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Theresa Doris Chretien
Louisiana State University and Agricultural & Mechanical College

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ACADEMIC ACHIEVEMENT, SELF-CONCEPT AND ATTITUDES TOWARDS READING OF STUDENTS IN BILINGUAL AND TRADITIONAL PROGRAMS

The Louisiana State University and Agricultural and Mechanical Col. PH.D. 1981

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ACADEMIC ACHIEVEMENT, SELF-CONCEPT
AND ATTITUDES TOWARDS READING
OF STUDENTS IN
BILINGUAL AND TRADITIONAL PROGRAMS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in Partial Fulfilment of the
Requirements for the Degree of
Doctor of Philosophy

in

The Interdepartmental Program of Education

By

Theresa Doris Chretien

B.A., University of Southwestern Louisiana, 1967
M.A., University of Southwestern Louisiana, 1971

December, 1981
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ABSTRACT

This study was designed to investigate the comparative achievement in reading and mathematics, self-concept, and attitude towards reading of bilingually educated and traditionally educated students. To determine differences in achievement, 239 third- and sixth-grade students enrolled in bilingual education (French-English) and traditional education classes in St. Martin Parish, Louisiana, were pre- and post-tested with standardized instruments in word knowledge, reading comprehension, self-concept, and attitude towards reading.

The findings were tested statistically at the .05 level. In academic achievement, there were significant differences between the two groups only in mathematics computation, favoring bilingually educated students at the third-grade level and traditionally educated students at the sixth-grade level. When achievement by group was evaluated according to the variables of sex, race and English-speaking level, significant differences were found for only two interactions: the group/sex interaction for third-grade students on the Word Knowledge Subtest, in which bilingually educated male students performed significantly less well than their female counterparts and traditionally educated male students; and the group/language interaction for sixth-grade students on the Reading Comprehension Subtest in which traditionally educated dominant-English-speaking students performed sig-
nificantly better than limited-English-speaking students whether they were bilingually or traditionally educated.

In the non-academic areas, a significant difference was found between the two groups in self-concept, but only at the sixth grade level; this difference favored the bilin- gually educated students. There was no significant differ- ence between the two groups in attitude towards reading at either grade level.
CHAPTER 1
INTRODUCTION

The subject of this study grew out of a problem which has challenged educators in the United States for years: how to improve the educational achievement of students with limited proficiency in the use of the English language. Several sources discussing the educational status of students with limited-English proficiency (LEP) in the United States pointed to the fact that for several decades school age children in the United States whose dominant language was not English had not succeeded in traditional American schools (United States Commission on Civil Rights*, 1975, Anderson, 1971, Blanco, 1977, Mackey and Beebe, 1977, Lopez, 1978, Ogletree, 1976, Padilla, 1977). According to these authors, statistics revealed that these children dropped out of school at unusually high rates, and those that did remain lagged significantly behind the majority language (English) group in academic achievement. Data from a 1930 study by Manuel (U. S. Commission, 1975: 14) documented that in Texas, "overageness and dropout rates were higher for Mexican American children than for either black or white students, and that most Mexican American children never progressed beyond

*Hereafter referred to as United States Commission
third grade. In addition, while approximately 95 per cent of Anglo children were enrolled in schools, only 50 per cent of Mexican American children were."

A Texas Education Report of 1957, as cited by Anderson (1971), revealed that the average Spanish-surnamed Texas child in the first grade was dropping out of school before reaching the fifth grade. Blanco (1977), using information from a 1960 California study, reported that more than half of the Spanish-surnamed females fourteen years of age and over at that time had not gone beyond the eighth grade. This was in contrast to 27.9 per cent of the males and 25 per cent of the females over the age of fourteen in the total population who had not gone beyond the eighth grade.

Describing the status of two LEP groups, Mackey and Beebe (1977) reported that in 1960, of all Puerto Ricans twenty-five years of age and older in the United States, 87 per cent had dropped out without graduating from high school. Further by eighth grade, 52.9 per cent of this population had dropped out. Later statistics in 1969 indicated that the dropout rate for Puerto Rican students by the twelfth year of schooling was 80 per cent compared to 46 per cent for Black students and 28.7 per cent for Anglos. Also, while the rate for entering higher education was 15-20 per cent for Blacks and 45 per cent for the general population, it was hardly 5 per cent for Puerto Rican college-age youth.

The situation for Mexican American students at that time, Mackey and Beebe continued, was not much different. The level
of educational attainment for the average Chicano child in the southwestern section of the United States was seventh grade. A report of conditions in the State of Texas indicated that the Chicano child usually repeated first grade three times and dropped out of school in the fourth grade. For Chicano children who continued into high school, the dropout rate was 89 per cent. College enrollment of these students was negligible, making up less than one-half per cent of college students at seven University of California campuses.

The U. S. Commission's (1975) report of 1973 included studies conducted with Indian as well as other LEP students. This report revealed that the longer these students stayed in school, the further they fell behind their classmates in grade level achievements. Drawing from the 1970 Census and several U. S. Commission on Civil Rights studies, the U. S. Commission (1975: 17) reported that:

Compared with the median number of 12.0 school years completed for whites, the median is 8.1 for Mexican Americans, 8.6 for native Americans and 12.4 for Asian Americans... As of 1972, the dropout rate for Puerto Ricans in New York City from 10th grade to graduation was 57 per cent. In New England, 25 per cent of the Spanish speaking student population had been retained in grade for at least three years; 50 per cent for at least two years. Only 12 per cent were found to be in the correct grade for their age group. The dropout rate for native Americans in the Southwest between grades 9 and 12 is 30.6 per cent. For Navajos..., the median educational level achieved is fifth grade.

Reports on the academic achievement of LEP students were no more promising. A report in a New York Times Article of 1976, according to Gebhard (1979), indicated that in twenty-four New York City public schools having 50 per cent
or more Puerto Rican enrollment, 86 per cent of the eighth-grade students had reading scores below grade level. The May 1977 report of the National Assessment of Educational Progress, according to Lopez (1978), showed that Latino achievement was consistently below the achievement of the total national population and that of white students. Speaking in general of LEP students, Ogletree (1976) reported that the non-English-speaking child was one year behind the general population in academic achievement by the third grade and two years behind by the seventh grade.

More detailed statistics on achievement were given by Padilla (1977). Using data from the 1966 Coleman report, Padilla noted:

By the twelfth grade the Mexican American student is 4.1 years behind the national norm in math achievement; 3.5 in verbal ability; and 3.3 in reading. The Puerto Rican student is 4.8 years behind the national norm in tests of general information—including humanities, social studies and natural sciences—the median twelfth grade score was 43.3 for Mexican Americans, and 47.7 for Puerto Ricans, 44.7 for Native Americans, and 49.0 for Asian Americans, as compared to a median score of 52.2 for white students.

Several conditions were advanced as causes for this state of affairs: socioeconomic status, school experiences, inadequate testing, cultural experiences and limited-English-language knowledge. Among these, limited-English-language knowledge was often given as the primary factor in the lack of progress made by LEP students (Baecher, 1977). Over the years, educators had given lip service to the possibility of providing instruction in reading through the native
language as one means of solving the problem, but little action was taken. Studies in the 60's revealed that at that time the needs of LEP students were still unmet by our educational system (U. S. Commission, 1975).

The establishment of English as a Second language (ESL) programs in the early 1960's was one major attempt to provide solutions for LEP students experiencing problems in our nation's schools. That these programs were adequate to meet the special needs of these children, however, was considered doubtful by several sources (U. S. Commission, 1975), Tucker (1977), Siegrist (1977), Hatch (1977), Troke (1977). To support its view that ESL instruction did not meet the immediate communication and academic needs of students with limited-English proficiency, the U. S. Commission (1975:27) pointed to the findings of Finocchiaro in 1971, Saville and Troke in 1973, and Saville-Troke in 1974. The investigations of these researchers revealed that implementation of ESL programs in many areas required that students be 'pulled out' of regular classes for special English-language training. This experience for many students, resulted in retardation in subject matter areas until the English language was learned, with little chance to recover. It was also the case, researchers reported, that ESL 'pull out' classes implemented in the United States, in practice, tended to be isolated English instruction which did not allow the learners to integrate the English they had learned in reading material in their regular classes.
Several investigators of ESL programs and their effectiveness for LEP students saw deficiencies not so much in the administrative practices as in the instructional domain. Tucker's (1977) position was that the unsatisfactory performance of disproportionately large numbers of non-English speaking youngsters in ESL classes (as revealed in studies by the U. S. Commission on Civil Rights in 1971 and Gezi in 1975; and in reviews of studies by Arendt in 1967, Brustall et al in 1974, Olsson in 1969, Scherer and Wertheimer in 1964 and Smith in 1970) stemmed from several factors inherent in the principles and instructional methodologies on which those programs were based. A major shortcoming of ESL and other second-language-teaching programs, according to Tucker, was that the theoretical views of the language-acquisition process on which those programs were based were erroneous theories which eventually came to be disputed by research. Beginning in the early 60's, Tucker reported, error-analysis studies and investigations of the various facets of the speech system acquired by second-language learners by such researchers as Burt and Dulay in 1974, Larsen-Freeman in 1975, Hamayan Makcman, Pelletier and Tucker in 1976 and Torone in 1974 and in 1976, suggested that the language-learning process of the young child was not the random or disorganized process on which the traditional second-language programs had been based. The learner did not learn a large number of discrete elements and then gain ability, through practice, to manipulate those elements in a rapid and automatic fashion. Rather, the learner engaged actively in the
language-learning process, gradually discovering the rule system underlying the language to which he was exposed. Further, the results of empirical studies, Tucker stated, strongly suggested that the processes of acquiring a native language and a second language were essentially analogous. These studies tended to support the belief that children did not really need formal instruction in order to learn a second language.

Where traditional language-teaching methodologies, including ESL, fell short, Tucker concluded, was in their failure to take advantage of this new knowledge about second-language acquisition. They relied on the so-called "scientific" application of linguistic principles to language teaching which focused on the teacher and methodology rather than the learner. Further, attempts to reproduce in the classrooms natural conditions for communication in second-language programs were unsatisfactory, producing rather artificial situations which did not stimulate the language acquisition that could come from a more informal, less structured approach.

Tucker's analysis of research on the status of ESL instructional methodologies was supported by evidence supplied by Hatch (1977), and Dulay and Burt (1980). Examining Tucker's position in light of research, Hatch (1977) presented a summary of the data from fifty-two longitudinal studies of one or more children as they either simultaneously learned two languages or added a second. Included among
these were Leopold's classic ten-year study (1929-1939) and others by investigators like Fantini in 1974, Alce Murcia in 1975 and Swain and Wesche in 1976. The data from these studies (none of which involved formal language instruction) and from the cross-section studies of such researchers as Brown in 1973, Cazden in 1975, de Villiers and de Villiers in 1973, Hakuta in 1975 and Dulay and Burt in 1976, Hatch concluded, supported the notion that one could learn a new language simply by being exposed to the language and interacting with speakers of that language. As reported in these studies, the major focus in activity of the classroom in second-language learning which led to successful experiences for the students involved was communication which emphasized the content of what was spoken rather than the appropriateness of the grammatical structures of the language. However, Hatch cautioned, these results only indicated that formal language instruction was not necessary for language learning to take place. There was no evidence in these data to say whether or not instruction might help.

Perhaps, the most serious indictment of the ESL curriculum was delivered by Dulay and Burt (1980). Much of English-language-teaching methodology in use today, they contended, had not yet caught up with current theory and research on the learning of a second language. The finding of research over the last decade, these authors revealed (p. 26), led to principles of second-language acquisition that differed radically from the habit-formation principles formulated in
the 1950's. These principles revealed that:

"a second language is acquired to a large extent through the 'creative construction' of the new language by the learner; that is through the learner's systematic and gradual reconstruction of the rules of the language. Environmental conditions such as classroom features and teaching method become maximally effective only when they are in tune with the developmental processes of language acquisition."

Application of these principles, however, were not to be found in ESL programs, according to Dulay and Burt (1980: 25). In their review of the major ESL curriculum series for elementary students and a survey of forty ESL teachers, these authors found a heavy reliance on pattern drills, repetition, imitation and contrastive analysis—teaching practices which were out of step with the new language-acquisition principles. What the new learning principles implied for instruction, Dulay and Burt (1980: 31) suggested, was that during a significant part of the language class, natural communication situations which allowed learners to use their creative construction abilities to the fullest should be provided. In these kinds of situations, the focus of both the speaker and the listener "is on the message being conveyed not on the form of that message." This was not to say, Dulay and Burt offered, that there should be no focus on the language at all. Rather, the implication was that "when natural communication is to be provided in a particular lesson, form must be de-emphasized."
THE PROBLEM

Background of the Problem

The weaknesses in traditional second-language training programs revealed by Tucker (1977), Hatch (1977), and Dulay and Burt (1980) and others were not the only, and perhaps not the primary grounds for the characterization of ESL programs by many educators as inadequate to meet the needs of students with limited English proficiency. It was acknowledged that ESL training, when it achieved any success at all, met only one of the many needs of this student population (U. S. Commission, 1975). In its mode of operation, ESL was geared solely toward English-language learning and to the "complete acculturation of foreign and ethnic groups to the mainstream of American society" (Office of the Commonwealth of Puerto Rica, 1977: 7). Because it was not structured to allow for ethnic mother-tongue development and use as a tool in learning and because it did not include the cultural values and heritage of students with limited-English proficiency, it did not satisfy the social and emotional needs necessary to the success of these students in school (U. S. Commission, 1975).

Most advocates of a new educational approach to meet the needs of LEP students did not reject ESL training but saw it as an essential part of a wider scheme--bilingual education. In their analysis of three educational approaches to teaching English to speakers of other languages, Teachers of English to Speakers of other Languages (TESOL) recommended the use of ESL as a component of bilingual education (Blanco,
Dorothy S. Messerschmitt, a past president of the New Jersey organization for second-language education and bilingual education, NJTESOL—NJBE, expressed the view in the Winter 1976 Newsletter, edited by Alatis and Twadell (1976:1) that "Clearly...bilingual education and English as a Second Language are two complementary areas...Bilingual education without special instruction in English as a second language would be fruitless." Alatis (1976:6) offered a statement from Bernard Spolsky emphasizing the cooperative relationship between bilingual education and ESL: Any bilingual education program in the United States, Spolsky stated, 'must include an effective ESOL component and any ESOL program that ignores the children's first language is likely to be ineffective...ESOL provides a strategy for teaching standard English to children for whom there is a language barrier to education.' Alatis (1976:6) went a bit further in his statement that TESOL and bilingual education, 'if not absolutely synonymous are certainly and thoroughly compatible.'

At the 1975 TESOL convention in Los Angeles, Pena (1976:17), as president of the recently organized National Association for Bilingual Education, also spoke for the mutual and supportive roles of ESL and bilingual education. Members of the bilingual-education profession, Pena contended, had maintained and would continue to maintain that ESL was a vital part of any education program for children whose dominant language was not English. However, he con-
tinued, teaching ESL with a bicultural perspective was not enough. Students would have to receive adequate subject-matter instruction while they were learning English and would have to continue developing their own language. Further, a school environment would have to be provided which did not erode the self-esteem and cultural pride children brought with them. These priorities, Pena contended, required a different experience than that provided by ESL training alone. They required the complementary endeavor of bilingual education.

The definitions of bilingual education appearing in the literature are not consistent, and, in some sources, bilingual education and ESL are defined synonymously. However, most sources depict bilingual education as a much broader and more comprehensive approach than ESL. For the most part, the definitions indicate that bilingual education has two essential parts (Vattakavanich and Tucker, 1980): (1) instruction in two languages—English and the child's mother tongue; and (2) instruction in the two languages covering at least part if not all areas of the curriculum. A third component is frequently added: attention to the history and culture of both languages.

The concept of bilingual education as it appeared in theory, did not translate itself into uniform practice as it became implemented in American schools during the late 1960's and early 1970's. Many of the programs which were implemented at that time were federally funded and, thus,
were shaped by the guidelines of the Bilingual Education Act. This Act was passed by Congress as Title VII of ESEA in 1967 and subsequently renewed with amendments in 1974 and 1978 (Harrington, 1980; Pifer, 1979). According to de Valdes (1979), three models of approaches to bilingual education emerged as a result of the Bilingual Education Act. One model was English as a Second Language (ESL) in which non-English-speaking pupils were pulled out for part of the school day and were given intensive instruction in English as a second language. Another model was Transitional Bilingual Programs. Here, instruction was given to limited-English-speaking students in their home language in order to help them maintain a steady rate of progress in the content areas and to enhance their self-image with the ultimate aim of helping students leave the home language behind and become fluent enough in English to receive complete instruction using the English language. The third model was Bilingual-Bicultural education. Programs under this model were designed so that every participating student, English-dominant and limited-English-speaking, was taught content areas in both languages and given experiences leading to an appreciation of both cultures. The Fourth Annual Report of the National Advisory Council on Bilingual Education* (1979) included a fourth model: Language Other than English as a Second Language Programs. When this model was used, English-speaking students received instruction via a

*Hereafter referred to as The Fourth Annual Report
foreign or second language, most often the language of limited-English-speaking students.

Though all of these models existed, de Valdes' (1979) reported, an emphasis on English-language learning seemed to be a major component of most of the bilingual education programs. This emphasis grew out of the language of the Bilingual Education Act and its various amendments. According to Harrington (1980), the provisions of the Act made the first priority the learning of English although it did include as a purpose to maintain and, perhaps, increase mother-tongue skills. Bilingual education was a means of correcting English-language deficiencies in children and thereby promote assimilation into mainstream education (Pifer, 1979). Viewed this way, it became a compensatory measure for students who had fallen behind or who were likely to do so. It did not have as a primary purpose the fostering and maintaining of competence in two languages.

Though bilingual education was not taken as a panacea to cure all ills at its inception, it was conceived by its proponents as a more effective means for students of limited-English proficiency to reap more benefits from their educational experiences than that provided solely by ESL programs (Fishman, 1977a). Educators concerned with the continuing need of these students to learn the English language as a means of gaining access to educational opportunities also saw it as a more effective approach to language learning (Tucker, 1977). From their vantage point, because it capi-
talized on the relationship between the students' native language and the English language in language learning by using both languages as media for instruction and because it offered an opportunity for the informal, more natural conditions under which the child acquired his mother-tongue, bilingual education was more conductive to successful language learning for the limited-English-speaking child.

Other supporters, whose main concern was not English-language learning in and of itself, saw in bilingual education the promise of other lofty ideals. These proponents, Tucker (1977) concluded, looked to bilingual education as a means of insuring initial success in academic subject instruction; as a way of maintaining the mother-tongue; and as a means of enhancing the development of pride, self-esteem and cultural awareness of the language-minority child.

The basic premises underlying a rationale for the bilingual approach to education which considered the vantage points of most supporters were well outlined in the U. S. Commission's (1975) report. Basically, these supporters held that bilingual education:

(1) capitalized on the language skills and societal experiences the child already had; thus it prevented retardation in reading skill development until sufficient command of English was attained.

(2) enhanced the development of a positive self-concept necessary to insure success through inclusion in the curriculum the cultural heritage of the LEP child.
(3) contributed to the development of bilingualism for both the limited-English-speaking and the dominant English-speaking child, a feature which had begun to gain desirability in the United States. Despite the large store of proponents for bilingual education, the concept, in theory and in practice, was not without its critics. The major arguments of those who opposed bilingual education, von Maltitz (1975) reported, centered around what they saw as the ultimate academic and social consequences of this approach to teaching. Teaching children in two languages simultaneously, they contended, led to confusion and inhibition in verbal expression and impaired cognitive development. It took away from valuable time needed to teach English, the language necessary for full participation in American life. A more socially oriented argument was that bilingual education could lead to ethnic and political divisiveness rather than to a strengthening of national unity. It had also been suggested, Wright (1973) revealed, that bilingual education led to a reduction rather than an increase in academic progress.

As of 1980, research had not dealt in any great depth with either the claims of the proponents or the contentions of the critics. Despite the vast amount of literature reported in the area of bilingualism,* there was expressed

*William F. Mackey's International Bibliography on Bilingualism, Volume I, 1972 and Volume II, 1979, according to Anderson (1978), contained a combined total of 20,006 titles, with an additional guide to be published in 1980 on bilingualism in Canada expected to contain some 5,000 titles on French-English bilingualism.
agreement by several sources [(Harrington (1980), Nieves Squires (1980), de Valdés (1979), Pifer (1979), Troike (1978), and the Fourth Annual Report (1979)] that research in the area of bilingualism and bilingual education was decidedly lacking. According to the Fourth Annual Report (1979), until 1979, there had been no funding for research under Title VII. Of the millions of dollars spent on operational aspects of bilingual programs and support activities, only about one-half of one per cent of this had been spent on research. As a consequence of this, Harrington (1980) reported, there had been little critical research and virtually no longitudinal research to evaluate the potential or actual effectiveness of bilingual programming. Further, in their annotated bibliography published in 1980, Nieves Squires and Others (1980) indicated, there was not a single source that examined through statistical means, the effectiveness of specific features in bilingual education for children. Also absent, the Fourth Annual Report (1979) indicated, were longitudinal studies of monolingual and bilingual children acquiring their first and second languages for most languages other than English. Further, areas such as culture, cognition, literacy and the measurement of language proficiency had not been sufficiently investigated.

What dominated the existing research base, Harrington (1980) contended, were after-the-fact evaluations of existing projects. But many of these evaluations, Harrington revealed, contained important flaws in design which lessened their reliability in revealing any information about the
strengths or failings of the bilingual education programs. When the Center of Applied Linguistics surveyed over 150 evaluation reports in 1978, Troike (1978) reported, only seven evaluations were found which met minimal criteria for acceptability and contained usable information. When the Northwest Regional Laboratory surveyed 108 evaluations, they rejected all but three of them, Harrington (1980) reported. Also, a review of some thirty-eight research projects and 175 project evaluations by Dulay and Burt (1980) on the effects of bilingual instruction on student performance resulted in the acceptance of only nine evaluative research studies and three bilingual demonstration project evaluations which adhered to sound empirical research procedures.

Added to the lack of in-depth research and inherent weakness in methodology in bilingual education research were the apparent contradictory findings of the bilingual education research which did exist. A review of research studies on bilingual programs from South Africa, South America, the Phillipines, Ireland, Wales, Canada and the United States, Cohen and Laosa (1979) reported, indicated the success of at least four different approaches to the testing of pre-literacy and literacy skills. The results of ten studies these authors reviewed suggested that instruction should start in the student's dominant language. Results of at least six studies suggested that simultaneous literacy in two languages could be established successfully. Also,
ten studies reported the success of preliteracy and literacy instruction through direct instruction in the second language.

With respect to subject-matter acquisition, Cohen and Laosa indicated, findings were just as variable. The results of eight of the studies reviewed by the authors favored the use of the dominant language as the sole medium of instruction initially. Eleven studies spoke for the success of using the second language as the sole medium of instruction; and there were ten reports which suggested that the use of both the languages simultaneously yielded successful, if not the most successful, results.

Although the effort had been small, some researchers of bilingual education did venture into exploring some of the non-academic outcomes proponents expected from bilingual education. Here, too, the findings had been inconsistent. Fishman (1977b) looked at the results of studies into the effects of bilingual education on self-concept and inter-group relations. Studies by Cohen in 1975, Lambert, Giles and Picard in 1975, by Zirkel in 1972 and Churchill in 1975, Fishman (1977b) reported, led to the conclusion that the self-concept and own-language perceptions, as well as own-culture views, of students enrolled in bilingual education programs were more positive than those who were not enrolled. Negative results, however, were reported in the area of attitude toward the mother tongue in studies by Cooper and Fishman in 1977 (Fishman, 1977b). The few American studies dealing with the effect of bilingual education on intergroup
relations, according to Fishman (1977b), had not produced positive results. Investigations by Steinberg in 1974 and Johnson in 1975, Fishman indicated, revealed that, except for Title VII programs which required the inclusion of dominant-English-speaking students, most bilingual programs tended to foster separation of students, from the regular school program. On the other hand, Canadian experiments, like those of Lambert, Tucker and D'Anglejan in 1973 and Macnamara in 1974, he reported, had produced opposite results.

