and Hispanic, for children they include Mexican American, American of Mexican descent, U.S. citizen, Mexican, and American.

This multidimensional measure of social identity promises to be an interesting and fruitful way of examining the transmission of social identity (including ethnic identity) from parents to their children.

Math Achievement and Math Attitudes/Self-Concept

This aspect of the study addressed the general problem of underachievement in mathematics among Chicano/Latino students, and the underrepresentation of this population in high school classes that are prerequisite to educational and occupational opportunities in science and technology. The intervention was multifaceted, but for purposes of the work reported here, involved the implementation of thematic integration across the curriculum as a means of helping students to map mathematical knowledge onto conceptual schema derived from their own activities. This approach engaged students in gathering, processing, representing, and communicating about quantitative concepts. Seventh grade students from the available pool (N=117) were randomly assigned either to heterogeneous classes in the thematic (experimental) condition, or to traditional, ability tracked classes in the comparison condition, or to traditional ability tracked classes in the comparison condition. Since traditional approaches to instruction for students of this population tend to emphasize computation more than meaning, we hypothesized that the achievement of students assigned to the thematic condition would exceed that of comparison subjects on a test of mathematical concepts and applications. We expected no achievement differences in computational skills. The data supported both of these expectations.

A secondary function of this aspect of the research was to obtain baseline data on attitudes toward mathematics in order to examine patterns of similarities and differences between the National Assessment of Educational Progress (NAEP) sample and our Chicano/Latino sample. Preliminary analysis of these data indicate that our subjects (both thematic and comparison) expressed greater liking of mathematics than either the White or Hispanic students in the NAEP sample. To a greater extent than students in the NAEP sample, they also considered themselves to be good at mathematics and expected to work in an area requiring mathematics when they left school. Patterns of both change and stability in attitudes across the academic year are reported. The implications of high expressions of liking for mathematics and confidence in mathematics ability among this sample, juxtaposed to overall low performance in mathematics, was puzzling.

A final purpose of this research component was to test for changes in motivational self-perceptions through the academic year, and to examine the relationship of self-perceptions to instructional outcomes. A significant main effect across trials was detected for a measure of scholastic competence, and there was a marginally significant trials effect on a measure of challenge-seeking and persistence. Contrary to predictions based on Dweck's theory of academic motivation, females exceeded males on a posttest measure of Challenge-Seeking and Persistence. The influence (statistical) of self-perception variables on learning outcomes in mathematics was examined by means of a separate path analysis for each of the mathematics achievement measures—(1) computation and (2) concepts and applications. Results indicate that the best prediction of math achievement was a positive math academic self-concept as opposed to a general overall positive self-concept.

Long-Term Effects

Three years later, a follow-up study was conducted to measure both the Project Theme and non-Project Theme students' (1) future aspirations, (2) academic performance as measured by course grades, and (3) perceptions of middle school. The method in executing the follow-up project was a self-administered survey. Questions in the survey included:

- What is your grade point average?

- Was your middle school a good institution?
- Did you receive excellent grades in middle school?
- Did you find the subjects in middle school to be very interesting?
- Did middle school teachers help you develop interest?
- Did middle school teachers help you plan for future goals?
- Did middle school teachers like you?
- Did you hate your middle school?
- What are your future plans?
- Do high school teachers help plan for the future?
- Do high school teachers like you?
- Do you feel comfortable at your high school?
- Do you get along well with other students in high school?

Sample Population

In the follow-up study the questionnaire was submitted to the students who were enrolled at Watsonville High School and those who were able to attend the one-afternoon session near the end of the academic year. Thirty-eight students were found to participate in the study with seventeen in the comparison group and twenty-one in the Theme group. Students completing the survey were never told that the purpose of the survey was directly related to assessing the effects of any particular middle school program.

The implementation of Project Theme has had a significant effect on grades: Theme students had approximately 70 percent of their grades *above average*, whereas 75 percent of comparison students' grades were *below average*. Although this is a self-report indicator, confidence in this indicator is enhanced since students were clear about the confidentiality of their responses. Also 65 percent of the Theme students perceived their middle school as a good institution while only 40 percent of comparison group reported such a perception. Moreover, 80 percent of Theme students reported middle school subjects as interesting as opposed to 30 percent of the comparison students.

In addition, teachers were perceived by the Theme students as providing greater inspiration. Approximately 85 percent of the Theme students agreed that teachers helped develop interest. Only 47 percent of the comparison students agreed that teachers helped develop interest. Also, 57 percent of Theme students indicated that teachers helped them plan for the future, as opposed to 40 percent of the comparison students. The implementation of this project also created a significant difference with the students future aspirations. Approximately 85 percent of Theme students indicated a strong desire to go on to college while only 69 percent of the comparison students expressed this desire.

In summary, four years later, the same Theme students who attended the middle school project are now in high school. The results of the above analysis indicate a consistent pattern of outcomes related to grades, perceptions of middle school, and future aspirations, each dramatically favoring the Theme students.