In summary, it was noted in this section that bilingual education had both proponents and critics, neither of whose claims had been adequately addressed by experimental research. The discussion also revealed that four features generally characterized the existing research in bilingual education. First, there was a lack of in-depth research into the differential impact of the bilingual education approach on academic achievement when it was compared to the traditional educational approach. Second, much of the bilingual research which did exist contained various methodological weaknesses. Third, the findings of existing research in bilingual education had produced contradictory findings as to the effectiveness of the bilingual education approach in various areas for LEP and English-proficient students. Finally, very few studies existed which investigated the differential effectiveness of bilingual education and traditional education on the self-concept or attitude towards reading of students enrolled in these educational programs; and very little
research considered the impact of differences in English-language proficiency on the effectiveness of either approach.

Statement of the Problem

Based on the information revealed in the preceding section, it was decided that a comprehensive study in bilingual education could add significantly to the currently limited research base in bilingual education. Thus, the research for this study included an analysis of group performance in bilingual education and traditional educational programs by grade, third and sixth, and against several variables: sex, race and English-speaking level. The following problem was investigated:

Was there a difference in achievement in word knowledge, reading comprehension, total reading and mathematics computation of elementary school students educated bilingually and elementary school students educated traditionally? Also, was there a difference in self-concept and attitude toward reading of elementary school students educated bilingually and elementary school students educated traditionally?

The following hypotheses were tested in the study:

(1) There is no significant difference in achievement in word knowledge, reading comprehension, total reading and mathematics computation between bilingually educated and traditionally educated elementary school students.

(2) There is no significant difference in self-concept and attitude towards reading between bilingually
educated elementary school students and traditionally educated elementary school students.

(3) There is no significant difference in achievement in word knowledge, reading comprehension, total reading and mathematics computation between bilingually educated elementary school students and traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

(4) There is no significant difference in self-concept between bilingually educated elementary school students and traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

(5) There is no significant difference in attitude toward reading between bilingually educated elementary school students and traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

DEFINITION OF TERMS

Bilingual Education - The use of two languages as a medium of instruction for part or all of the curriculum with attention given to the cultural values and heritage of both the majority and minority culture. In the program under consideration in this study, the two languages were English and French.
Traditional Education - The use of one language, English, as a medium of instruction in all curriculum areas. Students may be exposed to a second language through foreign language teaching, and attention may or may not be given to the cultural values and heritage of the minority culture.

English-speaking-Level - Classification of students as either dominant-English speaking or limited-English speaking. Basis for classification in this study were the results of the instruments: Louisiana State Parental Survey of Home Languages, Total Reading score of the Metropolitan Achievement Test (prior-year spring testing results), and a Teacher Student-Evaluation Form.

Achievement - Raw scores gained on the Reading and Mathematics Subtests of the Metropolitan Achievement Test, 1970 edition, Form F.

DELIMITATIONS

The sample of students used in this study was limited to third- and sixth-grade students in the six primary and elementary schools of St. Martin Parish which operated both bilingual education programs and traditional education at these grade levels. The total student population tested consisted of 236 students. Areas investigated in this study were limited to reading and mathematics achievement, self-concept and attitude toward reading.
SIGNIFICANCE OF STUDY

There was expressed agreement from authorities in the field that one of the problems facing bilingual education programs everywhere in the United States was the lack of in-depth research into the impact that bilingual education was having on academic achievement of the students enrolled (U. S. Commission, 1975, Tucker, 1977, Gonzales, 1977, Harrington, 1980, Ramirez, 1977, Fourth Annual Report, 1979, Dulay and Burt, 1980). Investigations considering the influence of bilingual education on self-concept or attitude towards reading were less abundant. Further, much of the research which did exist was considered by many to be fraught with contradictions and methodological weaknesses.

There was also agreement by authorities in the field that the available research in bilingual education had produced inconsistent and often contradictory results. Research on the influence of bilingual education on academic achievement, Powers (1978) reported, could be organized into three categories: (1) those studies which showed a favorable effect of bilingual education; (2) those which showed no effect of bilingual education; and (3) those which showed a detrimental effect of bilingual education. Also, Cohen and Laosa (1979) revealed, research had not supported one approach to bilingual education over another (as brought out in the preceding section). From their review of research studies of bilingual education programs from various regions of the
world, Cohen and Laosa had found success indicated for at least four different approaches to the teaching of pre-literacy and literacy skills:

(1) Literacy in the primary language was introduced one to three years before the introduction of literacy in the second language.

(2) Literacy was introduced directly in the second language, that is, without teaching literacy in the primary language first.

(3) Literacy in the primary and the second language was introduced at the same time.

(4) Literacy in the primary language was introduced after literacy in the second language had been established.

Cohen and Laosa (1979) also found success achieved for at least three different approaches to subject-matter acquisition:

(1) The primary language was the sole medium of instruction for the first one to five years.

(2) The second language was the sole medium of instruction for the first one to five years.

(3) The primary and the second language were used as media of instruction at the same time.

The apparent contradictions in the findings for bilingual education were felt by several authorities (Cohen and Laosa, 1979, Dulay and Burt, 1980, Troike, 1978) to be due
to a number of factors, including weaknesses in the research designs and research methods employed. Dulay and Burt (1980:33) produced a list of shortcomings they found in a large group of research studies which led them to reject 95 per cent of the reports they surveyed:

1. No control for subject's socioeconomic status
2. No control for initial language proficiency or dominance
3. No baseline comparison data or control group
4. Inadequate sample size
5. Excessive attrition rate
6. Significant differences in teacher qualifications for control and experimental groups
7. Insufficient data and/or statistics reported

Cohen and Laosa (1979) included methodological weaknesses among the probable causes of the contradictions in the research but pointed to a number of other factors as well: (1) the educational treatments investigated; (2) characteristics of the students in the samples investigated; (3) the contexts in which the programs took place; and (4) interactions among these factors. Cohen and Laosa's thesis for the first factor was that in order to account for different results, research and evaluation studies should specify in detail the curricular aspects of the programs, since not only was there curricular variation among the different bilingual education programs studied but also wide curricular variation within the same programs over time. Considering student characteristics, Cohen and Laosa felt that, among others, variables such as culture, age, sex, language and socioeconomic status could influence the relative success of a bilingual education program. In discussing
context, Cohen and Laosa referred to the social milieu in which the bilingual program was offered and the motivation of the parents in accepting bilingual education for their children. In their discussion of research design and methods, Cohen and Laosa included some of the same aspects as Dulay and Burt but also pointed out several other problem areas: (1) Studies employed different measurement techniques to tap the same aspect of performance, making it difficult to make comparisons or draw conclusions accurately; (2) Instruments were used which were at best tangentially related to the objectives of the program; (3) Instruments were used that were inappropriate for making comparisons across different cultural and language groups; and (4) One-group designs were frequently used, and changes were attributed to the impact of the method.

One important aspect of this study was that it was research needed to fill an obvious gap in investigation in the area of bilingual education in general and, specifically, in the State of Louisiana. The last composite analysis of the results of bilingual education programs in Louisiana, according to Bill Foster (Information Liaison, National Bilingual Educational Service Center, Lafayette, Louisiana), was done for the 1975-76 school year and then only for the French-English Title VII ESEA programs. Subsequently, student achievement on the Louisiana State Assessment Test was compared for students in bilingual education programs but only for the Fall, 1977-78 assessment (Louisiana Statewide
Pupil Assessment, Fall, 1977-78). Further, only four research studies in the area of bilingualism had been conducted of programs in the State as of this writing. Two of these studies—one performed in Lafayette Parish by Morgan in 1971 and the other in Vermillion Parish by Broussard in 1977—primarily concerned themselves with French-English bilingualism rather than with the bilingual education program themselves (Broussard, 1977). Only the study performed by Gardiner in St. Martin Parish in 1974 and by Childress in Avoyelles Parish in 1980 considered differential academic achievement of bilingually and traditionally educated elementary school students.

The present research was also significant because it offered one opportunity for objective study of a bilingual education program under conditions which more closely applied the techniques of experimental research. Since the inception of bilingual education in Louisiana, the Parish involved in this study, like each parish in the State which had a Title VII bilingual education program, performed annual evaluations; but these were done primarily according to one-group designs or were comparisons made against local or national norms, using post-test results. Also, evaluations in this Parish had not considered the effect of the program on self-concept or on attitude towards reading. Moreover, neither parish evaluations nor any of the previous research studies conducted in the State had considered the differential impact of bilingual instruction
on students who were either limited-English or dominant-English speaking in Louisiana. Although the present research did not claim to be free of all the shortcomings pointed out by Cohen and Laosa and Dulay and Burt, it did claim to make provisions for many of the factors considered relevant to the study of the effectiveness of an educational program. These included: use of a control group, adequate sample size, control for initial proficiency in English reading, and consideration of the potential impactive variables of sex and race.

Further importance of this study was established after interviews with staff members at the National Bilingual Educational Service center in Lafayette, Louisiana. These staff members revealed that the program being investigated in this study was considered exemplary and was being replicated in several other parishes in the State. The results of an objective evaluation of the target Parish, then, could also provide valuable information to the other parishes which were implementing the same approach. This study could confirm the belief by educators in these parishes that the program, as it had been designed, was having a significant impact on the educational achievement of students enrolled. It could also point to areas of need that were going unserviced, and thus, possibly lead to revisions and additions in project offerings. Finally, it could demonstrate to the communities and to the local school authorities whether or not there was a need for continued moral
and financial support of the programs in the community.

ORGANIZATION OF THE STUDY

Chapter 1 was devoted to the problem being studied, the significance of the study and definitions of terms related to the study. A review of selected literature is presented in Chapter 2. Chapter 3 includes a description of the evaluative instruments used, the population studied and the procedures employed for collecting data. Presentation, analysis and interpretation of data are presented in Chapter 4. Chapter 5 contains the summary, results and conclusions and recommendations for further study.
History and Background of Bilingual Education in the United States.

Bilingual education in the United States has had a rather long and erratic history, dividing itself into two main periods—pre-World War I and Post-1963. The first bilingual schools, founded before 1800, were chiefly parochial elementary schools in New England and the Southwest. Many were German schools located throughout the country, but there were also French schools in New England and Scandinavian and Dutch schools in the midwest. Most of these schools, however, "were not actually bilingual in their curricula; they were non-English schools where English was taught as a subject" (Cohen, 1975:29).

The first public bilingual school was founded in 1840 in Cincinnati where a large group of German-speaking immigrants concentrated. In this early program, German was introduced as an optional subject rather than as a medium of instruction. During the period from 1849 to 1919, however, there were schools in Cincinnati, Cleveland, Milwaukee and other areas with heavy concentrations of German-speaking families in which at least part of the curriculum was taught in German. Also, during this period, French was being used as a medium of instruction in Louisiana, and from 1948, Spanish was used in New Mexico. Various other ethnic
groups provided after-school language classes in such languages as Chinese, Greek and Hebrew, but these were language-development classes rather than bilingual education. The languages were taught as subjects for children who were learning only English in public schools so that their traditional family language could be maintained (von Maltitz, 1975).

The decade from 1913 to 1923 saw the staging of a great Americanization movement in the United States, and bilingual schooling—in the sense of instruction in and through two languages—disappeared from the U. S. scene. By 1923, thirty-four states had passed statutes requiring English to be the only language of instruction in the public and private schools. This action, essentially a rejection of alien cultures and languages in favor of everything American, was an expression of the melting-pot philosophy, with the schools seen as the vehicles for transmitting the tool needed for full participation and contribution to American life—the English language. From 1920 to the late 1950's, there were scattered attempts to maintain the use of the native language as instructional medium for Mexican American students in some parts of the Southwest, but these did not alter the general pattern of language schooling during this period (U. S. Commission, 1975). Attempts to meet language needs at this time took the form of English as a Second Language (ESL) programs for the limited-English-speaking/non-English-speaking children and foreign language
instruction for English-speaking children. During the late 1940's, ESL programs were expanded considerably, with no effort to develop children's knowledge of their native language and culture. In the late 1950's, foreign language programs, especially for college-age students and adults, were being offered, but it was not until the 1960's that foreign language teaching in the elementary schools (FLES) was offered to any extent to young children (Cohen, 1975).

The establishment of a bilingual education program in Miami, Florida, in 1963 marked the beginning of the second period of bilingual education in the United States. The program, supported by a grant from the Ford Foundation, was established at the Coral Way Elementary School in Dade County for grades one through three and was designed for Spanish-speaking Cuban students and English-speaking Anglo American students in the county. At first only part of the school participated, primarily children with English-speaking parents, but by the second year, all Spanish- and English-speaking children were involved (Cohen, 1975). Anderson (1971:428) described the program in some detail:

During half of the school day subjects are taught in the pupil's native language—in Spanish to Spanish-speaking children by Cuban teachers and in English to English-speaking children by native American teachers. During the other half of the school day, the concepts which have been introduced in the native language are reinforced in the pupil's second language. Once the children have acquired adequate control of the second language, concepts are introduced in the native language of the teacher regardless of the native language of the student. From the beginning, the children are mixed on the playground and at lunch, in music, and art and are free to speak in either language.
During the next few years, similar local programs were launched in cities and towns in Texas, New Mexico, California, Arizona, New Jersey, and the Virgin Islands for Mexican American, Puerto Rican and American Indian Children. By 1971, Anderson (1971) estimated, there were about 100 such programs in the country. This resurgence of interest in bilingual education, von Maltitz (1975:7) stated was fostered by two factors: "the growing determination of various ethnic minorities (especially the two Spanish-speaking groups--Puerto Ricans and Mexicans) to maintain their ancestral languages and life styles and the schools' inability to educate many of the children from these ethnic groups... when using a language that the pupils had not yet mastered as the only medium of instruction." Anderson (1971) also noted that interest was stimulated on a national level by several events which made a traumatic impact on our national thinking: the realization that deficiencies in a second language led to an inability of our armed forces during World War II to communicate with our allies or others in any language but English; experiences with Sputnik, indicating our insufficiencies in the field of science and other aspects of education; and the Supreme Court's decision of 1954 to desegregate education which brought to the forefront the role that not only segregation but also poverty and linguistic deficiency played in our educational shortcomings.
The effort initiated at the local level in those states mentioned earlier was given impetus by the passage of the Bilingual Education Act in 1967. Attached as Title VII of the Elementary and Secondary Act (ESEA), the Act provided funds for three main activities: developing instructional materials, training teachers and other personnel, and providing special programs for children of limited-English-speaking ability (Cohen, 1975). In its wording, the statute focused on the widespread need for teaching children in a language they understood and could handle. More important, it recognized the need to preserve the language and culture of minority children in the United States. In this Act, the population to be served was limited-English-speaking students from ages three to eighteen from low income families. The Act also stipulated the necessity for making the benefits of the program available to similar children in private or parochial schools. Another provision of the 1967 Act was that English-speaking children should have an opportunity to learn the non-English mother tongue of their classmates (Anderson and Boyer, 1970).

The Bilingual Education Act, as enacted in 1967, was to be in effect for five years. However, no funds were appropriated for support of bilingual education programs until fiscal year 1970. During that year, according to Anderson (1977), some seventy-six programs in seventy different cities located in the states of California, Texas, New Mexico, Arizona, New York and Louisiana were funded.
These programs involved some sixteen different languages, the majority of which, sixty-eight, were Spanish-English combinations serving Mexican Americans in the Southwest and Puerto Ricans on the East Coast. Most of the programs, Anderson (1971) indicated, were located in elementary schools only, although eight were in secondary schools and fourteen were at both levels. Besides these federally funded programs, Anderson (1971) estimated, approximately 100 locally supported bilingual education programs were in operation at that time.

During the 1971-72 school year, there were 163 bilingual education programs supported by the Bilingual Act, serving approximately 86,000 children (Anderson, 1971). By 1973, the future of the Act was in doubt with the reorganization of governmental departments under the Nixon Administration, but Congress passed legislation in 1973 to continue the Act on a one-year basis. For the 1973-74 school year, no new programs were accepted, but 220 programs were continued, serving over 100,000 students (Cohen, 1975).

Federal support for bilingual education was extended with the passage of the Education Amendments of 1974 (von Maltitz, 1975). With these amendments, the compensatory aspects of the bilingual education program were minimized in comparison to the Act of 1967, Pifer, (1979) reported, the stated aim being to establish equal educational opportunity for all children. Also, Harrington (1980) revealed, the amendments continued to strengthen the emphasis on
English-language purpose when it said that the goal of the bilingual education program was to permit a limited-English-speaking child to learn as effectively in English as in the child's native language. With the passage of these amendments, according to Cohen (1975), many of the initial programs were continued, although some of these had already been absorbed in part by the local school boards or supported at the state level. In its final report on state programs in March of 1977, Development Associates, Inc. (1977) reported eleven states operating state bilingual education programs during the 1975–76 school year with approximately 533,000 students enrolled, 80 per cent of whom were Spanish speakers. Federally funded projects at the same time numbered 325, with instruction, according to Development Associates, Inc. (1977) figures, being given in seventeen different languages. These federal projects, as cited by the U. S. Commissioner of Education (1976), were serving over 190,000 students.

Broadening of the mandate for bilingual education at the federal level, according to the Fourth Annual Report, (1979), was provided not only by the enactment of the Amendments of 1974 but also by the incorporation of bilingual education provisions into several previously enacted laws. These included Emergency School Aid, Vocational and Adult Education, Library Services, Civil Rights, Indian Education, Cooperative Research, Higher Education, Educational Professional Development and Education of the Disadvantaged. Under
the Emergency School Aid Act of 1972, Mackey and Beebe (1977) reported, bilingual projects were authorized for migrant education (Title I-Migrant, ESEA) and Indian Education (Indian Education Act of 1972), and other funds were made available through the Ethnic Heritage Program (Title IX). In addition, Mackey and Beebe emphasized, local school systems utilized other titles of ESEA—Titles I, III, and IV—plus programs of the United States Office of Economic Opportunity as well as state government programs to fund projects involving bilingual education.

Interest by states in expanding bilingual education and passing bilingual education laws was spurred by the famous Lau v. Nichols case in 1974. The Supreme Court decided in that case, Mackey and Beebe (1977:10) revealed, that "a city school system in the State of California had denied 1,800 students of Chinese ancestry, who did not speak English, a meaningful opportunity to participate in the public education program by failing to provide them with special instruction in the English language." This, the Court said, was a violation of these students' civil rights, and any school system with significant numbers of non-English-speaking students which did not provide special English-language classes were ineligible for any form of financial assistance.

In order to meet the needs of non-English-speaking students, Lopez (1978) reported, the Court demanded in Lau v. Nichols that districts 'fashion appropriate relief' to
rectify the language deficiency in order to open instruction to students deficient in English-language skills. As such, the Court did not mandate bilingual education, Lopez stated. However, when the Lau Guidelines were released by the Office of Civil Rights in the fall of 1975, Milan (1978) revealed, they openly endorsed bilingual education as the preferred alternative for remediation in the majority of cases and even went so far as to prescribe it in some cases.

While the Supreme Court in Lau v. Nichols did not specify or dictate that bilingual/bicultural education be the vehicle for providing a meaningful education to non-English-speaking students, subsequent lower court cases suggested it should be. Lopez (1978) considered three of these cases to be very important in that regard: (1) Serna v. Portales Municipal Schools; (2) Aspira of New York, Inc. v. Board of Education, City of New York; and (3) Keyes v. School District No. 1, Denver, Colorado.

In the "Serna" case, Lopez (1978:4) reported, the Court ruled that bilingual instruction was a remedy to meet the Lau decision when it said: 'a student who does not understand English and is not provided with bilingual instruction is therefore precluded from any meaningful education.' This was the first time, Lopez asserted, that a court expressly required bilingual education as a remedy.

In the "Aspira" case, Lopez revealed, consideration was given to who should receive bilingual instruction. The Court ruled that all Hispanic students who scored above the
20th percentile were to receive bilingual instruction provided their Spanish proficiency exceeded their English-language facility.

The "Keyes" case, according to Lopez, was a desegregation case. However, a bilingual education program was part of the desegregation plan. The Court approved the bilingual program as an option to desegregation so that students who were non-English speakers could receive instruction in academic areas in their native language (in this case, Spanish) until they could compete effectively in English.

The 1978 Amendments to the Bilingual Education Act were hailed by several bilingual educators as a move forward in bilingual education. Although these amendments continued to place emphasis on the English-language purpose in bilingual education, Harrington (1980) noted, they covered linguistically different children who not only had difficulty speaking and understanding the English, but also who needed help reading and writing it (Pifer, 1979). In addition, Pifer asserted, the amendments committed substantial funds for research and teacher preparation. They also allowed for up to 40 per cent of the participants in bilingual education programs to be children whose first language was English; and they authorized more money for curriculum development. Data from the Guide to Title VII ESEA Bilingual Education programs, 1979–80 (1980) indicated that, for the 1979–80 school year, 534 bilingual education projects had been funded in the United States in forty states, with an
additional twelve projects funded by the Act in territories outside the United States. Using the 1979 data, de Valdes (1979) reported that 260,000 children in thirty-nine states in the United States were learning their academic subjects in both English and their home language. These programs involved more than sixty languages, with 80 per cent of the children in the programs being Spanish speakers.

In addition to projects financed through the Act and its various Amendments, bilingual education programs of various types were maintained by local or state funds. After the passage of the 1967 Act, Mackey and Beebe (1977) reported, many resolutions were proposed and adopted in state legislatures mandating bilingual education and urging that colleges and universities assume greater responsibility for training bilingual teachers. Massachusetts, New Mexico, New York, Connecticut, Pennsylvania, Texas and California all passed mandatory bilingual education legislation requiring public schools to offer instruction on a bilingual basis if a significant number of their students were non-English speaking. One of the first new state laws governing bilingual education, according to Mackey and Beebe (1977), was the Massachusetts Transitional Bilingual Act of 1971; Massachusetts was the only state at the time both mandating and funding bilingual instruction. Other states mandated bilingual education without providing necessary funds, Mackey and Beebe revealed, without compelling implementation of bilingual instruction, as was the case in New Mexico, New
York, and Washington.

Subsequent years saw increased state support for bilingual education. By 1971, the Fourth Annual Report (1979) revealed, thirty of the fifty states permitted or required some form of bilingual instruction in local classrooms. Twenty states prohibited such instruction. By 1975, the number of states prohibiting bilingual education had dropped to ten, and as of 1979, bilingual education was permitted in every one of the fifty states, although only twenty-two states had actually adopted legislative or executive provisions and provided funding for such instruction.

A detailed analysis of the provisions of the state legislation on bilingual education was provided in the Fourth Annual Report (1979). This included state provisions for program type, population to be served, language to be used for instruction, among others.

All of the states that adopted legislation, The Fourth Annual Report revealed, were guided by the federal Bilingual Education Act of 1967 and made provisions for transitional programs. Four of the states, however, made provisions for maintenance bilingual programs as well. These were Alaska, California, Louisiana, and New Mexico. All of the programs had English-language competency development as a major component of the program. Additionally, some states provided for the development of native-language competency. With respect to the language of instruction, the Fourth Annual Report revealed, the majority of the laws provided for the
use of two languages for instruction. In terms of program type, state programs were considered either Maintenance, Transitional Bilingual, ESL or Language other than English as a Second Language. Descriptions of these were presented in another section of this paper.

Included in other provisions of the various state legislations were factors related to grade levels to be included and length of time for student participation. The majority of states, the Fourth Annual Report revealed, did not place a limit on the grades which might be served, although several states gave priority to some grade levels, particularly the primary and early elementary grades, and funded the programs accordingly. Also, the majority of states did not restrict the length of time students could participate in the program.

In addition to state-level initiative, Mackey and Beebe (1977) reported, support for bilingual education also came from municipalities, especially from those with large numbers of non-English-speaking children. The biggest of these was New York City, a great percentage of whose million-and-a-half pupils spoke Spanish at home. As of 1976, the Third Annual Report of the National Advisory Council on Bilingual Education (1977) revealed thirteen states were providing local educational agencies with supplementary funds in support of bilingual education.

The largest language group consistently being served by bilingual education programs in public schools, according
to von Maltitz (1975), was the ten million Spanish-speaking students in the United States, made up of two segments: Puerto Ricans and Mexican Americans. Of the 164 federally supported bilingual programs in operation in 1971, 130 were exclusively for Spanish-speaking students. Although by 1978, the federal government funded programs using seventy-four languages, Pifer (1979) reported, 65 per cent of the money went to Spanish-English bilingual education. These programs were largely centered in Texas and California, with New York State having the next highest number. Other languages used in the projects included Chinese, Portuguese, Russian, American Indian and French (von Maltitz, 1975).

In his assessment of the bilingual education movement in the United States, Pifer (1979) commented on the remarkable growth and energy of the movement over the past twelve years. But, he asserted, its proponents had had reason to despair over the many problems of implementing it effectively on a broad scale. Much like Head Start and Follow Through before it, Pifer stated, bilingual education was at that time on the defensive, and in the short time remaining before the Act was due for reauthorization, all those who believed in it would be under pressure to prove its worth to a skeptical public.

Indeed, Pifer's analysis of the situation seemed to be on target, judging from recent legislation and subsequent decisions made by the Reagan administration. According to the Fourth Annual Report (1979), the new legislation had
created an incentive-funding approach designed to encourage the institutionalization of bilingual programs at the local level. Emphasis was on capacity building at all levels, the Fourth Annual Report revealed, designed to sustain a long-term commitment at the state level and local level. Federal involvement in the decisions about bilingual education was further curtailed just a few months ago when the new Secretary of Education, Terrel H. Bell, rescinded the guidelines that would have mandated bilingual education for children deficient in English ("Lau and Order," 1981). This rescinding did not affect programs fashioned by local school districts, but it did ensure that in the future, school districts receiving federal funds would be able to choose just how they planned to overcome English-language deficiencies.

**Bilingual Education: Definitions, Approaches and Models.**

One feature of bilingual education which was reflected in the literature was the different definitions of this method of teaching offered by authorities in the field and the various approaches and models in practice throughout the United States and the world. This variety not only reflected different philosophical points of view but also the fact that the planning and developing of bilingual education projects were done locally to suit the needs and characteristics of each community involved.

**Definitions.** The differences in definitions offered for bilingual education seemed to be based on whether the author considered cultural development and/or language develop-
ment as key components of the process or whether he saw bilingual instruction primarily as a means of transition, bridging the gap in instruction until the English language was learned.

A definition which encompassed all of these aspects was provided in the Project Manual accompanying the Bilingual Education Act of 1967 (as presented in Anderson, 1971: 432). Bilingual education was defined there as

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

Later in its Declaration of Policy, the Manual stated: "It is intended that children participating in this program will develop greater competence in English, become more proficient in their dominant language and profit from increased educational opportunity" (Anderson, 1971:432).

von Maltitz's (1975:63) definition included the same features, stressing the use and study of both languages in a bilingual education program and placing an emphasis on "developing a knowledge and understanding of the differences in manners, mores, history and cultural characteristics and values of the two (or more) groups."

In their definition, John and Horner (1971:178) included the idea of using two languages for instruction with indirect consideration of native-language development. "A bilingual school is a school which uses, concurrently, two
languages as a medium of instruction in any portion of the curriculum except the languages themselves. The teaching of a vernacular solely as a bridge to another, the official language, is not bilingual education."

Cohen (1975:18) defined the process similarly with no mention of the function of language and cultural development in the process and distinguished it from elementary foreign languages programs (FLES) and ESL programs. FLES, Cohen (1975:20) described as a foreign language program "designed to teach languages like Spanish and French to Anglo children in the later elementary grades and in junior high." ESL was "usually a crash program throughout the grades (1-12) to teach productive and receptive skills in English using foreign language teaching techniques." In a bilingual education program, an ESL component was an essential part, but, Cohen stated, it "must be accompanied by instruction in and through the first language of students."

The definition offered by the U. S. Commission on Civil Rights (1975:3), though it did emphasize minority-culture development, suggested a transitional use of the native language. Bilingual, bicultural education, the Commission stated, was "instruction using the native language and culture as a basis for learning subjects until second language skills have been developed sufficiently."

Definitions by Stern and Willink reflected a view of bilingual education as a total educational approach for developing bilingualism and for minority-language develop-
ment. Bilingual education, Stern (1972:1) offered, is schooling "provided fully or partly in a second language with the object in view of making students proficient in the second language, while at the same time, maintaining and developing their proficiency in the first language and fully guaranteeing their educational development." It was not enough, Willink (1973:179) asserted, that "one language, English, is taught for explanatory purposes." Bilingual education should mean that both languages were taught to the same extent that dominant nationalities—English, German and French—taught the native language to native children.

**Approaches.**

Typical American Bilingual education projects provided instruction in the native language of the students in the early grades, pre-kindergarten and first grade, and introduced English by degrees. The bilingual programs usually operated side by side with the English-monolingual program in the same school with the content of what the two groups learned similar except that bilingual education students learned in two languages, and usually both the cultural heritage of limited- and dominant-English-speaking students were considered. An additional feature was that second-language instruction for both limited-English-speaking and English-speaking children was provided (U. S. Commission, 1975).

Because the development of bilingual education programs...
was done locally to suit the needs and characteristics of
the particular community involved, there was considerable
variety in the approaches to instruction used in the differ­
ent projects in different sections of the country.

Cohen (1975:18) distinguished between two major organi­
zational methods used in bilingual education— one-way and
two-way. In a two-way bilingual education program,

the children in each ethnic and linguistic group

learn curricula through their own language and
through a second language. All curricula are
taught in both languages to both groups, or per­
haps just certain subject matter (such as social
studies). . . . the different native language groups
are kept segregated, sometimes just for the first
two or three years of primary school.

Cohen (1975), in the same source, also described sev­
eral instructional approaches that had been employed in
bilingual education programs. In the Repeated Teaching
Method, the same subject matter was taught in both languages;
for example, math in English in morning and math in Spanish
in the afternoon. With the Alternate Days Approach, subject
matter was taught in one language on one day and continued
with new content in that same subject matter in the other
language on the following day. Teachers using Simultaneous
Translation taught a lesson in both languages simultaneously
by translating word by word, sentence by sentence or para­
graph by paragraph. With Functional Specialization, some
subjects were taught in one language and other subjects in
the other. Delayed Bilingual Education involved learning
subject matter primarily in the native language in the early
primary grades, shifting to instruction in the dominant or
official language in certain content areas (such as math and science) or in the entire curriculum in the late primary or early intermediate grades. Still another approach involved presenting all material in the second language; also, some teachers utilized continual alternation of one language with the other when teaching the same subject matter.

Two distinct approaches, also described by Cohen (1976), made use of innovative techniques primarily practiced in Canada: the Total-Immersion, or home-school language switch, approach and the Partial-Immersion approach. The Total-Immersion approach was intended as an initial phase in bilingual education. In this phase, all instruction, kindergarten and grade one, was given in the student's second language. Students were segregated linguistically, with native-language speakers introduced gradually to provide native peer models of the students' second language. The teachers were bilingual, but, like the students, only the second language was used in this phase for instruction and communication. Language arts instruction in the students' native language began in the second, third, or fourth grade, and content subjects in the students' native language were introduced by the fifth grade. This approach was seen as a means of achieving functional bilingualism both for the majority- and minority-language-group child.

In the Partial-Immersion approach, students received instruction through the medium of their second language in
the morning and through the medium of their native language in the afternoon.

Models.

The most extensive topology of models of bilingual education was offered by Mackey (1970). Using as the basis for his classification the number of languages used in instruction, the language-development pattern, the distribution of languages, the direction of language use toward assimilation or acculturation and the manner of changing language medium in instruction, Mackey outlined eight distinct models. Though all were called bilingual education models, four characterized programs using a single medium of instruction. These were called bilingual, Mackey (1970:598) stated, because "they serve children whose home language is different from the school language, the area language or the national language." With the Single Medium Accultural Transfer Model, one language, the language of the home, became the language of learning in the school. However, the direction was toward eventual acculturation with transfer to the language of the wider culture. In those programs using the Single-Medium Accultural Maintenance Model, the dominant home language was taught as a subject without being used as a medium of instruction. It was the purpose of this model to maintain the home language by teaching it as a subject. Use of this Single-Medium Irredental Transfer Model occurred when the home language was used as a medium of instruction with eventual transfer to the national language. In some
schools, the Single-Medium Irredental Maintenance Model was used. Here, the dominant language was maintained as a school subject while the home language was used as a medium of instruction.

With the four dual medium models, the home and the second language were both used to convey knowledge. The Dual-Medium Acculturational Transfer approach used both home language and the language of the wider community to transmit knowledge with the aim of preparing the children ultimately for education via the language of wider communication. The Dual-Medium Irredental Transfer Model required use of the language of the home as a medium of instruction with the second language being taught as a foreign language. With the Dual-Medium Differential Maintenance Model, some subjects, usually the culture-based subjects, were taught in the home language while other subjects were taught in the second language. When the Dual-Medium Equal Maintenance Model was practiced, the use of the two languages was not distinguished by subject; rather, use was alternated on some time scale—day, week, month or year (Mackey, 1970).

Fishman's (1976) classification of bilingual education programs into four broad categories was based on the kinds of sociolinguistic development implied in the objectives of various programs for Spanish-speaking students. One type, Fishman called Transitional Bilingualism. This type, equivalent to Mackey's Dual-Medium Acculturational Transfer Model, used the mother tongue as the medium of instruction in the early
grades until skill in English was developed, when it (Eng-
lish) would be used as the sole means of instruction. This
approach did not encourage fluency in the mother tongue;
rather it sought language shift after the English language
was mastered.

Fishman's second type, Monoliterate Bilingualism,
stressed development in both the native and the English
languages for oral-aural skills such that the native lan-
guage remained active in the domains of homes and neighbor-
hood; but it did not emphasize development of literacy skills
in the native language such that it could become a language
of formal use. Type three, Partial Bilingualism, equiva-
 lent to Mackey's Dual-Medium Differential Maintenance type,
sought fluency and literacy in both languages, but literacy
in the mother tongue was restricted to subject matter related
to the cultural heritage of the ethnic group. Type four,
Full Bilingualism, was equivalent to Mackey's Dual-Medium
Equal Maintenance Model and occurred when both languages
were used as media of instruction for all subjects with con-
sideration for maintenance and development of the minority
language.

Other models were offered by Burt and Dulay (1975),
von Maltitz (1975), Kjolseth (1973) and John and Horner
(1971). Burt and Dulay's models--Full Bilingualism and Par-
tial Bilingualism--and von Maltitz's classification of bilin-
gual education programs into either the Transitional or the
Maintenance type, each found a match with one of those
offered by Mackey or Fishman. Kjolseth classified bilingual education programs according to their ultimate goal: They were Pluralistic if they promoted maintenance of the ethnic language and Assimilationist if they promoted shift in ethnic language after skills in the English language were mastered.

Of the four models offered by John and Horner (1971)—Informal, Supplementary, Transition and Two-Way—two were equivalent to the similar classifications from Fishman. The others, Informal and Supplementary, were defined according to the amount of time and attention paid to instruction in two languages. In the Informal model, instruction and communication through two languages were circumstantial, brought on by the use of paraprofessionals in the classroom. With the Supplementary Model, instruction through two languages was a little more organized with dual medium instruction offered to small groups, and movement to reading in English occurred after a certain proficiency in the native language was achieved.

Rationale for Bilingual Education.

As might be expected, opinions as to the desirability and need for bilingual education in the United States were far from uniform among educators, parents and other community members. From what was reflected in the literature, however, the concept seemed to have a larger store of proponents than it had critics.
The basic premises most frequently included in a rationale for bilingual education were well outlined in a publication by the United States Commission on Civil Rights (1975). One major point of contention focused on the part bilingual education played on improving academic achievement, particularly the development of reading skills for students who were bilingual or limited-English speaking. In the schools where all instruction was through English, supporters explained, attempts were made to teach these students to read when they had only rudimentary oral skills in the English language. Most of the students were not ready to read English because they were unfamiliar with the language and the cultural experiences which formed the background for reading. Further, their knowledge of the grammar of the language was minimal, and many of the subleties and shades of meaning of English needed to decode words and to understand concepts were very slowly acquired.

Most of the skills necessary for learning to read, proponents of bilingual education asserted, could be developed through the use of the bilingual child's native tongue. The child learning to read his native language had already learned most of the grammatical rules governing his own language. Using the native tongue capitalized on the language skills the child already had and thus prevented retardation in reading skill development until sufficient command of English was attained. Also since the basis for instruction in bilingual education was the cultural values, cultural heri-
tage and societal experiences of the bilingual child, he would be aided in understanding words which carry feelings and experiences. With this foundation, the child could be taught how to read and write in his native language and later transfer the reading skill gained in the first language to reading in the second language.

This point of view was shared by several authors. It was John and Horner's (1971) view that bilingual education could be used to help the young child at the most crucial ages between five and seven when words were becoming a medium of problem solving. Teaching the child the value of words for memory and thought could best be accomplished through use of his native language at this time. This achieved, the child could be expected to apply this knowledge to a second language which would lead not only to acquisition of that language but also to an extension of his intellectual skills.

Kobrick (1974) also pointing to the crucial role of language in problem solving, decried the permanent harm to intellectual development that could result from frustrating a child's native-language development. When a child entered school already speaking and understanding a language, Kobrick (1974:173) asserted, "he was ready to learn to read and write it. A bilingual education program which taught a child to read his own language at the same time that he was taught to speak, read, and write English would provide the child with the proper readiness to learn to read in both languages."
Gaarder (1972) pointed to the probable retardation in school work which would result for children who entered school with less competence in English than monolingual-English-speaking children if English were the sole medium of instruction. However, use of the mother tongue as medium of instruction, Gaarder affirmed, could result in the normal growth of the bilingual child's conceptual development and acquisition of other experience and information.

Willink (1973), in her discussion of the relationship of language to thought development, also made a case for bilingual education. Language development and particularly "mother-tongue development where the mother tongue is the child's dominant language," Willink (1973:182) suggested, is very important for thought development and "thought development is what education is about. Once the child has better learned how to think, and thereby how to learn, he is better equipped to learn anything he might need to learn--including his second language, English."

For Anderson (1970), bilingual education was a change in approach to education whose time had come. Educators were beginning to realize, Anderson (1970:44) suggested, that "the best medium, especially for the initial stages of a child's learning, is his dominant language." For von Maltitz (1975:64), "the logic of teaching a child to read and write first by using a language they speak and understand seems too obvious to need explanation."
A second basic premise advanced in a rationale for bilingual education was that learning in the native language enhanced the development of a positive self-concept which was necessary for success in school. A monolingual-English school system almost totally excluded the native language and culture of language-minority children from every aspect of the school process failed, the U. S. Commission (1975) wrote, to provide this and ultimately caused failure. Bilingual education helped the child make the transition from home to school more easily by reducing the difference between the language and culture of the home and that of the school. It utilized teachers, instruction, and instructional materials to which the language-minority child could relate and which reinforced the child's background and culture.

Supporting this idea were such authors as Gaarder (1972), Cohen (1975), von Maltitz (1975), Kobrick (1974), and Christian (1973) and John and Horner (1971). Gaarder (1972:52) supported the belief that "use of a child's mother tongue by some of the teachers and as a school language is necessary if there is to be a strong mutually reinforcing relationship between home and school." If a school rejected the mother tongue of an entire group of children, Gaarder stated, "it can be expected to affect seriously and adversely those children's concept of their parents, their homes and themselves."
Cohen (1975:21) shared this view when he asserted that "learning in the vernacular minimizes culture shock for the child.. . .augments his sense of personal worth.. . .and it helps him establish a habit of academic success." Cohen saw as one key purpose of bilingual education the elimination of the stigma of being bilingual, resulting in children who had pride in their cultural heritage and who experienced academic success from the first day in the classroom.

von Maltitz (1975:63) singled out this aspect of bilingual education by noting that a major goal of the bilingual approach to instruction was to lead students "to believe in themselves, in their basic worth as human beings and in their native capacities." The students' self-confidence was reinforced when the language they spoke was acknowledged and respected and when some of their teachers were persons who used their language and belonged to their cultural community. When children received encouragement in the use of their mother tongue and when respect for their cultural and familial roots was demonstrated, students felt good and confident about themselves. Feeling this way, von Maltitz (1975) maintained, was of great importance in the motivation and the capacity of students to handle tasks successfully, in school or out.

Kobrick (1974) cited a belief by experts the world over that allowing the child to begin his schooling in the language he understood best would more likely make the child's first experience with school a positive one. John and Hor-
ner (1971:xxii) offered as an argument for bilingual education that "it was more human; that it enriches the school experience for the non-English-speaking child; and that it is a means toward the development of a more positive self image."

Anderson (1970), in his summary of the proposition on which a rationale for bilingual schooling in the United States rested, included the concept that bilingual education maintained and strengthened the sense of identity of children entering the school from homes where non-English languages were spoken. It eliminated the feeling of being a stranger imposed on a non-English-speaking child when English was the only medium of communication, and his language was banned from the classroom and playground.

Christian (1976:24) explained the basis for the "self-concept" premise in a rationale for bilingual education in more psychological terms:

If at school a child is taught in a language consisting in great part of sounds he has learned to regard as meaningless, arranged in structures he had been taught to reject, in terms of meanings he must consider invalid if he is to maintain the sense of reality he has acquired. . . he develops psychological problems and he has difficulty adjusting to the social world represented by the school. And if the only language he is taught to read and write further denies the validity of his own system and robs him of its meanings. . . literacy, so far as he is able to attain it, is not integrated into his self-concept as an aspect of his own personal reality.

A third consideration offered in a rationale for bilingual education was its contribution to the development of bilingualism not only for language-minority children but
also for dominant-English-speaking children as well (U. S. Commission, 1975). It provided an opportunity, proponents asserted, for children of all socioeconomic levels and racial ethnic groups to learn two languages through being instructed in the two languages and through the formal, second-language component characteristic of most bilingual education programs.

Cohen (1975:20) observed that instruction through a second language enhanced language learning since "a good way to learn a language is to have to use it as a vehicle for learning something else." The end result of the bilingual approach was to make each bilingual "functionally bilingual--able to understand, speak, read and write in both his first and second languages." According to von Maltitz (1975:67), Gaarder supported this theory in his statement that students learned more of a language and learned it better "if some subject matter is being taught through the medium of that language rather than only the grammar, lexicon and syntax of the language."

Kobrick (1974:174) provided an observation from another angle. Experience revealed, Kobrick stated, that "development of literacy in one's native language actually enhances the ability to learn English." Further, bilingual education allowed English speakers to learn a second language far more effectively than they could in a foreign language program because their classmates were native speakers.
In other observations, teaching bilingually was hailed as the great equilizer in educational opportunity for all children (U. S. Commission, 1975). John and Horner (1971:xxv) saw the bilingual-bicultural approach to education as facilitating the movement toward an open and varied society with full and equal participation for all groups. von Maltitz (1975:76) lauded the approach because, in his experience, "bilingual classrooms are happy productive places; by and large teachers and students who have the opportunity to participate in the projects are enthusiastic and confident that they are involved in a good education; Kobrnick (1974:171) pointed to the large failure and drop-out rates of Puerto Rican, Mexican American and Indian children in the traditional classroom and suggested that "one reason schools are failing in their responsibilities to these children is that they offer only one curriculum, only one way of doing things, designed to meet the needs of only one group of children. . .when English is the sole medium of instruction, when the child is asked to carry an impossible burden when he can barely understand or speak, let alone read or write the language."

That the traditional English-only approach to instruction resulted in the failure and dropout of large numbers of limited-English-proficiency students was pointed out by several sources, most of whom supported their thesis with statistical data. References for this statement were a publication of the United States Commission on Civil Rights
(1975), and the works of Anderson (1971), Blanco (1977), Makcey and Beebe (1977), Lopez (1978), Ogletree (1976) and Padilla (1977). Complete bibliographical data is given in the Bibliography. In general, their data showed that under the traditional system where English was the only medium of instruction, students with limited proficiency in English, in large percentages, dropped out before completing high school and were far behind dominant-English-speaking students in academic achievement.

Criticisms, Limitations.

Bilingual education was not without its critics, drawn from the same population which lauded its possibilities and accomplishments. Teachers, administrators and school board members questioned the advisability of teaching children in two languages simultaneously for fear that "confusion and inhibition in verbal expression and impairment of cognitive development" might result (von Maltitz, 1975:22). There were also those who felt that since English was of the utmost importance for full participation in life in this country, time should not be wasted on teaching the child's first language (if it were not English) but rather should be devoted to acquiring mastery of English. Still others asserted that bilingual education would encourage ethnic minorities "to assert their difference and their special identities in language use and distinctive cultural characteristics," and this would tend to "ferment political divisiveness rather than to strengthen a feeling of national
unity (von Maltitz, 1975:24). Some questioned the propriety of the school in providing literacy in the native tongue and suggested that parents seeking this should take care of it themselves by organizing after-school classes. An indirect criticism was the claim by some that elementary foreign language programs could do a better job than the bilingual classes (von Maltitz, 1975).

A major criticism of bilingual education was that bilingualism, one of the aims of bilingual education, would impair intellectual development (Anderson, 1971). Research investigating this belief had not been consistent in the results. Peal and Lambert (1972:1), in their discussion of the research since the 1920's involving Spanish American students, indicated that a large proportion of the studies concluded that "bilingualism has a detrimental effect on the intellectual functioning." However, there was a small proportion of the investigations which found "little or no influence of bilingualism on intelligence," and a few suggested that bilingualism might "have a favorable intellectual consequence." In their analysis of these contradictory findings, Peal and Lambert (1976:6) pointed to the lack of control for socioeconomic class and age in the studies, the inadequate measures of bilingualism used by the researchers and the idea that the "type of benefit that comes from bilingualism might not become apparent on standard intelligence tests." In the discussion of their own study conducted with ten-year-old school children in Montreal
in which there was control for all of these factors and where very intensive procedures were used to identify degree of bilingualism, these authors (1972:20) reported that "bilinguals performed significantly better than monolinguals on both verbal and nonverbal intelligence tests."

The research on the effects of bilingualism on the measurement of intelligence during the 50's was reviewed by Darcy (1963). The research she reviewed covered a variety of language groups, and, though the results, again, were not totally consistent, the bulk of the evidence, Darcy (1963:280) concluded, indicated that "while bilingual children received significantly lower scores on verbal intelligence tests than comparable monoglots, this inferiority does not hold if the tests are of a nonverbal type, particularly, if the monolingual and bilingual subjects are of the same socio-economic class."

Several sources, though not critical of bilingual education in concept, pointed to limitations of the program in practice as it was operated in the early 70's. Gaarder (1972), who provided a detailed evaluation of the first seventy-six federally funded projects, indicated two primary weaknesses: inadequate attention--time, resources, and understanding--to the other tongue as compared to the attention paid to English; and the poor preparation of teachers for bilingual schooling, resulting in the use of bilingual paraprofessionals from the community who were rarely required to be literate in the non-English tongue.
Further, von Maltitz (1975:30) suggested, many bilingual teachers also had an inadequate command of the English language.

Kjolseth (1973) in his description of two types of bilingual education programs for Mexican Americans in the United States, suggested that they were more assimilation than pluralistic. Contrary to their usual statement of program goals, most programs, Kjolseth asserted, encouraged the loss rather than the maintenance of the ethnic mother tongue.