Conclusion

The present effort brought together middle school teachers with university faculty in a redesigning of seventh grade instructional organization. This redesigning was founded on recent empirical work that has identified effective instruction and curriculum with Hispanic students along with recent theoretical

formulations which are of general relevance to enhancing academic learning. Theme students participated in an educational experience that kept them together for the majority of their school day. This experience included participation in small heterogeneously structured learning groups through which instruction was delivered around jointly determined themes integrating reading, language arts, math, science, and social studies. The academic outcomes of these Theme students were compared to a group of students who participated in this same school's typical seventh grade organization—seven independently taught, homogeneously-leveled classes with limited curriculum integration and a more traditional whole group instructional approach.

The implementation of the project required extensive rethinking of the existent middle school organization by teachers, administrators, and participating university faculty. Moreover, the restructuring that took place required extensive collaboration, especially by the teachers. These teachers report that, without the time, the project allowed them to meet and plan, the project would not have been possible. In addition, they report that the on-site coordinator played a key role in bringing them together and ensuring that the goals and specific objectives of the project were always at the forefront of the project activity. Recall that the teachers were provided with a minimum of one-day release every four to six weeks and met on a weekly basis during lunch. The coordinator was able to have the time to meet individually with teachers and university faculty and was a key resource person with regard to developing and/or finding relevant theme related curriculum material. In sum, the project could not have been implemented without the additional release time for teachers and the presence of an effective site coordinator.

The results of the project are clearly positive. That is, consistent positive comparative academic outcome data favor the student participants of the Theme intervention over the conventional program implemented at this middle school. Specifically, comparative analyses in the areas of reading comprehension, vocabulary, language mechanics, and language expression in English significantly favored the Theme students. Similar results were found on Spanish language measures.

Although these empirical results are promising, it is important to identify a number of constraints of the study. First, the study was a voluntary effort by a group of self-selected and particularly motivated teachers and university faculty. Coupled with the inability of the present project implementation and data procedures to specify causal links between the intervention subcomponents and the dependent variables, the results of the study are difficult to specifically interpret. It does seem appropriate, however, to conclude that the results suggest a set of possible school and classroom restructuring alternatives that may provide enhanced educational successes for a population of educationally vulnerable students.

With the present results and implementation experiences of this study in mind, it seems appropriate to readdress the set of principles with which this study began. Table 1 summarized this set of principles, particularly as it related to the diversity of the student population, which more and more teachers are serving. Diversity in language and culture are becoming all too common place in today's classrooms. The present project was designed with such circumstances in mind and attempted to address this challenge directly. As Table 4 indicates, developing and implementing the curriculum and instruction for diverse student classrooms requires attention to curriculum comprehensiveness, quality, and integration. In addition, the instructional strategies used in such situations should emphasize small group interaction, heterogeneous grouping, and active and informal learning activities of vertical and horizontal relevance. Based on the tentative results of this study, these principles seem to carry significant promise for further educational research and educational change.

Table 1
Means and Standard Deviations of English CTBS Subtests by Group

Group (N)		Vocabulary	Language Mechanics	Reading Comprehension	Reading Total	Language Expression	Language Expression Total
Theme Bilingual (17)	M	22	16.7	24.6	47.8	26.1	42.6
	S.D.	3.1	3.6	4.1	5.2	3.1	4.1
Theme English-Only (26)	M	27.4	19.9	29.4	51.7	33.6	52.1
	S.D.	2.6	3.1	3.1	4.1	3.2	4.4
Non-Theme English-Only (31)	M	22.9	17.5	24.8	50.7	27.6	45
	S.D.	3.6	3.2	3.1	5.2	3.8	4.2

Table 2
Means and Standard Deviations of English LAS Reading and Writing Subtests by Group

Group (N)		Synonyms	Fluency	Antonyms	Mechanics and Usage	Reading for Information	What's Happening	Let's Write
Theme Bilingual (21)	M	8.4	8.4	8.4	13.1	14	12.1	4.3
	S.D.	2.1	1.6	2.5	2.4	2.5	3.6	0.7
Non-Theme Bilingual (14)	M	6.6	5.6	5.4	11.8	5.6	8.2	3
	S.D.	1.9	1.3	1.1	2.3	1.1	2.1	0.5
Theme English-Only (16)	M	9.5	8.9	9.2	14.2	9.1	11.6	3.8
	S.D.	2.3	2	2	3.1	2.1	1.6	0.5
Non-Theme English-Only (31)	M	6.3	8.1	7.5	12.6	7.2	11.8	4
	S.D.	1	1.1	2	3	1.6	1.8	0.6

Table 2
Means and Standard Deviations of English LAS Reading and Writing Subtests by Group

Group (N)		Vocabulary	Reading
Theme Bilingual (21)	M	8.4	1.4
	S.D.	2.5	2.5
Non-Theme Bilingual (14)	M	5.4	5.6
	S.D.	1.1	1.1

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