Kobrick (1974), expressing a sentiment also shared by Wright (1973), lamented the selectivity of bilingual education under Title VII, which in 1972 was serving only 88,000 of an estimated five million non-English-speaking children. Also, von Maltitz (1975:28) saw as a major problem in many projects maintaining balanced proportions of children in bilingual classrooms "whose dominant language was English and those who spoke other language." This occurred, von Maltitz suggested, because many schools where bilingual programs were established had few English-speaking pupils enrolled. Similar views were expressed by Wright (1973:16) who remarked on the token numbers of English speakers in bilingual programs. Wright (1973), along with Mackey and Beebe (1977), and Pifer (1980) all commented on the scarcity of teachers fluent in languages other than English to implement even the most tentative bilingual programs. Teachers in two languages need special preparation, Pifer (1980) asserted. A teacher who happened to be bilingual was not
automatically qualified to undertake bilingual instruction nor was a monolingual teacher who had taken a few courses in a second language up to the job. Bilingual programs, Mackey and Beebe (1977) reported, were not having much success in finding enough Anglo teachers who were fluent in Spanish or the other language of the bilingual program.

Anderson (1970:63), pointing to an instructional problem in bilingual education, suggested that "the proper meshing of instruction of the non-English language is not simple." It required "sensitivity and skill, and teachers have great difficulty too in conceiving of languages as media of instruction and not just as subjects." Among other deficiencies in bilingual education, Fishman (1976) suggested that the programs suffered from a lack of evaluation programs—curricula, materials and methods. Pifer's (1980) assessment of the problem was that although there was much evidence of quality bilingual education programs, indications were that many of the programs were launched hastily with little empirical evidence of what worked, without adequate diagnosis of children's varying linguistic needs, without properly trained teachers or appropriate curricula materials and often without strong support of school administrators.

The Bilingual Education Effort in Louisiana.

In Louisiana, where many Black and White students spoke regional types of French, either Cajun, Creole or Gumbo, bilingual education classes under Title VII were first estab-
lished during the 1972-73 school year for about 450 children. This action came on the heels of a renewed interest by many persons in the State in maintaining the French language. Steps were being taken by some local officials at this time, according to von Maltitz (1975:46), "to encourage the survival of the French language in the State, including making arrangements with the French government to send French natives to teach in Louisiana schools." In 1968, the Louisiana legislature, in a unanimous decision, voted to "support the teaching of French in all elementary and secondary schools under the auspices of the Council for the Development of French in Louisiana." The deadline for implementation of the Act, Broussard (1977:2) stated, was the 1972-73 school year, "with school superintendents given the option to decide whether or not they wanted to implement French classes in their parishes."

The initial Louisiana Title VII projects, according to Broussard, (1977), were set up during the 1972-73 school year, and were French-English programs located in the parishes of St. Landry, Iberia, Evangeline, St. Martin, and Lafayette. These programs were aimed at helping pupils develop literacy in both French and English. Subsequently, other Title VII bilingual education projects were instituted in the other Louisiana Parishes of St. John, Jefferson, St. Charles, Orleans, Tangipahoa, Avoyelles, St. Bernard, Livingston, and Terrebonne. Of the projects in the state during the 1980-81 school year, twelve were English-French, three
Spanish-English, one was Italian-English, one was Hungarian-English and five were Vietnamese-English. These programs were serving approximately 17,500 students (Needs Assessments, Demographic Information, 1980).

Research and Evaluation in Bilingual Education

Issues and Methodology. From the inception of bilingual education in the United States, evaluators and researchers were faced with several major issues critical to their undertaking. For federal Title VII projects, the primary problem for evaluators was adherence to strict rigid guidelines in evaluation for programs that were flexible and loosely designed. ESEA, Title VII funding of bilingual education programs, Golub (1980) reported, required a quantitative pre-test and post-test estimate of pupil growth in English and the home language. Also required was a comparison of limited-English-proficiency students not in Title VII programs. This kind of comparison, as Golub described it, called for an evaluation research design with treatment- and control-group comparison, preprogram or entry base-line and exit comparison groups of norm-referenced or criterion-referenced testing data. However, Golub asserted, in nature, the bilingual education programs did not lend themselves to rigorous experimental control, and random assignments. Because of enrollment regulations, the population of bilingual education programs was a culturally and linguistically unique group, requiring loosely designed programs incompatible with measurement by standard measures.
Other issues in evaluating bilingual education programs were outlined by Carsruo (1980). A serious difficulty, Carsruo pointed out, was being able to locate appropriate instruments for measuring achievement objectives in bilingual programs. Language instruments were frequently subjective and many instruments measuring content were lacking in truly "equivalent" English/Spanish forms. Additionally, there was always the problem of potential cultural bias in English achievement tests.

A second issue, Carsruo indicated, was the problem of obtaining an appropriate sample of students in order to assess the objectives. Because of random assignments of students in this and many other programs, control groups were hard to organize, and at best, they were not comparable to the students participating in the project. Also, because of the high attrition rate among participants, it was difficult to measure longitudinal gains unless initial samples were large.

Other problems, Carsruo pointed out, concerned personnel changes in project or evaluation staff during the course of a long-term project. This often led to inconsistencies in a student's program or in the evaluation process. There was also a lack of evaluative models, Carsruo continued, and many questions concerning the best ways to measure change over long periods of time.

Some of the issues presented by Carsruo for bilingual education evaluations in general were true for locally
funded programs as well. However, there were conditions present in locally funded programs, according to Golub, (1980), which placed further limitations on the nature of the evaluation possible for these programs. In some cases, Golub reported, because of the haste with which the bilingual education program at the local level was started, the instructional and training objectives were never stated in writing or as measurable assessment objectives. Also, the problem was frequently not with finding appropriate tests to measure different factors but with finding any tests at all. At best, most programs only had a few teacher-made tests. Further, time schedules and staff responsibilities in schools were generally not allocated for the purpose of conducting program evaluations. This was compounded by the fact that personnel trained in data collection and analysis were usually not available to the average school district.

Besides these limitations, Golub reported, locally funded programs were interested in evaluating outcomes other than academic achievement. Among these were questions like the following: (1) How long do entering LEP students remain in the bilingual education/ESL program? (2) How does the secondary school "drop-out" rate of LEP students in bilingual education/ESL programs compare with the "drop-out" rate of non-LEP students in the regular program? (3) How many secondary school LEP students in bilingual education/ESL programs graduate compared to
non-LEP students? (4) How many LEP students in bilingual education/ESL programs repeat a grade compared to non-LEP students in the regular program? and (5) What are the perceptions of the parents and community, those with children in bilingual/ESL program and those without children in the bilingual/ESL program, about the bilingual program?

For Bruck and Cohen (1979), the issues in evaluation were more concerned with the methodology of researchers than the limitations of the research field. Many evaluators, they contended, failed to consider various characteristics of the independent variables in the program which might affect the outcome of the evaluation measures. One factor, they indicated, which needed to be considered was the lack of a standard bilingual education program with a treatment variable that was constant between program classrooms and even within a classroom. Bilingual education, they asserted, encompassed many different approaches, both quantitative and qualitative.

A second source of difficulty, Bruck and Cohen reported, arose when students from a variety of bilingual classrooms were considered as a homogeneous group in evaluations. At issues here was the fact that while many bilingual programs followed the same model, it was rare that any two classes followed the model in an identical fashion.

A third issue involved considering the background characteristics of the children attending the programs when planning the research design. Often results of bilingual
evaluation could be explained, Bruck and Cohen pointed out, by student characteristics which were not properly controlled for in the original design. These included such variables as home-language background, student's educational history, socioeconomical level of the family, sex and cognitive or personality styles.

Finally, Bruck and Cohen offered, determining a particular treatment, and various aspects of student characteristics, required a research design which included a description of ethnographic data and observation of classroom interactions. The two areas, classroom ethnography and summative, product assessment, they concluded, needed to be considered in unison so that results could be interpreted in terms of accurately perceived independent variables.

The following selection of research and evaluation studies were reviewed within the framework of the issues and methodological problems indicated by authorities in the field. No attempts were made, as with Dulay and Burt (1980), to separate those studies which adhered to sound empirical-research principles from those which did not. The bulk of the selection was comprised of evaluative studies of individual programs, although there were also some independent research studies.

Many of the studies in this selection reported results in terms of comparative achievement of the bilingually educated group and a control group or comparisons were made with national or local norms. Some studies used gains
achieved from pre- to post-test to illustrate results. For some studies, especially when criterion-referenced tests were used, results were reported in terms of the number of objectives achieved. For all studies reviewed, only the results which concerned language development, academic achievement, cognitive development or self-concept and attitude toward school or reading were included, although many of the evaluations reported other results as well.

For the sake of organization, the research studies were presented according to whether the bilingual education program emphasized language development or academic achievement. To be sure, many of the programs emphasized both. Some programs also included examination of self-concept and attitude toward school or school subjects along with academic achievement. These multi-emphases program evaluations were included under the section Bilingual Education and Academic Achievement. A third section, Reviews and Summaries of Significant Other Studies, was included to present the findings and conclusions of several reviewers of research studies in bilingual education and to describe the results of several special programs or special research which were felt by some authorities to have specific impact on bilingual education in the United States.

Bilingual Education and Language Development. Cohen (1975) reported on the results of a bilingual education program in San Antonio, Texas, in which an oral-aural approach to initial reading instruction was employed with
native Spanish-speaking students in nine schools of the San Antonio Independent School District. Acting as control and experimental groups in the initial experiment were 753 children from twenty-eight first-grade classes, some of whom received the oral-aural approach in English, some in Spanish, and some without any oral-aural structures at all. Results over a period of five years were mixed. After two years, findings indicated that earlier introduction of English reading meant better performance in English reading. Analysis of the results of an English-language proficiency test when students were in grades four and five showed that the fifth-grade experimental group receiving the Spanish oral-aural language treatment performed better than either the English-treatment group or the control group in most areas, and the English oral-aural treatment group was better in one area. There were no differences among the fourth-grade groups.

A study conducted in Chicago was performed to disprove the theory that "language minority children learn more English in a monolingual English school than in a bilingual-bicultural program" (U.S. Commission, 1975:75). A total of 104 kindergarten through third-grade children enrolled in an ESL program were compared with 213 kindergarten through third-grade Spanish-speaking students in a bilingual program who received 25 per cent less instruction in English. The results indicated no significant difference
in English-language achievement between the two groups (von Maltitz, 1975).

Saavedro (1969) reported on the evaluation of an experimental curriculum in bilingual education conducted in El Paso, Texas, by the Applied Language Research Center of El Paso Public Schools. Here, Mexican American children in grades one through three were taught social studies and science concepts through Spanish. English was taught intensively thirty minutes daily through live drill and tape-recorded lessons. Evaluation of the first year of operation, 1966-67, Saavedro (1969:97) stated, showed that groups receiving instruction in Spanish and English scored as well on Center developed English language proficiency tests as the control groups who were instructed in English only.

In Compton, California, Cohen (1975) reported, a group of 299 students, 80 per cent Spanish-dominant, participated in a bilingual education program in kindergarten through the third grade in which they received at least eighty minutes of Spanish-medium instruction per day. Evaluation with the Stern Expressive Vocabulary Inventory showed that the Spanish-dominant bilingual kindergarten and first graders were better in Spanish and English than a comparison group who did not receive such instruction. These same first graders were also "better in English oral comprehension and as good in Spanish oral comprehension as the comparison group as measured by the Inter-American Tests of Oral Comprehension" (Cohen, 1975:38). Both first- and second-grade
bilingual groups did better than the comparison groups in Spanish reading.

Contrasts in language development was also the subject of a study by Riley in 1968 (Cohen, 1975:13). To test the theory that "if a child develops skills in one of his two languages, he generally pays for it by a deficit in the other," the PPVT was administered in Spanish, in English and in both languages simultaneously to three groups of forty first-grade Mexican American students from Fort Worth and Laredo, Texas. Degree of bilingualism was also correlated with word recognition ability. The results indicated that the students did better on the Spanish-English version of the test than the English version alone. Further, "the more bilingual the subject, the better he did on the test in both languages simultaneously." Riley concluded that "bilingualism did not impair word recognition in both languages."

The final evaluation results of a bilingual-bicultural program in a community school in the Bronx, New York, were presented by Hennessey (1976). The school provided individualized bilingual instruction to 168 youngsters in the school who had scored below the 20th percentile on a language assessment test. The primary goal of the program was to raise the level of competence in using and understanding English of the students enrolled. Results were not altogether satisfactory, Hennessey reported. Only 47 per cent of the students reached the project goal of gaining ten
percentile points in English-language comprehension. The goal had been to get 65 per cent of the students to reach that goal.

Lambert and Tucker (1973) reported on a French-immersion program conducted in St. Lambert, a suburb of Montreal, Canada, and on the results of a study of how the children following this type of experiential program fared "in comparison with conventionally trained French-speaking children following the standard academic programs in English." The progress of these dominant-English-speaking students was followed for a seven-year period as they went from a two-hour per day kindergarten program conducted exclusively in French by teachers from France to reading, writing, and arithmetic introduced exclusively in French in grade one and English introduced as a subject in grade two. Among other findings, Lambert and Tucker (1973:91) revealed, children in the experimental classes "performed as well as the control group on all measures of receptive and expressive features of English;" further, by grades four and five, the children in the experimental classes had "attained a state of functional bilingualism that permitted them to read, write, comprehend and speak French with fluency and naturalness." Also, in computational and problem-type mathematics and in science, the children "attained a level of performance similar or slightly higher than that of pupils following the conventional English-Canadian program." Cognitive development, by grade five, was enhanced rather than
retarded, with experimental children performing better on a comprehensive English-based measure of verbal intelligence than did the control group.

Among other variables, the St. Lambert experiment also investigated student self-concept (Lambert and Tucker, 1973). The evidence at the end of grade two showed no signs of the children in the experimental program having been affected one way or the other by their experiences with another language and culture. Essentially the same results were observed at the end of the third and fourth year. All three groups—experimental, French-control, and English-control—had a generally favorable view of themselves. Thus, Lambert and Tucker concluded, the egos of the bilingually instructed students had apparently not been disturbed as a result of their immersion experience.

The children in the experimental group of Lambert and Tucker's study offered a wide variety of IQ's but were predominantly from middle-class families. Tucker, Lambert and d'Anglejan (Cohen, 1975) performed a similar experiment with working-class children in two separate schools. The results were mixed, with the experimental group performing as well as the English-control group in English language arts in one school but not in the other; also the experimental group was behind the French control group in many French-language skills but just as well in French listening comprehension. In mathematics, the experimental groups did significantly better than the controls, although the test was
in English.

An American Spanish-immersion program, modeled after the St. Lambert project, was conducted with Anglo American students in the Linwood Howe School in Culver City, California in the fall of 1971 (Cohen, 1974). A pilot group of nineteen five-year old monolingual-English-speaking children were taught in the kindergarten curriculum completely in Spanish. By grade one, fifteen students remained, at which time English reading was introduced. At the end of the first year, the comparison group, composed of both native Spanish-speaking students and their native English-speaking peers, scored significantly better than the pilot group on a test of readiness to read in English. At the end of the second year, however, there was no significant difference between the groups on tests of English morphology, English story telling, English reading or performance in mathematics. These results led to the conclusions that "no first language retardation resulted from immersion in a second language," and "children immersed in a second language, which had not yet been mastered, were still able to absorb ideas and concepts in a content subject without lagging behind classmates studying in their first language." (Cohen, 1974:101). Further, in Spanish reading, Cohen (1974) reported, the pilot group was reading at a level comparable to native Spanish speakers in Quito Educador at the end of grade one, comparable to native Spanish-speaking students in California at the end of grade two, and as well as comparison groups in Tijuana, Mexico, by the end of
third grade.

Foster (1970) reported on a French-American bilingual school, Encole Bilinque, a total French-immersion school for kindergarten through eighth grade in Berkeley, California. Results of testing with the Stanford Achievement Test were given for the year 1976 for the fourth, sixth and eighth grades; these indicated that in the subjects of reading, mathematics, and language arts, students excelled in their actual grade-placement levels by no less than two grade levels.

Rand's (1976) presentation of a total French-immersion program at one elementary school in Silver Springs, Maryland was primarily descriptive and reported results only in general terms. Observation of the classes, Rand reported, revealed the natural way in which the immersion students spoke and understood French and their acceptance of their teachers who spoke quickly in French with no limitation on their vocabularies. Test results, Rand reported, indicated that the immersion students were keeping up equally with their peers.

Barik and Swain (1974) reported on an evaluation of a variation of total immersion—partial immersion—or partial instruction in the second language. This program was conducted in St. Thomas, Ontario, from 1970 to 1972 with one class in each of grades one, two and three. Mathematics, music and French language arts were taught in French for half a day with all other subjects taught in English the
second half of the day. Generally, students in the partial-immersion program were about equivalent to students in a total-immersion program and about equivalent to students enrolled in a regular program. Although the partial-immersion students did lag behind their regular peers in several aspects of English-language skills, by the end of grades two and three, there was no difference in their performance in mathematics when compared to students taught mathematics in a regular program.

A study of another partial-immersion program was conducted in Cincinatti, Ohio (Met, 1978). There, a bilingual/bicultural education program in French, German and Spanish was instituted for monolingual English-speaking students in kindergarten and first grade. The foreign language was taught as a second language and also used as a medium of instruction in later grades. Students in the program were tested for achievement and self-concept and compared with other children in the district. Data from scores on the Metropolitan Achievement Test, Met reported, indicated that students in the bilingual programs were performing at a level comparable to children throughout the Cincinatti school district. Also, high ratings were obtained on measures of students' self-concept and on attitude toward new material for students participating in the French and Spanish Programs. No data was supplied for students participating in the German-immersion classes.
A partial-immersion bilingual education program was also the subject of evaluation by Edmonton Public Schools in Alberta, Canada (1977). This was an English Ukranian program introduced at the first-grade level in 1974 and continued to include grades one through three by September, 1976. Comparative achievement on standardized tests of English-language arts, mathematics achievement, Ukranian-language skills and cognitive and linguistic development was examined for bilingual program and regular students in grades one through three. The findings indicated that bilingually educated students in grades one through three were achieving at or above their grade level in the English-language skills. While there was a lag in mathematical skill development in grade one, there was no evidence of a lag by the end of grade two. Pre- and post-test results on a test of Ukranian-language knowledge indicated that students in all three grades were acquiring a greater degree of proficiency in the Ukranian language. On tests of cognitive and linguistic development administered to a sample of students in regular classes, a sample of fluent bilingual-program students and a sample of nonfluent bilingual-program children, nonfluent bilingual-program children from grades one and three performed similarly to that of regular students on a majority of the tasks; also, on a majority of the tasks, there was no significant difference between the fluently bilingual students and the other two groups.
In a report by the Office of Bilingual Education Washington, D. C., (1978), the results of an early-childhood bilingual education project in Clovis, New Mexico, were presented. The program, designed to facilitate the learning of English and Spanish simultaneously, was divided into two sections: a kindergarten program and a program for grades one through four. The programs served forty students in kindergarten and 200 students in grades one through four.

The primary concern of the evaluation was to measure language development and academic readiness skills. Kindergarten students were pre- and post-tested for aptitude, basic skills, auditory comprehension of Spanish and readiness. Students in grades one through four were also pre- and post-tested for aptitude and for achievement in reading and mathematics. The performance of both groups was compared to a control group which received no bilingual schooling. Findings indicated that students in the bilingual kindergarten program made significant gains in basic skills and in school readiness. They made slight gains in Spanish- and English-language development though these gains were not statistically significant. For students in grades one through four, no significant differences were found between the bilingually educated and the control groups for all measures of achievement and for all grade levels, with the exception of second-grade reading, where the difference favored the control group. This was after post-test scores were controlled statistically.
Price and Sperber (1979) reported the results of Project P.R.O.B.E., a bilingual education program for four- and five-year old Spanish-speaking children in two Bronx, New York schools. Achievement of the objectives of the program was primarily evaluated in terms of language development and basic skills. The results indicated significant positive gains in both the areas of language and basic skills; after participating in the program, students had a higher degree of mastery in both languages, English and Spanish, and in basic concepts than when the program started.

A bilingual education program emphasizing language development was also the subject of an evaluation report by Feingold and others (1979). The program was established for children from Spanish- or Yiddish-dominant homes in grades K through two in three public and four non-public schools in Brooklyn, New York. The curriculum included ESL, Spanish- or Yiddish-language arts, dominant-language instruction in the content area and cultural-heritage instruction.

The results of the Spanish/English component indicated that at the kindergarten level, students in the experimental group performed similar to those in the control groups in all areas tested. The gains for the grade-one experimental group in language achievement and in basic concepts exceeded those of the control group; and the grade-two experimental group surpassed the control group in both
English and Spanish; although the control group did achieve significant results in performance in English.

For the Yiddish/English component, it was not possible to obtain data to compare experimental and control groups because of the limited size of the participating schools. However, analysis of gain figures for the experimental group indicated that, with the exception of grade one, all pupils showed significant gains in both English and Yiddish reading; and with the exception of grade two, all gains in Spanish reading were significant. Also students in the experimental groups showed more gains than the control group in all areas, whether the testing instruments were administered in Spanish or in English. No significant gains were found for oral comprehension of Yiddish for any grade level.

Holtz (1979) presented an analysis of the results of a bilingual education program conducted in four Bronx, New York elementary schools. Data for evaluating the program was collected for four program areas: native-language maintenance, English-language development, mathematics and reading achievement and cultural awareness. The findings revealed that, after one year of instruction, there was no growth in Spanish-language development and only moderate growth in English-language development. However, in every grade except one, the reading and mathematics components exceeded, at a significant level, the performance that could be expected without program intervention.
Bonn and Bonn (1979) reported the 1978-79 evaluation results of Project ABLE, a bilingual education program operating in six public and non-public schools in Brooklyn, New York for approximately 250 students. The program involved four language groups—Hebrew, Italian, Russian, and Spanish. Students were pre- and post-tested in three areas—bilingual syntax, language development and academic achievement.

Results were reported separately for the public school component, the non-public school component and the Italian bilingual component. Findings for the public school component revealed that students showed gains at each grade level in bilingual syntax, but only the gain in English for the second-grade Spanish bilingual component was significant. In academic achievement, grades two through four showed actual mean gains exceeding predicted mean gains, and, although, this seemed to be true also for grade five, there were too few students to compute a meaningful predicted mean-score gain.

The number of students in the non-public school component, which included both Hebrew- and Russian-speaking children, made it difficult to arrive at extensive generalizations, but results did indicate mean increases for each grade level for all three measures—bilingual syntax, language development and achievement. For the Italian bilingual component, test results indicated mean increases at each grade level, one through three, for bilingual syntax, but these were not significant. The lack of significant
increase, the authors suggested, might be attributed to students "topping out" on the post-test since they scored high on the pre-test.

A bilingual program for Yiddish-speaking students was the subject of a report by Kosky (1979). The program operated in six Yeshivas in Brooklyn, New York during the 1978-79 school year and enrolled 251 students in grades one through eight. The program emphasized achievement in the English language and offered English-language instruction four days a week for one group, three days a week for another and two days a week for a third, with forty to forty-five minute periods each day. Results for the four-days-a-week group indicated significant gains in mean scores on language ability measures for all grade levels, one through eight. Students participating in the three-days-a-week program, grades one through five, also showed gains in mean scores for all grades. However, the two-days-a-week group, grades four through eight, showed gains in mean scores only for grades four and six, with results only being significant for grade four. The author concluded that the two-days-a-week treatment was not sufficient for growth to occur.

Fox and others (1978) reported on a bilingual education program (PACES) for 240 students of Chinese and Hispanic backgrounds in the seventh and eighth grades in one district of New York City. The activities of the program capitalized on the native-language proficiency of the students while developing competency in their ability to speak English.
Among other areas, students were tested in Chinese language arts and English reading.

To determine achievement of objectives, a score of 25 per cent was established as criterion for success on the Chinese Language Arts Test and a one-year or more gain was established as criterion for success in English reading. The findings for Chinese language arts indicated that only 29 per cent of the students reached or exceeded the criterion for success; further, one in three scored below 40 per cent. So the objective of improved ability in Chinese language arts was not considered achieved. Findings were more positive in English reading. Of the sixty-four students taking the test, 80 per cent gained and 30 per cent achieved a gain of one year or more. This objective was considered achieved.

_Bilingual Education and Academic Achievement._ Among other factors, Cohen (1975) studied the effect of bilingual schooling on English reading, Spanish reading and on math ability of a group of Mexican American children as they moved from grade one to grade five in a school in Redwood City, California. This was a longitudinal study in which half of the ninety students involved in the study received bilingual schooling for a period of five years and half received conventional English-only schooling during that same time. The experimental group was 67 per cent Spanish-speaking and 33 per cent English-speaking. Instruction was offered in both languages for this group, and separate
classes were provided for second-language instruction. The comparison group was composed of Spanish-speaking Mexican American students.

At the end of grades one to three, Cohen reported, the experimental classes seemed to be holding their own in English reading, with the comparison group only outperforming one bilingually schooled class. At the end of grades three to five, however, it appeared that the comparison group was outdistancing the bilingually schooled children more each year. With regard to Spanish reading, Cohen revealed, the results were mixed. At grade five, the experimental group read Spanish significantly better than the comparison group; grade-three-level experimental studies were slightly better; but grade-four-level experimental students lagged behind the comparison group, a trend which had increased each year.

The findings for mathematics achievement were also mixed. The experimental group scored similar to the comparison group in grade three, but the experimental groups in grades four and five tested somewhat behind the comparison group. The same was true for the experimental groups in grades two and three, although each group respectively caught up in grade four.

In a bilingual program in the Harlandale Independent School district, San Antonio, Texas, Jacobson (1975) reported, a group of first-grade Mexican American students were taught bilingually in Spanish and English and had Spanish language arts eighty minutes each day. Other first-grade Mexican
American students were taught in English only. Tests at the end of the first year showed that the students taught bilingually did as well in reading English as the classes instructed in English only; also, the pupils in the bilingual sections "could speak, read, and write in both Spanish and English." Further, three of the four bilingual classes "made more progress in every measure—communication skills, conceptual development and personal adjustment—than the classes taught in English only." (Cohen, 1975:37).

The effects of bilingual instruction on a group of Spanish-speaking students attending an elementary school in Webb County, Texas, was the subject of a report by Trevino (1970). Students, equally divided between English monolinguals and Spanish monolinguals, were taught bilingually in their first, second and third grades. Both languages were used alternately for communication and instruction by bilingual teachers. The students' growth in mathematical understandings, skill and problem-solving ability during the three year period was tested with the California Achievement Test. Results indicated marked improvement for all students from the first grade and dramatic improvement by the end of the third year of bilingual instruction. These results, Trevino (1970:256) suggested, supported the idea that "the solution to the Spanish-speaking child's low scholastic achievement may lie in the use of Spanish in his primary grade instruction." Also, the results supported the theory that a second language might be taught efficiently
in the primary grades without adversely affecting the normal scholastic progress of any child.

The performance of bilingual students in mathematics was also the subject of a study by Gallop and Kirkman (1972). Their research involved an examination of the performance of bilingual children on a bilingual mechanical-mathematics test. Most of the previous research in this area, the authors stated, had utilized English only or other language only in testing. A group of 274 students for whom Welsh was the first language, from the ages of nine to eleven, were tested with a specially prepared experimental bilingual version (English/Welsh) of the NFER Mathematics Test C3. The test was administered first in bilingual form and then, one month later, in separate English only and bilingual forms to two matched samples of the group--one bilingual and one English only. Among other revelations, the results showed no evidence that the bilingual child functioned any the worse or better when answering bilingual or English only questions.

Inclan (1972) reported on the results of a bilingual education program in Dade County, Florida, the first bilingual education program during the second phase of bilingual education in the United States. The program here involved two-way bilingual education for Cuban and Anglo students with subject matter presented in one language in the morning and repeated in the other language in the afternoon. A three-year (1964–66) evaluative study of the program
revealed that while both English- and Spanish-speaking students were not yet as proficient in their second language as in their native language, they had made impressive gains in their second language. Also revealed was that the bilingual curriculum was as effective as the traditional curriculum in helping students progress in various reading and mathematical skills. As of 1970, Cuban students in grades three through eight who were schooled bilingually were as good in English reading as Cuban control students schooled conventionally. An assessment of bilingual education in Dade County as a whole was that experimental students, both Spanish-speaking and English-speaking, performed as well as did control students in language arts and in math achievement.

In a study by Modiano (1974), the cognitive effectiveness of instruction in the native language as compared with instruction in a second language was examined for a group of students from three Indian tribes in the Chiapas, Highlands, in Mexico. The study involved an examination of students being schooled in federal or state schools in which all reading instruction was given in Spanish and other children attending the schools of the National Indian Institute where they began reading in Spanish only after they had learned to read in their own language and had acquired some oral Spanish vocabulary. Results of reading tests conducted in Spanish showed that the students initially taught in the vernacular read with greater comprehension than those initially
taught in Spanish.

Roth (1976) reported on the results of a Bilingual Teacher Intern Program operating in New York City in eleven school districts during the 1975-76 school year. Approximately 2400 Hispanic children of limited-English-speaking ability in grades K through eight received bilingual instruction in all subject matter areas from college graduates who had received training in bilingual communication skills in English and Spanish at a state University. Pre- and post-tests were administered to the students to determine gains in reading and math achievement. The results indicated significant gains for both Spanish- and English-dominant-speaking students at every grade level.

The annual evaluation report of an ESEA Title VII bilingual-bicultural education program in Milwaukee Public Schools (1976) showed successful results at the kindergarten and upper primary levels in English reading and mathematics for bilingually educated students, but findings in these areas were not satisfactory for the middle-primary-grade students. Grade-level progress was achieved at all three levels—kindergarten, lower and upper primary—in readiness, English reading and mathematics when comparisons were made with national norms, Title I and Spanish-surnamed groups. Also, the bilingually instructed students exceeded those in the Title I reading and mathematics programs; Spanish reading achievement was also high for the bilingual group. Both bilingual and comparison groups produced positive results
on a self-concept measure.

The subject of Almeida's (1976) evaluation was a pre-kindergarten bilingual program in East Harlem, New York in which fifteen students received all-day instruction in Spanish and English during the 1975-76 school year. The program, designed to develop a more positive self-image and to provide a stimulating pre-school learning environment, resulted in students scoring above the criterion levels in the various pre-school learning skill areas tested.

Much of the research in bilingual education, according to Paulston (1977b) was to be found in dissertation studies. The ten studies reviewed below represented a sampling of those studies appearing between 1971 and 1980. Olesini (1971), in evaluating the achievement of two composite groups to determine the effect of bilingual instruction, found no significant difference in achievement between two groups in spelling and arithmetic computation after one group received bilingual instruction and the other group did not. However, there was a significant difference in the areas of vocabulary, reading, language and total arithmetic achievement, favoring the bilingually educated students. Thus, Olesini concluded, greater gains were made in academic curricula when bilingual instructional methods were used.

Lopez (1972) studied the relationship between self-concept of elementary school students and their participation in bilingual-bicultural educational programs. Lopez found that both the Mexican American and the Anglo American chil-
dren in bilingual-bicultural education programs exhibited a more enhanced self-concept than their counterparts in regular programs. Intergroup comparisons revealed no significant difference in self-concept between Mexican American and Anglo American students participating in the bilingual education program. Results also indicated a decline in positive self-concept from grade to grade for both ethnic groups as they progressed in school.

Skoczylus (1972) constructed and applied an evaluation model to determine if bilingually instructed children in a particular program suffered linguistic, academic or cognitive loss and if their self-image and attitudes toward two ethnic groups were less favorable than those of their monolingually instructed counterparts. Skoczylus' major conclusions were that bilingually instructed students showed no evidence of either intellectual inferiority or superiority at the end of two years of bilingual instruction. Also, the experimental group performed less well on the English mathematics test than the control group, but the bilingually instructed students were learning Spanish and English simultaneously with no apparent difficulty. Further, the evidence indicated that the bilingually instructed students were developing a positive and more democratic attitude toward Anglo and Mexican American students and a more favorable self-image.

Zirkel (1972) assessed the effectiveness of the experimental bilingual programs initiated in four Connecticut
cities in 1970-1971. Analysis of student outcomes in general academic abilities in Spanish and English and in improvement in self-concept generally favored the bilingual model of instruction in two of the cities. In the other two cities, slight but not significant differences between the experimental and control groups with respect to those outcomes were found. In the latter two cities, Zirkel indicated, bilingual models were really quasi-bilingual, with bilingual instruction being accorded a secondary status in terms of time distribution and staffing patterns.

Rivera's (1973) study involved a comparison of the academic achievement, bicultural attitudes and self-concepts of third- and fourth-grade public elementary Hispanic and non-Hispanic pupils in one bilingual school and two non-bilingual schools in New York City. The findings led to the conclusions that non-Hispanic children would suffer no loss of basic skills in their own language by being exposed to a program of second-language instruction at an early age. Further, time devoted to the study of a second language was not affecting the non-Hispanic students' growth in mathematics skills and understanding of math concepts. Also, Rivera concluded, the bilingual-bicultural atmosphere generated greater feelings of acceptance for the Hispanic child by non-Hispanic students and a consequent greater feeling of self-worth by Hispanic students.

Self-concept and academic achievement were also the object of Velasquez's (1973) study of Mexican American and
Anglo American students enrolled in a bilingual-bicultural education program. The results of this study indicated that in achievement, English as well as Spanish speakers in the third grade and in the secondary grades (7-12) made significant gains. In English-language ability, the kindergarten through third grades made significant gains, but higher gains at all grade levels were made in the Spanish language. All bilingual education students made significant gains in self-concept. Based on these findings, Velasquez concluded that Mexican American students were reading in the English language as well as in Spanish after participating in a bilingual program for three years.

Covey's (1973) analytical research was a study of the effects of bilingual instruction on a group of ninth-grade Mexican American students in achievement in English, mathematics and reading and in self-concept. The results showed that bilingually instructed Mexican American students achieved significantly higher scores in English reading than those who were instructed traditionally. Further, Mexican American students in bilingual education programs had favorable attitudes toward themselves, school, peers, and teachers, while traditionally instructed students did not.

Gardiner (1973) studied change in academic achievement and self-concept of second-grade students enrolled in bilingual programs and in regular classes in St. Martin Parish, Louisiana. The results of testing in the areas of language arts, mathematics and French language indicated
a highly significant difference between the two groups in both French and English language arts, and in achievement in mathematics on both the French and English versions of the mathematics test, favoring the bilingually educated group. There were no significant differences between the two groups on the self-concept measure.

The differential effect on academic achievement for a group of second-grade Mexican American students participating in bilingual and monolingual programs was the subject of a study by Alvarez (1975). The students, 147 second-grade Mexican American students in two public schools in Austin, Texas, were tested for achievement in several academic areas and in Spanish reading achievement. The results indicated significantly higher scores for bilingually educated students in Spanish reading achievement, but there were no statistically significant differences between them and monolingually educated students in the other academic areas, in academic attitudes or in aspirations. The findings did lead Alvarez to conclude that using Spanish and English as media of instruction did not result in academic retardation or in a low level of academic aspirations in the bilingual classes.

Chapa (1975) investigated the English reading achievement and self-concept of Mexican American children who had been in a bilingual program from kindergarten through the second grade. No significant difference in English reading achievement was found, although the Mexican American chil-
dren did score higher than the traditional group. In Spanish reading achievement, Mexican American children who had had no formal Spanish reading instruction scored significantly lower than those in bilingual programs. Thus, Chapa concluded, Mexican American students in bilingual programs attained successful proficiency in Spanish reading while maintaining a high degree of success in English reading. Also, there was no difference in self-concept between the two groups.

Childress (1980) investigated the differential reading and language achievement of 278 second-grade students in regular classes and in French-English bilingual classes in Avoyelles Parish, Louisiana. The results indicated no significant difference between the two groups in either reading or language achievement when the groups were considered singly or against the variables of sex, race, and language designation (Francos or Anglos). However, when the students were examined according to ability level, it was discovered that low-ability students in the bilingual program had a significantly greater gain in language achievement than students in the regular program. The opposite results were found in language achievement for average-ability students, with regular program students achieving a greater achievement gain than the bilingually educated group. There were no significant differences between the two groups in language achievement among students of high educational ability. Gain in French-language ability was significant
for students in the bilingual education classes.

A 1977-78 evaluation of a Title VII bilingual program was the subject of a report from the Hartford Public Schools in Connecticut (1978). The results of this program, conducted at Ann Street Bilingual School for grades two through six, were reported for reading, math and attitude toward school subjects in terms of achievement against national norms and comparisons with the previous year's progress. In reading, the results indicated that students maintained or increased national percentile growth in reading at every grade level. Student achievement in the 1977-78 school year equalled the progress of previous-year students in grades three and four and was at much higher levels than the previous year at grades five and six. In mathematics, similar results were obtained, with students at all grade levels increasing national percentile growth. Also, students in grades three and five equalled the last-year's growth; and students in grade six exceeded the last-year's growth. Students in grades two and four, however, achieved less growth than the previous-year students.

When attitude toward school subjects was examined, findings indicated that students expressed more positive attitudes toward all school subjects at every grade level than did a national sample of students given the same survey.

Bortin (1978) presented an analysis of the results of a bilingual education program in Milwaukee, Wisconsin in its
third year of operation in the 1977-78 school year. The program served approximately 1,000 students in the elementary and secondary grades who varied in language dominance from monolingual English through bilingualism to monolingual Spanish. Students were presented with the regular curriculum in both Spanish and English and also participated in Hispanic culture sessions. Results of standardized measures were reported for kindergarten readiness, English reading, Spanish reading, mathematics, bilingual skills, English-as-a-second-language for Latinos and attitude toward school.

In the area of kindergarten readiness, Bortin reported, bilingual program pupils equalled or exceeded the performance of Spanish-surnamed children in the regular program comparison group. In English reading, upper primary students scored significantly higher in English reading than a Spanish-surnamed comparison group, and students at all levels were average on national norms. In Spanish reading, the average yearly gain was short of criterion performance for upper primary. In mathematics achievement, by the end of upper primary, bilingual program students scored higher than the Spanish-surnamed comparison group and rated average on national norms. In bilingual skill development, 85 per cent of the students were reading both English and Spanish by the end of upper primary. The Latino group participating in ESL classes posted gains in English usage and comprehension. In attitude toward school, upper-primary and Latino students in ESL classes demonstrated positive atti-
tudes toward school.

Orlow (1977) attempted to determine if there was a predictive relationship between factors of visual retention, auditory discrimination, attitudes toward self and educational program and reading achievement in Hebrew or in English for a group of Hebrew and English bilingually educated third graders. Her findings indicated a significant positive relationship between visual retention and reading achievement in Hebrew and English, and a significant positive relationship between auditory discrimination and reading achievement in Hebrew but not in English. There was also a significant positive relationship between reading achievement in Hebrew and reading achievement in English. On the other hand, Orlow reported, there was no significant relationship between selected attitudes and reading achievement in Hebrew or in English. Also, there was no significant relationship between the fact of Hebrew being spoken at home, whether any language other than Hebrew or English was spoken at home, or sex and reading achievement in Hebrew or in English.

In his study Powers (1978) sought to determine if there were any significant differences in academic achievement and self-esteem between students who had participated in a bilingual education program and a similar group who had not. The population of the study was a group of eighty-seven Mexican American junior high school students, forty-four of whom had participated in bilingual education and forty-three
who had not. Powers' finding indicated that bilingual-pro-
gram students did not differ significantly from non-bilin-
gual students on any of four measures: general academic
achievement, reading comprehension, mathematical computa-
tional ability and self esteem. However, Powers did not
draw conclusions from his findings because of the revela-
tion that the bilingual-program students and non-bilingual
program students differed on the frequency with which they
spoke English and Spanish, a difference which existed prior
to participation in bilingual education.

A school- and home-based bilingual education model in
its fourth year of operation was the subject of a study by
the Bureau of Secondary Education (1979). The Bureau sought
to measure the program's impact on the achievement of 85
participants in grades two through five in the areas of lan-
guage arts, reading, mathematics and Spanish language devel-
opment. The findings were reported by grade for all measures
administered on a pre- and post-test basis, with compara-
tive results given for three groups: LEP students, other
bilingual students and students in the regular/traditional
classroom.

For grades two and three, no significant difference
was found between the three groups in the areas of reading,
language arts and mathematics. However, LEP students and
regular program students scored significantly higher than
the other bilingual students. LEP students also indicated
a significant gain score in language development in Spanish.
For grades four and five, LEP students scored higher on three of the measures than the other two groups, but the three groups did not differ significantly. Again, LEP students indicated a significant gain score in Spanish-language development.

Rosier and Holm (1980) conducted a longitudinal study of a Navajo school bilingual education program at Rock Point, Arizona. Their analysis covered the period from 1975 to 1977 when the program was three years into a five-year experience. They sought to determine the effects of initial literacy in Navajo on later reading in English and the effects of initial instruction in Navajo on later arithmetic instruction in English. To conduct their study, Rosier and Holm compared two groups of Navajo students both of whom began school essentially monolingual in Navajo. One group had first been taught to read in Navajo and then, at the second-grade level, had also been taught to read in English. This was the bilingual group from Rock Point Community School. The second group of students were selected from a sample of schools where students had been taught to read in English only through an English-as-a-foreign-language program.

The results, Rosier and Holm reported, overwhelmingly favored the bilingual group from the Rock Point school. Findings indicated that Navajo students who had initially been taught to read in Navajo seemed, by third grade, to be reading better in English than those taught to read in Eng-
lish only and those who had been reading in English for longer periods of time. Further, by the fourth grade, this same group from Rock Point did better in arithmetic than those who had been taught arithmetic only in English. An additional finding was that Navajo students who had been taught in both Navajo and English seemed to do better in English (as a foreign or second language) than Navajo students who had been taught only in English. The authors noted from these findings that the results of initial instruction in Navajo might be cumulative; that at each grade level above the second and third grades, bilingual program students' scores diverged further from the other groups and closer toward national norms. Further, when these Rock Point students, who as kindergarteners learned to read in Navajo, began to reach the fifth and sixth grades, dramatic differences between them and the other Navajo area students became apparent. In short, the authors concluded, a good bilingual program showed strikingly better results than a good ESL or EFL program in relatively comparable schools.

Carsruo (1980) examined the achievement outcomes for Austin's five-year Title VII bilingual education project. The project was designed to improve the achievement of elementary students in oral-language proficiency, knowledge of basic concepts, reading ability in Spanish and proficiency in English reading and mathematics. Comparative results were reported for English reading and mathematics. Fifth-
grade project students outgained non-project students in English reading, but, the author stipulated, those gains appeared to be due to gains made by English-dominant and English-monolingual students. There was no significant difference between fourth-grade achievement in reading and math in both project and non-project classrooms. The author concluded that the gap in achievement between Spanish-dominant or bilingual students and their English-dominant peers did not appear to be closing.

A comparison of reading achievement and self-esteem as related to length of exposure to bilingual education for the Houston, Texas elementary bilingual program was the subject of a study by Curiel and others (1979). Scores on a self-concept scale, scores on a test of basic skills, and grade-point averages were compared for eighty-six Mexican American seventh graders who had at least one year in a bilingual program and ninety Mexican American students in a control group who had experienced a traditional English-language program. The findings for school performance in the areas of English reading, grade-point average and self-esteem were that length of time in the elementary bilingual program, whether it was one to three years or four to seven years, produced equal results. Comparisons made between experimental and control groups revealed: (1) Control students who were instructed in English for six years or more achieved higher scores on all three measures of reading at the end of elementary school; (2) Students in the experi-
mental group obtained a significantly higher grade-point average in grades one through six than the control group; (3) At the seventh-grade level, experimental and control group students achieved comparable reading scores on two of the three reading measures and comparable grade-point averages. No significant difference was found between the two groups in English reading comprehension and vocabulary. Control group students, however, scored significantly higher on a test of English-language skills; (4) No significant differences were found between the two groups on the self-concept scale, although the control group obtained higher scores on the anxiety section of that scale.

An evaluation of a bilingual project in Washington, D. C. was the subject of a report by the District of Columbia Public Schools (1979). The program served approximately 1600 students in fourteen elementary sites, grades one through six, and included both Spanish/English and Chinese/English components. Results were reported for achievement in Spanish reading, English reading and Spanish and English mathematics. Overall, statistically significant gains were recorded for both English and Spanish reading. Specifically, statistically significant gains were achieved in grades one, two, three and five in Spanish reading. The results were neutral for English reading in grades, three, four and six and for Spanish reading in grades four and six. In general, the students made good progress in acquiring mathematics skills. Students in grades one, two, three
and five achieved statistically significant gains on both the English and Spanish versions of the math test. However, the students in fourth grade achieved no gain on the Spanish math test, and achieved a significantly negative change on the math test.

Canseco (1978), in her study of a bilingual school for Spanish-speaking students in Long Beach, California attempted to answer three questions: (1) Would Spanish-dominant bilingual/bicultural children who began a dual reading program demonstrate higher reading achievement in English than their English-dominant peers who began reading English in the first grade? (2) Would Spanish-dominant bilingual/bicultural children who demonstrated mastery of decoding skills in Spanish prior to the acquisition of reading skills in English achieve higher reading scores than their English-dominant peers? (3) Is there a relationship between a child's language dominance and ethnicity and his reading achievement?

The population for Canseco's study was 161 Spanish- and English-dominant children in grades three through six. The performance of the Spanish-dominant children were examined according to the grade level at which they began a dual reading program. English-dominant students were grouped by ethnicity: Hispanic, Black, Native American, Asian and Anglo. Findings of the study were analyzed according to the hypothesis of no difference for each of the three areas studied. For the first hypothesis (formed from
question #1 above), the hypothesis of no difference was rejected for the English-dominant Hispanic and the Spanish-dominant subgroup who had begun a dual reading program in the first grade. In all cases, the null hypothesis was upheld. For the null hypothesis formed from question #2 above, there was insufficient evidence to reject the null hypothesis for all cases, particularly in comparisons of English-dominant groups with students in the third and fourth grade who had begun a dual reading program in either the second or third grade. There was also insufficient evidence to reject the null hypothesis formed from question number three. Significant differences were not found in grades three, four and five when total English-dominant subgroups were compared to total Spanish-dominant subgroups. At the sixth-grade level, however, data was insufficient to reject the null hypothesis.

The data presented, Canseco concluded, demonstrated the effectiveness of bilingual education for teaching English reading skills to Spanish-dominant bilinguals. The evidence suggested that for some students, particularly those who demonstrated proficiency in Spanish and English from the time they began school, a dual reading program might be a definite advantage. Also, Spanish-dominant students who were introduced to English reading following the acquisition of decoding skills in Spanish did not demonstrate the ability to attain the same level of success on tests of English reading at a faster rate than their English-dominant
Zeichner (1979) reported on the evaluation of a bilingual/bicultural elementary school program for grades kindergarten through six in one school district in Brooklyn, New York. To evaluate the program, students were pre- and post-tested using three measures of reading achievement (both Spanish and English) and one measure of mathematics achievement in Spanish. The results indicated a significant difference between pre- and post-test scores for each grade level and for each content area evaluated. Further, student achievement at the kindergarten and grade-three levels demonstrated the highest level of significance in Spanish mathematics.

Irizarry (1979) examined the results of two approaches to bilingual education in Brooklyn, New York: Project SABE and Project BLAS. Both programs were offered to improve the linguistic and computational performance of both English-dominant and LEP students in grades kindergarten through four. A total of 793 LEP students and 141 English-dominant students participated in the two programs during the 1978-79 school year. Besides instruction in English-as-a-second language, the projects offered content-area teaching in the child's dominant language. Evaluation of the projects was based on pre- and post-test data from tests of oral-language proficiency (English and Spanish), English and Spanish-reading achievement and achievement in mathematics. For oral-language proficiency, examined at the kin-
dergarten level, results showed that kindergarten classes increased from pre- and post-test in both English and Spanish, but mean increases were not significant. In the academic areas of English reading, Spanish reading and mathematics achievement, average scores for all grades (one through four) increased from pre- to post-test, and mean increases were significant.

Tilis and others (1979) reported on a program for Pupils with Special Needs (PSEN) designed for students in grades kindergarten through three and sixth through eight in one school district in New York. The program provided supplementary reading instruction to dominant-English speakers, bilingual instruction, including ESL, to Spanish and Greek students, and reading instruction in the students' native languages. The program served 3,856 students in grades kindergarten through three and 227 fourth through eighth graders.

To evaluate the program, the authors revealed, reading achievement results were examined for both the bilingual component and the supplementary reading component. For the bilingual component, students in kindergarten and grade one showed statistically significant growth in reading (English and native language) from pre- to post-test, using percentile rankings. For grades two through eight, in all instances, growth in reading, as depicted by total-grade-equivalent score, from pre- to post-test was statistically significant. For the supplementary reading component, only grade
two had a post-test mean on a standardized achievement test which was significantly different from what would have been predicted; at grade three, there were no significant differences. For grades four through eight, growth from pre- to post-test on a standardized achievement test was consistently one year or more in grade-equivalent scores.

An evaluation of one component of an ESEA, Title I and Impact-Aid Program for one district in Queens, New York, for the school year 1978-79 was the subject of a report by the New York City Board of Education (1979). The component consisted of bilingual resources centers located in four elementary schools in the district. Student achievement was evaluated in reading, mathematics and listening skills. The findings for reading skill development indicated significant progress over expectations for the first grade but declines in relative position for grades two through five over a year's time. Students in the sixth grade only declined in position for the test in Word Study Skills. Students above the sixth grade maintained their position relative to their peers, but they did not advance. In mathematics achievement, there were significant increases at all grade levels. On the test of listening skills, students in grades three through six showed significant increases in their ability to comprehend oral English.

Carin (1979a) discussed the results of another component of a Title I Impact-Aid Program, the Bilingual Methodology Reading Component. This component existed in one school
district in Brooklyn, New York, during the 1978-79 school year. The program was conducted in grades three through nine in the district and provided bilingual instruction to improve English-reading achievement. The results of evaluating reading achievement indicated that in grades three through six, students maintained or exceeded their percentile levels over a year's period of instruction. Students in grades seven through nine, however, declined in percentile rankings. Eighth grade students, however, showed substantial growth in auditory vocabulary.

Benedict's (1979A) report described the final evaluation of a Title VII bilingual education program conducted for Spanish- and English-dominant students in kindergarten through the sixth grade at a public school in one district of Brooklyn, New York. Among other aims, the program was designed to develop students' communicative abilities in English and to increase student achievement in content subjects. Achievement in these areas was evaluated by standardized tests in English reading, Spanish reading and mathematics. For Spanish-dominant students, grades two through six, changes in English-reading ability, as measured by differences in pre- and post-test scores, showed that all students, except third graders, improved significantly in comprehension and vocabulary. Third grade pupils showed significant improvement in vocabulary, but not in comprehension. For limited-English-speaking students, examination of results in Spanish reading indicated significant improve-
ment for grades one through three in vocabulary, comprehension and in total analysis. Fifth graders showed significant improvement in vocabulary, but not in comprehension. Analysis of results for mathematics achievement for all students indicated significant improvement for all grade levels, one through six.

Schenker and others (1979) presented the evaluation report of a bilingual/bicultural program operating in three public and one private school in one district in Brooklyn, New York. The program included a Spanish/English and an Italian/English component. Among other features, the program provided reading instruction and content-area instruction in English and in the students' native language. Assessment was based on student scores in reading, mathematics and language, on standardized achievement measures which were interpreted in terms of whether or not program objectives were met. Analysis of the results indicated that the objectives in reading were partially achieved but none of the objectives for mathematics were realized. In language development, however, results showed an upward movement in mean achievement change on a pre-post-test basis at every grade level. This improvement was found to be significant.

Cox and Street (1979) reported on the evaluation of a bilingual mini school operating in a school district in Bronx, New York. The school provided bilingual education services for students in grades kindergarten through six who were either Spanish- or English-dominant. For evalua-
tion purposes, students' academic skills were examined by grade levels in both their dominant and their second language. At the kindergarten level, results indicated that Spanish-dominant students significantly improved their reading readiness scores. Also, Spanish-dominant students in grades one through six significantly improved their Spanish reading achievement scores. In English-reading achievement, significant improvement was only obtained for grades five and six of this group. Achievement in reading in English was significantly improved for only one level in the English-dominant group, that is, third grade. However, Spanish-reading achievement was significantly improved at three grade levels--three, four, and five--for this group.

Benedict (1979b) discussed the results of an individualized bilingual instructional system conducted for Spanish-speaking students in kindergarten through the fifth grade at a public school in one district of Brooklyn, New York. The objective of the program was to improve student achievement in English and Spanish reading, mathematics and in bicultural factors. The results indicated significant improvement in most areas tested. In Spanish-reading achievement, all grades, one through five, showed highly significant progress in knowledge of Spanish vocabulary and in comprehension. In English-reading ability, the first, second, fourth and fifth grades achieved significant improvements. Third graders registered only modest and insignificant increases. In mathematics, all grades, kindergarten
through fifth grade showed significant improvement.

Carin (1979b) presented the program evaluations of three Title VII bilingual education programs conducted in elementary and junior high schools in Brooklyn, New York. These were S.U.B.E., a Spanish bilingual program; AVANTI, an Italian bilingual program; and HABILE, a Haitian bilingual program where creole, French and English were taught. Results were reported separately for each program. For all programs, results were interpreted in terms of growth obtained from pre- to post-testing. For S.U.B.E., growth in bilingual syntax and in reading and mathematics achievement was measured. In bilingual syntax, growth was achieved in this program, but significance could not be determined. Students in grades three through five made substantial growth in reading and mathematics; growth in grade six was less. For AVANTI, very substantial growth was realized in reading and mathematics achievement through grade and four and substantial increases in achievement for sixth grade students was evident. Pre- and post-test scores were not complete for grades five and for grades seven through nine. On a test of Italian language, growth was achieved by all grades, one through nine, but because of the unstandardized nature of the test, testing for significance was not possible. The HABILE program experienced various difficulties in evaluation. First, Carin reported, it was difficult to find an appropriate language test to mea-
sure students' proficiency in creole. Second, there was a relatively small number of students at any grade level, so statistical results were tentative. The only measure that could be interpreted statistically was a test of students' growth in English reading. Here, the findings indicated substantial growth only in the lower grades, with performance falling off substantially in the later grades.

The results of an evaluation of a bilingual education program at the Bilingual Center in Brooklyn, New York, was the subject of a report by Mayer and Brause (1978). The evaluation covered the activities of the 1977-78 school year and examined student progress in language development, reading, and cognitive and social development, and the content areas. The program involved pre-kindergarten through fifth-grade students from homes in which English, French, Spanish or Yiddish was spoken. Results of standardized measures in language development and reading showed that students achieved above level scores across subjects and age groups. A comparison of reading scores for bilingual program students in grades two through five with students from regular programs in the district revealed that students from the Bilingual Center achieved the highest mean scores in grades four and five for the entire district; also, the results of third-grade bilingual program students' scores in reading showed that they were the second highest for the community. In total, all groups of bilingual program students were on grade level, with most exceeding the scores
of the normative group. In mathematics, the results indicated that all groups, across dominant language, were at least at grade level when compared to a normative group. Results of a program-prepared test of reading in the various languages also showed constant growth of both native and non-native speakers. Native speakers seemed to maintain their five-year advantage fairly consistently throughout.

Fox and others (1978a) presented the results of a bilingual-bicultural program conducted in 1977-78 for fourth-, fifth- and sixth-grade students in a school district in New York City, where more than half of the 20,000 children were of Asian or Hispanic background. Among others, students were evaluated in the areas of English reading, Chinese language arts and attitude (as determined by teachers). The results of the evaluation were mixed. Students achieved low percentile rankings in English reading, indicating only limited-English-reading ability. In Chinese language arts, a majority of students in every grade made some gain, but only in grade four was the mean gain significant. According to teacher ratings, more than four in five children showed improvement on more than five of the ten characteristics rated for attitude. Since five was the criterion for success, the objectives of improved student attitude was considered achieved.

Benedict (1978) reported on the evaluation of a Title VII bilingual-bicultural program operating in New York City
for a large number of Spanish-speaking students during the 1977-78 school year. The program was designed to develop students' communicative ability in English, provide subject area instruction in Spanish and English and reinforce and develop students' use of Spanish and reading comprehension in Spanish. The program involved both Spanish-dominant and English-dominant students in kindergarten through the sixth grade and was in the second year of a five-year program in 1977. The results reported included the findings for English reading, Spanish reading and mathematics achievement. These results indicated that Spanish-dominant students in all grades except second and sixth, showed highly significant improvement in English reading, with second-grade improvement narrowly missing significance. In Spanish reading, highly significant gains were obtained for every grade level except sixth. In mathematics, significant improvement was found for grades three through five; first graders also made good progress, but their achievement narrowly missed significance.

Rosier and Parella (1977) presented the results of the evaluation report for the Gonado Public Schools Title VII project for the school year 1976-77. In this program, English-language teachers taught ESL classes while Navajo-language teachers taught cognitive skills in Navajo. The program involved five kindergarten classes and six first-grade classes, a total of 251 students. Students were evaluated in various areas by both criterion-referenced and standard-
ized tests. Results of the criterion-referenced tests revealed that the weakest area of achievement was in Navajo literacy, although one first-grade class met and exceeded the criterion of the objective, and good progress was made by individual students. In all other subject matter areas—language production, oral-English development, arithmetic and Navajo social studies—student achievement exceeded criterion of the objectives, with greatest progress being made in Navajo social studies at both grade levels. Results of standardize tests revealed that in three areas of basic skills development, student achievement met or exceeded the criteria set for standardized tests. Criteria levels for math were set quite high, and the percentage of students meeting the criteria here and in reading was quite low.

Ames and Bicks (1978) examined the results of an evaluation of a Title VII bilingual-bicultural program for Spanish and Creole French students in one district in Brooklyn, New York. The program offered French- and Spanish-bilingual classes in reading and subject matter areas and in ESL classes for students in grades one through nine. The evaluation process was designed to detect pre-post-test differences in English reading, English language arts and mathematics and to compare achievement of students pulled out of bilingual education classes for ESL instruction and students enrolled in bilingual classes. The analysis of test results showed no significant differences in achievement in reading in English between students in regular classes, bilingually
educated students and ESL pull-out students. However, there were significant differences in achievement between the bilingual education group and the ESL pull-out group in mathematics, overall, and in English-reading achievement in the upper grades. Generally, the results indicated that those students who received instruction in their native language achieved higher scores in mathematics than those whose instruction in mathematics was in English. Further, achievement in comprehension in reading in bilingual education classes was commensurate with those of similar students in regular classes.

In their study, Moore and Parr (1978) attempted to determine the differential effectiveness of four approaches to bilingual education: maintenance classes in which at least 50 per cent of instruction was in Spanish; transition classes, in which Spanish instruction was offered as needed to understand English; minimal classes which offered no more than twenty minutes of Spanish instruction each day; and non-bilingual classes which offered no Spanish instruction. The study was conducted with thirty-seven children of limited-English-speaking ability and seventy-seven English-dominant children, in kindergarten through the second grade in four elementary schools in West Texas. The evaluation process required a pre-post-test design, with post-test scores analyzed by analysis of covariance, pre-test scores serving as covariant. The analysis of covariance procedure was also used to compare several non-experimental instruc-
tional variables on each measure. These included, among others, sex, socioeconomic level, and language dominance.

Evaluation results were reported by Moore and Parr by type of bilingual class for achievement in basic concepts, reading, language arts, and self-concept (grades kindergarten and one). Students in the non-bilingual classes also scored significantly higher than the minimal classes in basic concepts, but no significant difference was found between non-bilingual and maintenance classes in basic concepts. All other comparisons of results in basic-skills achievement were insignificant. In reading and language arts achievement, the non-bilingual students scored significantly higher than each of the other three groups. No other differences were significant for language arts, but for reading achievement, results also showed the minimal group scoring significantly higher than the transitional and the maintenance group. Covariant analysis for effect of sex, socioeconomic level and language dominance revealed significance for only one of these—sex. Results indicated that girls scored significantly higher than boys in basic skills, reading, language arts and on self-concept.

These findings, the authors concluded, seemed to indicate that, overall, non-bilingual classes were achieving significantly higher than bilingual classes in reading and language achievement in English. However, there was no strong evidence that the maintenance and transitional approaches differed. The only significant difference between
the two was found for the test of basic skills. Further, self-concept did not seem to vary by type of class; and measures of Spanish language arts or reading did not indicate superiority of one type of class over any other.

Several evaluations of high school bilingual education programs were found in the literature. The rest of this section was devoted to reviewing these studies.

Soles' (1976) report on the results of a high school bilingual program showed mixed results for the 250 ninth-, tenth- and eleventh-grade students enrolled in a basic curriculum. Bilingually instructed students did not make significant gains in reading in English; however, a significant number of these students showed a gain of one or more levels on a test of their ability to speak and understand English, and significant gains were made in reading in Spanish. In the subject matter areas, the bilingually instructed students performed better than regularly instructed students in only one area--biology. In the areas of science and mathematics, regular students out performed their counterparts on tests given at the end of the year; but the difference here was not significant. It was concluded that the bilingual program had achieved all of its objectives except the one requiring significant gains in reading in English for the bilingually instructed child.

Rosenblatt (1976) reported on a high school bilingual program, Project SABER, operating in a high school in South Brooklyn, New York. The program offered bilingual instruc-
tion in social studies, science, math and Spanish and ESL instruction for approximately 150 ninth- and tenth-grade Spanish-dominant students during the 1975-76 school year. Pre- and post-test comparisons indicated no significant gains in English-language proficiency for the bilingually instructed students, but when they were compared with regular students for achievement in subject matter areas, better performance was revealed in math, science and social studies. However, there was no significant improvement for the bilingually instructed students in reading comprehension in English.

Soles (1975) and Strum (1976) reported on the results of a bilingual program in New York for high school bilingual or non-English-speaking students. Designed to prepare these students for the General Education High School Equivalency Exam in Spanish or in English, the program offered ESL training and instruction in reading, mathematics and social studies through the students' dominant language. The 1974-75 results, according to Soles (1975), indicated significant gains in reading scores and in native-language reading, and significant differences in pre-post-test achievement scores in mathematics for eleven of the twelve centers participating. Further, 80 per cent of the students who took the high school equivalency examination passed. Successful results were also obtained during the 1975-76 school year, Strum (1976) reported, with students showing significant gains in reading in the dominant language and
in mathematics. The passage rate for the high school equivalency exam that school year was also 80 per cent.

Abramson (1976) presented the findings of an evaluation of a bilingual program, CAPISCO, conducted in a New York City high school. Approximately 150 dominant-Italian-speaking ninth- and tenth-grade students in the program received ESL instruction and instruction in their native language in social studies, science and mathematics; language instruction in their native language was also given. The results of evaluation were positive in all areas, with students at both grade levels, ninth and tenth, showing significant gains in English-reading achievement, mathematics, and native-language reading achievement. Further, attitudes toward school and self at the end of the program were improved for all students enrolled.

A bilingual program with similar goals in another New York City high school was the subject of a report by Smith (1976). Students enrolled in the program, either dominant Greek-, Arabic- or Spanish-speaking, received native-language instruction in mathematics, science and social studies and received ESL instruction. The results of test information indicated significant achievement for the students in all areas of instruction.

Lolis (1976) reported on another New York bilingual program, this one in Brooklyn for ninth- and tenth-grade students whose dominant language was either Spanish, French, Italian or English. Results indicated significant growth
in reading in the Spanish language and proficiency in the English language and in mathematics for the Spanish-language dominant students. However, no significant growth was established for either the dominant-French or the dominant-Italian-speaking students on the English language tests.

Cervenka and Rodriquez (1979) reported the evaluation results of the Rafael Cordero bilingual school program for the 1978-79 school year. The school operated in one district in New York City and offered a basic bilingual education program for junior high students. During the 1978-79 school year, approximately 20 per cent of the students enrolled were English-dominant and 80 per cent were Spanish-dominant. The program was offered for students who were coming from bilingual elementary school programs. Results of the evaluation were reported by grade and by language dominance. The seventh and eighth grade English-dominant groups both showed significant improvement in English-language reading. However, the significant growth rate in Spanish-language reading shown for the eighth grade was not found for the seventh-grade group. Both seventh- and eighth-grade English-dominant students showed significant improvement in attitude toward school. No data was available for either group for mathematics achievement in the dominant language. The seventh- and eighth-grade Spanish-dominant groups showed similar progress in the various areas measured. Both groups made significant improvement
in growth rate in Spanish reading and also in ESL. Similar significant improvement was found in student achievement in mathematics in English, but eighth-grade Spanish-dominant students showed a significant increase in mathematics in Spanish.

The evaluation of a high school bilingual education program in New York City, Project Aprende, was the subject of a report by Keller and Tills (1979). The program was established in three junior high schools in New York City during the 1978-79 school year and provided bilingual-bicultural instruction in reading, language arts and selected content areas. Instruction was conducted in students' native language and in their second language. The student population was predominantly limited-English-speaking non-Hispanic students whose parents wanted them to study Spanish as a second language. Results of the evaluation were reported by language-dominant groups in the various areas tested. These areas included Spanish reading, English reading and mathematics. Post-test scores for Spanish-dominant students in Spanish reading indicated that, on the average, some progress was realized; achievement in English reading, however, was not improved, with students' scores showing a decrease from pre- to post-test. In mathematics, assessment indicated some growth for Spanish-dominant students at grade seven and relative stability at the other grade levels, eight and nine. For English-dominant-students, evaluation results were less promising. Except for grade
nine, no significant improvement was found for reading in Spanish. Mathematics achievement scores showed significant growth for both seventh and eighth grades, but there was a retrogression in this area for grade nine. No post-test data was available for assessment of this group's English reading skills. In general, the authors concluded, the program for Spanish-dominant students was effective in maintaining their Spanish reading skills, but there was a need for greater emphasis in teaching English reading. Mathematics achievement results for English-dominant students were also encouraging.

In his study, Prewitt Diaz (1979) sought to determine the effects of a bilingual curriculum on a group of ninth graders with regards to attitude toward school and self-concept. The experiment involved one treatment group which was monolingual in Spanish and two comparison groups: a monolingual-English group and a bilingual group. The monolingual-English group and the bilingual students were from a mainstream curriculum. The students were administered two self-concept inventories and a school sentiment scale at the beginning and end of a semester of one school year. To assess results, analysis of covariance was used to control for initial differences in intelligence and socioeconomic status. Results of analysis of adjusted post-test means for the two self-concept inventories and the school sentiment inventory indicated that all three groups had grown, but the growth was highest for the Spanish-monolingual group; also the dif-
ference between the groups was significant in favor of the Spanish monolinguals.

The most prominent figure in reporting high school evaluations was Ruddie Irizarry. Along with others, his name appeared as preparer of the nine evaluation reports which follow.

The bilingual-bicultural program at Thomas Jefferson High School in New York City offered bilingual instruction in academic subjects and native language arts for students in grades nine through twelve; it also provided ESL instruction. Evaluation of this program was primarily obtained from criterion-referenced test data, so results, as Irizarry and others presented them, were reported in terms of objectives completed or percentage of students passing. The results of assessment of ESL for Spanish-language students indicated that students mastered an average of 43 per cent of the objectives attempted, with better percentage of mastery of the higher level skills. In native-language arts, the percentage of students passing the exam in the fall ranged from 90 per cent in twelfth grade to perfect mastery in the eleventh grade. In the spring, however, the range was from 83 per cent in the ninth grade to perfect mastery in the twelfth grade. In mathematics, the percentage passing the examination increased at all grade levels except for ninth grade for fall to spring testing. In the content areas of science and social studies, the percentage passing the exam increased at all grade levels from fall to
spring testing (Irizarry and others, 1978).

Project ABLE was a bilingual education program operating at Theodore Roosevelt High School in Brooklyn, New York during the 1978-79 school year (Irizarry and others, 1979g). The program served 360 Hispanic and Italian students in grades nine through twelve during that year, and offered bilingual instruction in ESL, native-language arts and the content areas. For evaluation, both criterion-referenced and norm-referenced tests were used. Results were reported for achievement in English language by Spanish-language students, English-language fluency, native-language reading in Spanish and Italian and achievement in content areas. In assessment of ESL achievement, the results revealed that from 47 to 60 percent of the objectives were mastered for grades nine through eleven. The objectives for English-language fluency that at least one scale rating on a language-fluency scale was not achieved at any grade level. This may have resulted, the authors reported, from the "topping out" phenomenon. In native-language reading achievement in Spanish, the mean increase from initial to final testing was significant for all grade levels. In native-language reading in Italian, for both groups, tenth and eleventh graders, taking the test, rates of passing were achieved which substantially exceeded the criterion set for mastery. The results for content-area achievement indicated that, with the exception of the ninth-grade mathematics students at the end of the spring term and the tenth-grade mathematics students at the end of
the fall term, all students passed at rates which exceeded the program-set criterion level for passing.

The South Bronx High School bilingual program for the school year 1978-79 in Brooklyn, New York, was evaluated to determine the effectiveness of bilingual basic-skills instruction in ESL, English reading, native-language arts and various content areas (Irizarry and others, 1979a). Instruction was given to 360 ninth and tenth graders. The findings revealed that both ninth- and tenth-grade students made significant gains in English reading; also, most students passed the tests in Spanish-language arts and in the content areas. Students exhibited gains in mathematics on norm-referenced tests but did not pass teacher-made tests.

The George Wingate High School Integrated Bilingual Education Program in Brooklyn, New York, served 280 limited-English-speaking Haitian students in grades nine through twelve during the 1978-79 school year. The program was evaluated in terms of English-language achievement, English-reading achievement, native-language reading and mathematics (Irizarry and others, 1979c). Results for English-language achievement showed substantial gains for students in all grades in the number of skills mastered, with students in the ninth and tenth grades tending to master more objectives than the eleventh and twelfth grades. In the area of reading achievement in English, no significant gains were found from pre- to post-test, but only a small number of
students took the test. In the area of reading in the native language, correlations for pre- and post-test scores was negative for ninth graders and low for eleventh and twelfth graders. Only for the tenth graders was the growth from pre- to post-test significant. In mathematics, only three out of eight groups exceeded the rate set as criterion for success. Overall, the evaluators concluded, the bilingual students met the objective set for achievement in the content areas.

A bilingual education program for 206 dominant-Spanish, French, and Italian-speaking students and ninety-eight dominant-English-speaking students in grades nine through twelve was part of the instructional program at John Jay High School during the school year 1978-79 (Irizarry and others, 1979e). Non-English-dominant students received instruction in ESL or remedial English, with emphasis placed on mainstreaming the students with their English-dominant peers. Results of the evaluation were reported in terms of objectives mastered and percentages passing exams. In ESL classes, students from all linguistic backgrounds mastered an average of 0.6 instructional objectives per month. Hispanic students showed significant gains in reading achievement in Spanish, and 40 to 71 per cent of the students in grades nine through eleven achieved passing grades in mathematics. In science, bilingual students achieved rates of passing which ranged from 77 to 100 per cent.
The Eastern District High School bilingual education project in Brooklyn, New York, was the subject of an evaluation for the school year 1978-79 (Irizarry and Others, 1979a). In this project, 367 Hispanic students in grades nine through twelve received instruction in ESL and/or reading in English, native-language arts and instruction in subject matter areas. Results of the evaluation indicated that in the areas of achievement in English-reading skills, and native-language achievement, students at every grade level, nine through twelve, demonstrated statistically significant gains from initial to final testing. In English-language proficiency, all grade levels approached the program set objective for improvement in the expression mode. Student achievement was consistently high in the content areas, overwhelmingly achieving the criterion-level passing rate. Only one group out of eight did not achieve the passing rate in mathematics, and only two groups did not meet it in science.

Louis D. Brandeis High School's bilingual program was implemented in New York City for 900 Hispanic students with limited proficiency in English during the 1978-79 school year. Criterion-referenced tests results were used to assess the effectiveness of instruction designed to develop English- and Spanish-language skills and to improve subject matter achievement (Irizarry and others, 1979f). The findings indicated that students in all grades made gains in reading in Spanish, but only at the ninth-grade level were
the gains significant. It was also only the ninth graders who met the criterion level of success in mathematics. In science, nearly one-half of the students reached the criterion of achievement; and in social studies, all the twelfth graders and half of the students in the other grades met this criterion. All students exceeded the criterion in Spanish-language arts and, in English proficiency, most students appeared to be making progress.

A final evaluation of the John Browne High School bilingual program in New York City was conducted for the 1978-79 school year (Irizarry and Others, 1979d). In the program some 269 New York City students with limited proficiency in English in grades nine through twelve received instruction in English and Spanish language arts and in the content areas. The results of the evaluation were reported by grades for each area of instruction. All grades made statistically significant gains in English-reading achievement, except for the eleventh grade students who had entered the program in 1976. Also, except for the tenth grade, the students demonstrated a significant gain in native-language achievement. Achievement of the objectives for content-area instruction was met when 70 per cent of each grade passed the midterm examinations in the content areas of mathematics, science and social studies.

The Fort Hamilton High School Greek, Arabic, and Spanish (GRASP) bilingual program was the subject of an evaluation for the school year 1978-79. The program served 200
limited-English-proficiency students from Brooklyn, New York. Students received instruction in English-language skills or remedial English, native language arts and in the content areas (Irizarry and Others, 1979b). Evaluation of the program was completed using student-achievement data from norm- and criterion-referenced tests in the areas of instruction. In the area of English reading, Greek-speaking, Arabic-speaking, and Spanish-speaking students made statistically significant gains at all grade levels, except the twelfth-grade level for Greek-speaking students and the tenth grade for Arabic-speaking students. Here, the gains were only of moderate significance. In the area of native language arts, both Spanish- and Greek-speaking students made statistically significant gains on a standardized test of reading in Spanish at all grade levels. In the content areas, a substantial percentage of students in all groups achieved the course expectations. This was true for mathematics, science and social studies.

Reviews and Summaries of Significant Other Studies. An area of research in the realm of bilingual education enjoying a wider share of attention than most others was the investigations into the effect of bilingualism on intelligence. Darcy (1963) reviewed seventeen studies on the effects of bilingualism on the measurement of intelligence conducted during the 1950's, including eight studies of Spanish-English bilinguals, five of Welch-English bilinguals and four involving other languages. Though the results of
the studies were not consistent, the bulk of the evidence, Darcy (1963) concluded, indicated that bilingual children received significantly lower scores on verbal intelligence tests; this did not hold for non-verbal intelligence tests, however, particularly if the monolingual and bilingual subjects were of the same social class.

Peal and Lambert's (1973) review of the research of the relationship of bilingualism to intelligence conducted over several decades covered thirteen studies which found that monolingual groups performed better than bilingual groups on both verbal and non-verbal intelligence tests; two of the investigations they reviewed supported the favorable effects of bilingualism on intelligence. Reporting the results of their own study with a group of monolingual and a group of bilingual ten year old children, Peal and Lambert (1973) revealed quite different results from the dominant findings: the bilingual groups performed better than monolinguals on both verbal and non-verbal intelligence tests.

Results such as those of the Peal and Lambert study, according to Ramirez (1977), were quite common in later research. Investigations conducted by Cummins and Gulutson in 1974, Fieldman and Shen in 1971, Liedke and Nelson in 1968, Bain in 1974, Carringer in 1974 and Iaco-Worrall in 1972, Ramirez reported, all gave definite indication that bilingual individuals did have an advantage over monolin-
guals in some spheres of mental and cognitive ability. Further, Ramirez indicated, other studies like those of Lopez and Young in 1974, Price-Williams and Ramirez in 1976 and De Avila and Havasst in 1974, all indicated that in most cognitive abilities, Spanish-English bilinguals were either superior to or at least on a par with their monolingual (English-speaking) peers.

Several reviewers of research on bilingual education concluded that enough evidence existed to say with confidence that "quality" bilingual education programs could meet the goal of providing equal educational opportunity for students from non-English-speaking-backgrounds. This view was shared by various authors: Paulston (1977a), Fishman (1977a), Pifer (1980) Dulay and Burt (1980), Harrington (1980), and the Fourth Annual Report (1979). In her review of bilingual education research, Paulston (1977a) found that in seven studies, children in bilingual programs did better in English-reading and/or subject matter achievement than the students in traditional classes; two studies found no difference; one study revealed that the children in an ESL program did better; and one study favored the traditional English program. Further analysis of these studies revealed, however, that skills in mathematics did not transfer across languages as did literacy skills in reading. In subsequent work, Paulston (1977b) examined at least forty-nine dissertation studies and several independent evaluations conducted between 1960 and 1976 and concluded that, in general, bilin-
gual education showed favorable effects on pupils' achievement, attitudes, and self-concept. However, Paulston (1977b) advised that caution should be used in the interpretation of these results, due to the possible bias influencing each researcher's design, the lack of background information included in the studies and the possible influence of the Hawthorne effect on the experimental groups of the studies.

Trolke (1978) and Pifer (1979) presented the results of twelve program evaluations collected by the Center for Applied Linguistics in 1978. These included Spanish-English programs in Philadelphia; San Francisco; Artesia, New Mexico; New Haven, Connecticut; and Douglas, Arizona. These also included French-English programs in Lafayette Parish, Louisiana and St. John Valley, Maine; Spanish-English and Chinese-English programs in San Francisco. In several instances in these projects, Trolke (1978) reported, student achievement in English had risen to or above national norms; additionally, the students had acquired skills in their native language. The results of these projects also showed, according to Pifer (1979) that bilingual education students performed as well (or better) on tests of reading, writing, math concepts, social science, and other measures as comparable groups in regular classes. Further, Pifer offered, attendance figures for the bilingual education students in these projects were, in general, higher than would otherwise have been the case, and indications were that students showed a positive attitude toward the programs and
their academic capabilities.

Dulay and Burt's (1980) analysis of the studies accepted by them as empirically sound, produced a total of sixty-six findings. Of these, only one per cent were negative, 58 per cent were positive and 41 per cent were neutral. These results, they concluded, provided fairly substantial evidence of the effectiveness of bilingual instruction for limited-English-speaking/non-English speaking students who were dominant in their primary language.

Well designed studies in bilingual education, Harrington (1980) reported, showed that bilingual education fostered cognitive development achievement in school, positive attitudes toward schooling and positive attitudes toward other ethnic groups. Other studies, he continued, showed improvement in second-language acquisition, readiness for schooling and improved self-concept. Still others, Harrington noted, were available to contradict these findings, but these were on different programs and, with current research, it was not possible to explore precisely what characteristics of programs produced successful outcomes and compare them with programs producing negative outcomes.

According to the Fourth Annual Report (1979), numerous bilingual education programs had demonstrated success in various areas. These included programs in Santa Fe, New Mexico; Rock Point, Arizona; Loraine, Oklahoma; and Lafayette Parish, Louisiana. Data from these programs, according to the Fourth Annual Report, showed that students par-
Participants in bilingual programs scored higher on cognitive achievement tests (Stanford and Metropolitan) than control groups not benefiting from bilingual education. Among the projects described in the Fourth Annual Report were a longitudinal study of the Spanish-English bilingual project in Santa Fe, in which the most promising results were obtained in both math and reading for the five-year longitudinal group; projects in San Francisco; St. John Valley, Maine; New Haven, Connecticut and St. Paul, Minnesota, in which significant gains were achieved by the bilingual education groups over control groups in the areas of mathematics, Spanish and/or English reading and language arts; and an Arabic-English bilingual education program in Dearborn, Michigan in which bilingual classes consistently scored higher than their equivalent control groups when tested with the Metropolitan Achievement Test in mathematics, English- and native-language achievement. Further, the Fourth Annual Report revealed, there were major gains in self-concept for bilingually educated students in projects such as Artesia, New Mexico; St. Paul, Minnesota; Dearborn, Michigan; and St. John Valley, Maine. Control group children continued to lose positive self-image while children in bilingual programs maintained or increased it. The results of these programs, according to the Fourth Annual Report, demonstrated conclusively the effectiveness of bilingual instruction in enabling non-English-speaking or LEP students to reach their full educational potential.
Perhaps, the most controversial large-scale research undertaking in bilingual education was that performed by the American Institute for Research (AIR) for the United States Office of Education. In 1978, AIR published the results of a three-year study which involved the examination of thirty-eight Title VII projects with a total enrollment of 12,000 students (Danoff, 1978). The projects were all in their fourth or fifth year of funding. Most were maintenance bilingual programs and less than one-third of the students were classified as limited-English-speaking.

The research findings were not entirely favorable to bilingual education. For the sample of students in grades two and three during the 1975-76 school year, Fall to Fall testing, Danoff (1978) reported, revealed the following:

(1) The Fall-to-Fall achievement gains in English reading and in mathematics computation in Title VII projects were neither statistically significant nor substantially different from what would have been expected without participation in a Title VII project.

(2) The English-reading percentile rank and the mathematics percentile rank of the average Title VII Hispanic student remained at approximately the same level between Fall, 1975 and Fall, 1976 (approximately the 20th percentile in English reading) for the second and third graders who were followed into the third and fourth grade.
The results for the second through sixth grade comparisons from Fall, 1975 to Spring 1976, Danoff reported, were not any more promising. Among these were:

1. There were some instances of Title VII impact in English language arts and mathematics in some grades, but the overall across-grade analysis showed that the Title VII program did not appear to be having a consistent significant impact on student achievement.

2. In general, across grades, when total Title VII and non Title VII comparisons were made, Title VII students in the study were performing worse in English and at about the same level in mathematics as non Title VII students.

Further, the AIR report indicated, comparisons of Title VII and non-Title VII students in the area of attitudes toward school revealed that participation in Title VII programs did not bring about a more positive attitude toward school and school-related activities. Both Title VII and non Title VII students appeared to have a fairly neutral attitude in both Title VII and non-Title VII schools. In the area of Spanish reading, the results showed a gain in scores for Title VII students on the Spanish Reading Test between the pretest and posttest in the 1975-76 school year. No comparison group was available.

Reaction to the AIR study was immediate and critical. Professional bilingual educators pointed to flaws in the
project design, to weaknesses in purpose, and they questioned the accuracy and validity of the methodology employed in executing the evaluation (Fourth Annual Report, 1979, Burt and Dulay, 1980, Harrington, 1980). According to the Fourth Annual Report (1979), one major criticism was the manner in which the target population of the study was classified by language dominance—subjectively by the teacher of each classroom included in the study. Among other indicators of the inadequacy of this approach, according to the Fourth Annual Report, was the large body of research which pointed to the unreliability of teacher judgment as an indicator of the language characteristics of students.

A second criticism discussed in the Fourth Annual Report (1979) was that the Title VII and non-Title VII groups of the study were never tested for comparability at the onset of the study. It was possible that the two groups differed on the basis of cognitive development. It was known that the groups did differ in terms of language proficiency in English and Spanish before entering school. Thus, the groups were not comparable on most critical elements in evaluating a language program.

There was also a methodological conflict in the testing procedure, the Fourth Annual Report pointed out; this placed doubt on the applicability of administering an English-language achievement test to Spanish monolingual children who were just learning to read and write in English in
order to compare their English-reading ability with the non-
Title VII group which had basically been functioning in Eng-
lish for several years.

A point of objection was also made on the time element
in the pre- and post-tests of the evaluation—the average
duration time across all of the sites from pre- to post-
test was only 5.5 months. Bilingual education, the Fourth
Annual Report pointed out, was a cumulative process which
took years and could not be measured over a few short months.

Harrington's (1980) discussion of reactions to the AIR
report included some of the same objectives presented in the
Fourth Annual Report. Three additional criticisms were
revealed, and all involved what were considered methodo-
logical weaknesses. One criticism was that the research
design called for compiling data from many separate projects,
each having different purposes, staffs and programming.
Such differences might have obscured the design, rendering
the results uninterpretable. Further, in lumping results
across all programs, Harrington pointed out, AIR made no
attempt to isolate successful programs from unsuccessful
ones. This made it difficult to ascertain what constituted
successful programs. Also, the research was criticized,
Harrington reported, because evaluation was done without
checking to see if the funds had been spent as they were
intended.

Dulay and Burt (1980) rejected AIR's study for what
they believed to be weaknesses in purpose. The large
majority of students in AIR's sample, they noted, were English-dominant or English-monolingual students. So the measure used to judge the success of the programs for such students should have been radically different from that used to judge success for non-English-dominant, limited-English-speaking or non-English-speaking students. Further, they asserted, the AIR study attempted to evaluate the impact of Title VII funds and, in so doing, did not focus on the educational question of greatest concern—the effects of bilingual education on limited-English-speaking/non-English-speaking students.

A particularly significant finding in bilingual education research, according to Pifer (1979, 1980) and the Fourth Annual Report (1979), was that bilingual education had a cumulative effect that might not become evident until after five or six years of instruction, and therefore, might not show up in short-term evaluations. Of particular interest, according to the Fourth Annual Report, were the program results of a Brownsville, Texas project which indicated that the longer students were in the bilingual program, the better was their performance in the regular school program, though the effect did not become pronounced until after four or five years of bilingual instruction. This finding, the Fourth Annual Report suggested, was relevant not only in analysis of research results, but also for proposals in bilingual education that suggested bilingual education be limited to short-term programs, moving students into regu-
lar monolingual-English programs as quickly as possible.

A recent study by Finnish researchers on the achievement of Finnish immigrant children in Sweden, was felt by some researchers (Pifer, 1979, Troike, 1978, Fourth Annual Report, 1979) to have a bearing on the American experience and, perhaps, showed revolutionary significance for the education of linguistic minorities. In this study the researchers found that the longer the Finnish students were educated in Finland in their native language before coming to Sweden, the better they did in Swedish. These students were more likely to approach the norms of Swedish students, the study showed, when they emigrated to Sweden around the age of ten or twelve, after they had had five or six years of education in their native language in Finland. Similar anecdotal evidence was available (Pifer, 1979, and Troike, 1978) to suggest that Mexican children who emigrated to the United States after the sixth grade out performed Mexican American children who had been in the country since the first grade.

The implication of these findings, according to Pifer (1979) and Troike (1978), was that they presented evidence suggesting that if children were submersed in instruction in another language before the age of ten, it exerted a destabilizing effect on the development of their native language as a tool for cognitive organization. Thus, these children might not acquire the ability to use the second language for such purposes, becoming semilingual, not fully
competent to carry out complex cognitive operations in either language.

Results of immersion programs in Canada and a few in the United States were seen as possibly contradictive of the findings of the Finnish study (Troeike, 1978) and to the concept of bilingual education (Bowen, 1977). Immersion programs were basically programming in the second language. They were designed to make children currently functioning only in English truly bilingual. As they were conceived in Canada with the first kindergarten class at St. Lambert in 1965, Stern (1978) revealed, certain features distinguished them from other forms of language teaching: (a) substantial amount of educational time—up to 100 per cent—were given to French with English-speaking students; and (b) a substantial amount of French time was spent on educational activities conducted in French rather than the study of French per se.

Overall, the main findings of immersion research, Stern (1978) reported, were favorable. Children in immersion programs learned more French than students in extended French or core programs. There was a slight temporary loss in the editorial skills of English language arts, but no long-term negative effects of the programs on English-language skills. In some instances, the comparisons even favored the immersion group. As far as content learning was concerned, a large number of data, Stern noted, indicated that students learned subject material taught to them
in French and demonstrated achievement levels comparable to students taught the same subjects in English. Further, students in immersion programs seemed to gain a more positive outlook on the French language than students in other programs.

Researchers in second-language instruction might look at the results of the immersion programs, Troike (1978) asserted, and see them as contradictory of the findings reported in the Finnish experiment and in many other bilingual education programs. Indeed, Bowen (1977) was one who pointed to experiments like the French immersion programs as counterevidence that the choice of language to be used as medium of instruction was not the determining factor of pedagogical success. The question remained for Bowen as to why the immersion programs like those in Canada and Culver City in the United States had produced such encouraging results when essentially the same curriculum pattern—total immersion in English—had proven completely unproductive for limited- or non-English-speaking students in the United States. Both Bowen and Troike proffered that the difference was not strictly a linguistic problem. Rather, the success, or lack of success, of students under various language-learning conditions had to do with the relative social and cultural status of groups in the community. It was significant, Troike asserted, that the children who succeeded in immersion programs were, for the most part, middle-class children from supportive homes whose language and culture
were in no way threatened or demeaned by their being taught in another language. This had not been the case for most linguistic minority groups in the United States.

Summary of Research in Bilingual Education. The research in bilingual education reviewed in the preceding section fell roughly into three areas: (1) Bilingual Education and Language Development; (2) Bilingual Education and Academic Achievement; and (3) Reviews and Summaries of Significant Other Studies.

The primary issues studied under Bilingual Education and Language Development were the following:

(1) Whether the bilingual education program, which usually included some use of the students' native language, assisted LEP students in learning the English language.

(2) Whether the bilingual education program, which usually included some use of the students' native language, assisted LEP students in learning their native language.

(3) Whether immersion in a second language retarded language development in English and cognitive growth or really led to functional bilingualism.

In summarizing the findings for issues one and two, it was necessary to separate the studies which involved comparative analysis, using bilingually and monolingually (English) instructed groups, from those which considered average gains from pre- to post-testing to analyze their
results. In studies involving comparative analysis, for issue one, three studies found significant differences in English-language development, favoring the bilingually instructed group; in two studies, no significant differences were found. For studies analyzing average gains, significant gains from pre- to post-testing were found in four cases. Non-significant or no gains were found in three cases.

For issue two, studies involving comparative analysis revealed significant difference in native-language development, favoring bilingually educated students in two investigations. There were no studies where no significant differences were found. For studies analyzing average gains, significant gains were found in three cases. Non significant or no gains were also found in three cases.

Not all of the factors listed in issue three were considered for evaluation for every immersion program. Four studies considered functional development of both languages by the immersed group as compared to the language development of appropriate control groups. In three of these studies, the results favored the students in immersion classes. The other study produced mixed results. When comparisons were made between groups for achievement in English-language skills only, in two studies no significant differences between immersion and control groups were found. This finding was also true for the two studies which considered differences in academic achievement.
Included under the section Bilingual Education and Academic Achievement were research and evaluation studies which considered the following major problems:

1. The effect of bilingual education on achievement in English-reading skill development
2. The effect of bilingual education on achievement in native-reading development
3. The effect of bilingual education on academic achievement in the subject matter areas
4. The effect of bilingual education on attitude toward school factors
5. The effect of bilingual education on self concept

The majority of investigations in this section used either a two-way analysis, experimental/control group research design or one-group, pre-post-test comparisons. When the experimental-control-group research design was used, LEP students educated bilingually were compared either with monolingual students educated in a regular program or other LEP students educated in a regular program. Pre-post-test comparisons in the one-group design most frequently involved measurement of any significant gains or mean increases from pre-testing at the beginning of a school year to post-testing at the end of a school year.

Of the eighteen comparative-analysis studies which investigated problem one, seven revealed that bilingually educated students performed better in English reading than similar students in a regular program. There were no sig-
significant differences between the two groups in eight of the studies; two investigations were mixed, revealing significant difference for one grade or language group but not the other; and one study, a longitudinal analysis, concluded that achievement in English reading favored the traditionally educated students. The research studies investigating pre- and post-test gains in English reading revealed significant gains in six; and eight investigations produced mixed results, again, according to grade or dominant language.

In the area of native-language-reading skill development, seven of the ten comparative studies which considered this factor favored bilingual education. One study showed no significant difference between the approaches, and one, a longitudinal analysis, favored the regular program. Research considering pre-post-test gains in this area found thirteen cases in which mean increases were significant and nine cases in which the results were mixed, by grade, by language, or by ability level. There were no examples in which no gains or non-significant gains were found.

Of the fifteen comparative-analysis studies investigating problem three, six revealed that bilingually educated students performed better in various subject matter areas than similar students in a regular program. There were also six studies in which no significant differences were found; three investigations produced mixed results, by grade or by student groups; and one study favored the traditional approach. In the research investigating pre- post-
test gains, significant mean increases were found in all but one of the eighteen studies. Five investigations produced mixed results by grade.

Research investigating attitude toward school and self-concept was not well represented in the literature. The review in this section contained seven evaluations which considered attitude and thirteen which considered self-concept. Of the seven evaluations of attitude toward school two comparative analyses favored the bilingually instructed group, and one found no significant difference in the approaches. When gains were considered, in all four studies, bilingually instructed students experienced significant increases from pre- to post-testing.

In the area of self-concept, four of the six investigations revealed that the self-concept of students educated bilingually improved significantly more than that of students educated in a regular program. No significant differences were found in two of the studies. When gains were considered, in all seven of the studies, bilingually instructed students experienced significant increases from pre- to post-testing.

The third section of the review of research in bilingual education was devoted to summaries of the research by other authors and significant studies which were felt to have special impact on bilingual education. Those reviewing research studying the effect of bilingualism on intellectual development concluded that many of the studies
found monolinguals superior to bilinguals in cognitive development, but this was often only on tests of verbal intelligence. On nonverbal intelligence measures, few difference were found between the two groups. Reviewers who looked at bilingual education projects classified by authorities as "quality" programs concluded that bilingual education programs could meet the goal of providing equal educational opportunity for students from non-English speaking backgrounds. The single large-scale study of bilingual education to date, the AIR research, was not pro-bilingual education in its findings; however, it was highly criticized by reviewers for methodological and philosophical weaknesses. A case was made, in a review of some studies, for the cumulative effect of bilingual education and for the advantages of obtaining initial literacy in the mother tongue. Beginning instruction in the native language to obtain initial literacy, it was held, led to improved achievement later when the second language was used as a medium of instruction. Finally, the favorable impact of immersion programs was recognized. Immersion programs, the reviewers found, were not only effective for learning a second language, but also for academic achievement at levels comparable to students taught the same subjects in English.
Chapter 3

MATERIALS AND PROCEDURE

Materials

The materials for this study consisted of five instruments: The Metropolitan Achievement Test, Form F, 1970 Edition, Elementary and Intermediate Levels, published by Harcourt Brace and World, Inc.; The Piers-Harris Children's Self-Concept Scale by Ellen V. Piers and Dale B. Harris; Estes Attitude Scales by Thomas H. Estes, Ph.D., Julie P. Johnstone, Ed.D., and Herbert C. Richards, Ph.D.; the Louisiana State Parental Survey of Home Languages, published by the Louisiana State Department of Education; and a Teacher Student-Evaluation Form developed by the Bilingual Education staff of St. Martin Parish Schools.

The Metropolitan Achievement Test was the instrument historically used in the target Parish for post-achievement testing. A nationally normed standardized test, it included in the reading and mathematics subtests at the elementary and intermediate levels, sections on word knowledge, reading comprehension, mathematics computation, math concepts and problem solving. Reliability data for the tests were reported for each section and for each subtest as a whole. Coefficients based on split half procedures showed that at the intermediate level, tests of word knowledge ranged from a reliability coefficient of .92 to .93; reading comprehension was at .93, and a 196 was given for the total reading
score. The coefficients for mathematics computation ranged from .84 to .88. At the elementary level, the authors reported reliability coefficients ranging from .93 to .95 for word knowledge; from .93 to .95 for reading comprehension; from .96 to .97 for total reading and from .86 to .91 for mathematics computation.

The Piers-Harris Children's Self-Concept Scale is an eighty-item instrument designed to ascertain how a student feels about himself and his relationship with his peers. Each item is a declarative statement of the type, "I am a happy person: to which the student responds "yes" or "no." Using Bentler's (1972) figures, internal consistency of the Scale ranged from .78 to .93 and retest reliability from .71 to .77. The Scale correlated with similar instruments at the mid-sixty level, Bentler (1972) stated, and possessed teacher and peer validity coefficients at about .40. The Scale had also not been found to correlate unduly with social desirability. Because of these characteristics, Bentler (1972) concluded that the Piers-Harris Children's Self-Concept Scale possessed sufficient reliability and validity to be used in research.

The Estes Attitude Scale is provided in two forms, one for the middle, junior and senior high school and the other for the elementary grades. Both forms are designed to measure how students feel about courses taught in school. The form for the middle, junior and senior high school includes five separate scales of fifteen items each for
measuring attitudes toward English, mathematics, reading, science and social studies. Each scale requires the student to rate each item on a continuum from one to five, moving from "strongly agree" at number five to "strongly disagree" at number one. Specially prepared answer sheets were used with this form.

The form for the elementary grades includes three separate scales for measuring attitudes toward mathematics, reading and science. Each scale requires the student to rate each item using one of three possible responses: "A" for "Agree"; "?" for "Don't Know"; and "D" for "Disagree." At this level, students marked their answers directly on the student booklet.

The authors reported evidence of content, factorial, convergent and divergent validity for the scales and a split-half reliability coefficient of .94. Summers (1976: 19) in his evaluation of several attitude scales, rated Estes' instrument highly, calling it "technically and conceptually the best developed attitude scale today."

The Louisiana State Parental Survey of Home Languages is an instrument developed by the staff of the Foreign Language and Bilingual Education Section of the State Department of Education in conjunction with local directors of bilingual education programs in the State. According to Mr. Moses Dyes, Director of the Foreign Language and Bilingual Education section, the Survey was developed in response to requirements of Title VII of ESEA, the Bilingual Education
Act, which stipulated the need to identify those participants in bilingual education programs who could be classified as limited-English speaking.

The first draft of the instrument was completed in 1975 and grew out of an intensive review of home-language surveys being used in fifteen states. This draft was field tested in Louisiana parishes which had bilingual education programs during the 1975-76 school year. Field testing led to some revisions, Mr. Dyes, stated, primarily in the wording of several statements to make them less threatening to the respondents and, thus, encourage parents to complete the form.

In its revised form, Mr. Dyes reported, the Survey of Home Languages had been accepted by officials in Washington as a valid instrument for identifying children of limited-English-speaking ability, and eighteen Title VII programs in the State had been funded, based, in part, on the information it produced. The instrument had also gained the approval of local personnel who reviewed and administered the instrument in their local parishes.

Besides biographical data, the Survey contained seven items designed to determine the use and frequency of use of a language other than English in the homes by students, their parents and other members of the family. In the target Parish, data obtained from the Survey was substantiated by other information gathered by the Bilingual Education staff. The follow-up to the Survey was performed for all
students who indicated that:

(1) they heard a second language most of the time or some of the time at home.

(2) the second language was spoken by other members of the family.

(3) they understood most or some of the second language spoken.

(4) they spoke the other language much or some of the time.

The follow-up procedures consisted of two steps:

(1) Examination of student total-reading scores on the Reading sub-test of the Metropolitan Achievement Test administered to students during the spring of the past year. Any student scoring below the 20th percentile in reading on the test was classified as limited-English speaking.

(2) Teachers were asked to evaluate each student selected by the Survey according to the nature of language use in the classroom. Teacher evaluations of these students were reported on a Teacher Student-Evaluation Form, developed by the Bilingual Education staff of the Parish, on which the teacher indicated whether or not the student:

(1) exhibited difficulty in speaking, reading or writing in English in the classroom

(2) tended to speak a mixture of both English and French in classroom communication
(3) spoke French sometimes to classmates.
A positive response to any one of these statements
was used, along with the other criteria, as an
indication of limited-English-speaking ability.

Procedure

Sample of the Study. Forty-nine third-grade students
and seventy-three sixth-grade students, a total of 122 stu-
dents enrolled in bilingual education programs in elementary
schools in St. Martin Parish, comprised the experimental
group. Forty-three third-grade students and seventy-one
sixth-grade students, a total of 117 students enrolled in
regular education programs in elementary schools in St. Mar-
tin Parish, comprised the control group. All bilingually
educated students participating in the study had been
enrolled in bilingual education classes in the Parish since
kindergarten. Voluntary enrollment in these classes made
the bilingually educated sample a heterogeneous group in
terms of ability and English-language proficiency. The
traditionally educated sample used as the comparison group
was also composed of heterogeneously grouped students.

Three students were eliminated from the sample in the
final analysis because of a lack of post-test scores, so
the total sample of this study was 236 students. Table 1
indicates the distribution of students participating in the
study by group, sex, race, grade and English-speaking
level.
Table 1
Distribution of 236 Students by Group, Sex, Race, Grade and English Speaking Level

<table>
<thead>
<tr>
<th>Group</th>
<th>M</th>
<th>F</th>
<th>B</th>
<th>W</th>
<th>DE</th>
<th>LE</th>
<th>3</th>
<th>6</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bil.</td>
<td>57</td>
<td>65</td>
<td>36</td>
<td>86</td>
<td>54</td>
<td>68</td>
<td>49</td>
<td>73</td>
<td>122</td>
</tr>
<tr>
<td>Tra.</td>
<td>57</td>
<td>57</td>
<td>39</td>
<td>75</td>
<td>71</td>
<td>43</td>
<td>43</td>
<td>71</td>
<td>114</td>
</tr>
<tr>
<td>Tot.</td>
<td>114</td>
<td>122</td>
<td>75</td>
<td>161</td>
<td>125</td>
<td>111</td>
<td>92</td>
<td>144</td>
<td>236</td>
</tr>
</tbody>
</table>

Bil. = Bilingually Educated  DE = Dominant English-Speaking
Tra. = Traditionally Educated LE = Limited English-Speaking

During the week of October 9, 1978, the researcher administered the Reading and Mathematics Subtests of the Metropolitan Achievement Test, Form F, as a pretest to the students participating in the study. Within a week of pre-achievement testing, October 16-October 29, 1978, the researcher administered the Piers-Harris Children's Self-Concept Scale and the Estes Attitude Scales to students in both the experimental and control groups. The items of both the Self-Concept Scale and the Estes Attitude Scales were read to students at both grade levels.

Also, during the week of October 23, 1978, the Louisiana State Parental Survey of Home Languages was administered to parents in St. Martin Parish by the Bilingual Education staff of the target Parish. The follow-up
Teacher Student-Evaluation Form was completed during the fall semester, 1978, after all other data had been collected.

During the week of April 16, 1979, the researcher administered the Reading and Mathematics Subtests of the Metropolitan Achievement Test, Form F, the Piers-Harris Children's Self-Concept Scale and the Estes Attitude Scales to the same group of students. All data were collected and compiled by Summer, 1980, with analysis of data and writing of results completed by Summer, 1981.

Examination of Parish records revealed that the composition of both experimental and control groups of the study was comparable in socioeconomic level and English-speaking level as they were organized in the Parish so that no matching for these variables had to be performed to establish the groups. Enrollment in bilingual education in the Parish was voluntary, requiring parental consent. This resulted in a good cross-section of the student population of the Parish being enrolled in bilingual classes. Of the total number of school-age children in St. Martin Parish, 82 per cent were identified by the 1970 Census as limited-English-speaking. This was the same per cent of students enrolled in bilingual education classes during the 1978-79 school year who were identified as limited-English-speaking. Further, school age children from low-income families represented about 46 per cent of the school population. Students from low-income families represented about 55 per cent of the students in bilingual education classes (St. Martin

The hypotheses of the study were evaluated by the basic statistical procedure of analysis of covariance. This procedure permitted the researcher to allow for initial differences between the experimental and control groups in the areas considered in the study when determining the significance of the difference between mean scores of the two groups in these areas. Tests for significant difference between means were considered at the .05 level of confidence.

In summary, the procedures of this research consisted of the following steps:

(1) Administration of the Reading and Mathematics Sub-Tests of the Metropolitan Achievement Test, Form F, by the researcher to experimental and control groups—October 9, -October 11, 1978.

(2) Administration of the Piers-Harris Children's Self-Concept Scale and the Estes Attitude Scales by the researcher to experimental and control groups—October 12, -October 13, 1978.

(3) Administration of the Louisiana State Parental Survey of Home Languages and the Teacher Student-Evaluation Form by administrative staff of the target parish—October 23, -October 27, 1978.

(4) Administration of the Reading and Mathematics Sub-tests of the Metropolitan Achievement Tests, Form F, by the researcher to experimental and control
groups—April 16, April 18, 1979.

(5) Administration of the Piers-Harris Children's Self-Concept Scale and the Estes Attitude Scales by the researcher to experimental and control groups—April 19, April 20, 1979.


(7) Analysis of data and completion of study—December, 1981.
Chapter 4

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to determine if any significant difference existed in the word knowledge, reading comprehension, total reading and mathematics achievement, self-concept and attitude toward reading of elementary school students educated bilingually and elementary school students educated traditionally. Data were collected from a sample of third- and sixth-grade students in St. Martin Parish, Louisiana, during the 1978-79 school year. It consisted of pre- and post-test results from subtests of the Metropolitan Achievement Test, Form P, the Piers-Harris Children's Self-Concept Scale and the "Reading" section of the Estes Attitude Scales. The scores in the selected areas were categorized for both grade levels by group and according to the factors of sex, race and language. For analysis, each dependent variable was tested against the null hypothesis of no significant difference between groups considered singly and in combination with each other factor. Both analysis of variance and analysis of covariance were performed to test the null hypothesis by determining differences between a group of bilingually educated elementary school students and traditionally educated elementary school students in the following areas: (1) word knowledge; (2) reading comprehension; (3) total reading; (4) mathematics computation; (5) self-concept; and (6) attitude toward
reading. Differences were determined when the groups were considered singly for both grade levels and when the sex, race, and English-speaking level (language) were used as a source of variation. F-values were computed in the analysis procedure and tested at the .05 level of confidence.

The analysis of covariance results were used in this reporting since analysis of variance indicated a significant difference between the two groups on all initial (pre-test) scores. The analysis of covariance procedure with two by four classifications provided a method for testing all possible combinations. The classifications provided for an account of the interaction between combinations of the following factors or sources of variation: (1) Group; (2) Group/Sex; (3) Group/Race; and (4) Group/Language. In the analysis for each dependent variable, where significant differences were revealed for any factors tested, t tests were applied to determine which of the possible comparisons produced significant differences or whether all differences were significant.

RESULTS OF ANALYSIS OF COVARIANCE

Analysis of the two by four classifications for three subtest scores and one total score of the Metropolitan Achievement Test, Form F, revealed significant differences for two interactions between variables at the .05 level of confidence for both grade levels, third and sixth. Analysis of means by categories for scores on the Piers-Harris
Children's Self-Concept Scale revealed no significant differences for any interactions at the third-grade level and only one interaction showing significant difference at the sixth-grade level. The analysis of the classifications for mean scores on the "Reading" section of the Estes Attitude Scales revealed that no interactions produced significant differences at the .05 level of confidence for either grade level, third or sixth.

Achievement of Students in Word Knowledge

Tables 2 and 3 were prepared to present the data derived from analysis of covariance for the interactions between variables generated for the Word Knowledge Subtest for the third and sixth grades. The values obtained for the variance ratio $F$ indicated only one interaction significant at the .05 level of confidence. This occurred when the mean scores of the two groups, the bilingually educated and the traditionally educated, were considered by the sex variable at the third grade level (Table 2). The $F$ values of .73 and 3.53 for the group interactions at the third- and sixth-grade levels, respectively, were not sufficiently large to produce significance. Thus, the null hypothesis of no significant difference between bilingually educated and traditionally educated elementary school students in word knowledge achievement was accepted. Also, $F$ values of 2.47 and .32 for the group/race and group/language interactions, respectively, at the third-grade level, and the $F$ values of .41, .15, and .03 for the group/race, group/lan-
### Table 2

**Analysis of Covariance: Word Knowledge Subtest**  
**Third-Grade Students Educated Bilingually Compared With**  
**Third-Grade Students Educated Traditionally**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>27.72</td>
<td>27.72</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>89</td>
<td>3375.4</td>
<td>37.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>186.8</td>
<td>186.8</td>
<td>5.18*</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>2706.7</td>
<td>36.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>89.0</td>
<td>89.0</td>
<td>2.47</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>2706.7</td>
<td>36.1</td>
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<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>11.4</td>
<td>11.4</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>2706.7</td>
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<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level of confidence*
Table 3

Analysis of Covariance: Word Knowledge Subtest
Sixth-Grade Students Educated Bilingually
Compared With
Sixth-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>y.x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>y.x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>68.4</td>
<td>68.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within Group Total</td>
<td>143</td>
<td>2768.8</td>
<td>19.4</td>
<td>3.53</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>.5</td>
<td>.5</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>Within Group Total</td>
<td>127</td>
<td>2564.5</td>
<td>20.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>8.2</td>
<td>8.2</td>
<td>.41</td>
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<tr>
<td></td>
<td>Within Group Total</td>
<td>127</td>
<td>2564.5</td>
<td>20.2</td>
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<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>3.0</td>
<td>3.0</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>Within Group Total</td>
<td>127</td>
<td>2564.5</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
guage and the group/sex interactions, respectively, at the sixth-grade level (Table 3), did not reach significance. The null hypothesis of no significant difference between bilingually educated and traditionally educated elementary school students in word knowledge when these students were examined by race and by English-speaking level was also accepted. However, the hypothesis of no significant difference between the two groups in word knowledge when they were considered by sex was only accepted for the sixth grade. An F value of 5.18 for the group/sex interaction at the third-grade level was significant at the .01 level (Table 3), and, thus, led to a rejection of the null hypothesis. The t-test results presented later in this chapter showed which means in this interaction accounted for the significant difference.

Achievement in Reading Comprehension

An examination of Tables 4 and 5 showing analysis of covariance results for the Reading Comprehension Subtest revealed one F value significant at the .05 level of confidence. This resulted when the mean scores of the two groups, the bilingually educated and the traditionally educated, were considered by language classifications at the sixth-grade level (Table 5). The F values of 1.53 and .98 for the interaction between groups at the third- and sixth-grade levels, respectively, were not of sufficient magnitude to reject the null hypothesis. The hypothesis that there was no significant difference between bilingually educated and
traditionally educated elementary school students in reading comprehension was accepted. Also, F values of 0.17, 1.38 and 0.17 for the group/race, group/language and group/sex interactions, respectively, at the third-grade level (Table 4), and the F values of 1.29 and .92 for the group/race and group/sex interactions, respectively, at the sixth-grade level (Table 5), did not reach significance. The null hypothesis of no significant difference between bilingually educated and traditionally educated students when these students were examined by race and by sex was also accepted. However, the hypothesis of no significant difference between these two groups when they were considered by English-speaking level was only accepted for the third grade. An F value of 6.28 for the group/language interaction at the sixth-grade level was significant at the .01 level of confidence, and, thus, led to a rejection of the null hypothesis. The t-test results presented later in this chapter showed which means in this interaction accounted for this significant difference.

Achievement in Total Reading

A study of the analysis of covariance results presented in Tables 6 and 7 for the dependent variable Total Reading for the third and sixth grades revealed that no F values reached significance at the .05 level. This was true for the interaction between the two groups and also when each one of the three factors—sex, race and English-speaking level—was used as a source of interaction with group. Thus, the
Table 4
Analysis of Covariance: Reading Comprehension Subtest
Third-Grade Students Educated Bilingually
Compared With
Third-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares (y.x)</th>
<th>Mean Square (y.x)</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>30.6</td>
<td>30.6</td>
<td>1.53</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>89</td>
<td>1784.3</td>
<td>20.0</td>
<td></td>
</tr>
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<td></td>
<td>Total</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>27.6</td>
<td>27.6</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>1621.5</td>
<td>21.6</td>
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<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>3.6</td>
<td>3.6</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>1621.5</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
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<td>29.8</td>
<td>29.8</td>
<td>1.38</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>1621.5</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5

Analysis of Covariance: Reading Comprehension Subtest
Sixth-Grade Students Educated Bilingually
Compared With
Sixth-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares y.x</th>
<th>Mean Square y.x</th>
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<td>Between Means</td>
<td>1</td>
<td>27.8</td>
<td>27.8</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>143</td>
<td>4056.8</td>
<td>28.4</td>
<td></td>
</tr>
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<td>Total</td>
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<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>26.1</td>
<td>26.1</td>
<td>0.92</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>3605.3</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
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<td>36.1</td>
<td>36.1</td>
<td>1.29</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>3605.3</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>178.3</td>
<td>178.3</td>
<td>6.28**</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>3605.3</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
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</tr>
</tbody>
</table>

**Significant at the .01 level of confidence
Table 6
Analysis of Covariance: Total Reading
Third-Grade Students Educated Bilingually
Compared With
Third-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares $y.x$</th>
<th>Mean Squares $y.x$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>116.5</td>
<td>116.5</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>89</td>
<td>7296.8</td>
<td>90.0</td>
<td></td>
</tr>
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<td></td>
<td>Total</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>288.6</td>
<td>288.6</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>6328.7</td>
<td>84.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>56.1</td>
<td>56.1</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>6328.7</td>
<td>84.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>75.0</td>
<td>75.0</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>75</td>
<td>6328.7</td>
<td>84.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7

Analysis of Covariance: Total Reading
Sixth-Grade Students Educated Bilingually
Compared With
Sixth-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>9.0</td>
<td>9.0</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>143</td>
<td>8558.7</td>
<td>59.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>16.7</td>
<td>16.7</td>
<td>.27</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>7798.7</td>
<td>61.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>58.1</td>
<td>58.1</td>
<td>.95</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>7798.7</td>
<td>61.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>160.8</td>
<td>160.8</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>7798.7</td>
<td>61.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To'~l</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
hypothesis that there was no significant difference between bilingually educated and traditionally educated elementary school students in total reading achievement held whether the groups at both grade levels were considered singly or against the variables of sex, race, and language. This was interpreted to mean that third- and sixth-grade bilingually and traditionally educated students made essentially the same progress in reading during the year tested.

**Achievement in Mathematics Computation**

The data presented in Tables 8 and 9 revealed F ratios for the interactions tested by analysis of covariance for mean scores on the Mathematics Computation Subtest. These indicated two interactions between variables significant at the .05 level of confidence, one at each grade level: the interaction between groups at the third-grade level which produced an F value of 5.26 (Table 8); and group interaction at the sixth-grade level which produced an F value of 3.92 (Table 9). These results led to the rejection of the null hypothesis of no significant difference between bilingually educated and traditionally educated elementary school students in mathematics computation. An examination of adjusted post-test means in mathematics computation for the two groups at the third-grade level revealed a mean of 27.44 for the bilingually educated third grade students and a mean of 23.16 for the traditionally educated third-grade students. Thus, a greater gain was made by the bilingually educated students. An examination of adjusted post-test means for
Table 8
Analysis of Covariance: Mathematics Computation Subtest
Third-Grade Students Educated Bilingually Compared With
Third-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares $y.x$</th>
<th>Mean Square $y.x$</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>216.7</td>
<td>216.7</td>
<td>5.3*</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>87</td>
<td>3586.4</td>
<td>41.22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>31.7</td>
<td>31.7</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>73</td>
<td>2784.0</td>
<td>38.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>41.6</td>
<td>41.6</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>73</td>
<td>2784.0</td>
<td>38.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>41.6</td>
<td>41.6</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>73</td>
<td>2784.0</td>
<td>38.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>74</td>
<td></td>
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</table>

*Significant at the .05 level of confidence
Table 9

Analysis of Covariance: Mathematics Computation Subtest
Sixth-Grade Students Educated Bilingually
Compared With
Sixth-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares y.x</th>
<th>Mean Square y.x</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
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<td>1</td>
<td>78.6</td>
<td>78.8</td>
<td>3.9*</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>143</td>
<td>2867.0</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>28.8</td>
<td>28.8</td>
<td>1.40</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>2609.3</td>
<td>20.55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>6.8</td>
<td>6.8</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>127</td>
<td>2609.3</td>
<td>20.55</td>
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<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>0.7</td>
<td>0.7</td>
<td>0.04</td>
</tr>
<tr>
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<td>Within Group</td>
<td>127</td>
<td>2609.3</td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level of confidence
the two groups at the sixth-grade level revealed a mean of 22.45 for the bilingually educated sixth-grade students and a mean of 24.55 for the traditionally educated sixth-grade students. Here, the greater achievement gain was made by the traditionally educated students.

The F values of .83, 1.09 and .24 for the group/sex, group/race and group/language interactions, respectively, at the third grade level (Table 8), and the F values of 1.4, .33 and .04 for the group/sex, group/race and group/language interactions, respectively, for the sixth-grade level (Table 9), did not reach significance. Thus, the null hypothesis of no significant difference between bilingually educated and traditionally educated elementary school students in mathematics computation when these students were examined by sex, race and English-speaking level was accepted.

**Self-Concept**

The F ratios presented in Tables 10 and 11 for analysis of covariance of the scores obtained for the self-concept measure revealed that only one interaction was significant at the .05 level. This occurred with the comparison between groups at the sixth-grade level when no other variable was used as a source of variation. The comparison between groups at the sixth-grade level produced an F value of 8.88 which was significant at the .01 level (Table 11). The F value of 2.93 derived for the comparison between groups at the third-grade level (Table 10) was not sufficiently large to produce significance. The null hypothesis of no signifi-
Table 10

Analysis of Covariance: Self-Concept
Third-Grade Students Educated Bilingually
Compared With
Third-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares (y.x)</th>
<th>Mean Square (y.x)</th>
<th>F</th>
</tr>
</thead>
<tbody>
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<td>Group</td>
<td>Between Means</td>
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<td>237.3</td>
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<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>94</td>
<td>13656.7</td>
<td>142.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
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<td>14.0</td>
<td>14.0</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>6267.1</td>
<td>78.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
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<td>217.4</td>
<td>217.4</td>
<td>2.78</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>6267.1</td>
<td>78.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>251.6</td>
<td>251.6</td>
<td>3.21</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>6267.1</td>
<td>78.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Table 11

Analysis of Covariance: Self-Concept
Sixth-Grade Students Educated Bilingually
Compared With
Sixth-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares y.x</th>
<th>Mean Squares y.x</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Between Means</td>
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<td>548.1</td>
<td>548.1</td>
<td>8.9**</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>145</td>
<td>8947.2</td>
<td>61.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>1.2</td>
<td>1.2</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>7137.9</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>21.1</td>
<td>21.1</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>7137.9</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>21.1</td>
<td>21.1</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>7137.9</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at the .01 level of confidence
cant difference between bilingually educated and traditionally educated elementary school students in self-concept, then, was accepted for the third graders but not the sixth graders of this study. An examination of adjusted post-test means for the two groups at the sixth-grade level revealed a mean of 56.17 for the bilingually educated sixth graders and a mean of 53.39 for the traditionally educated sixth graders. Thus, the greater gain in self-concept was achieved by the bilingually educated students.

The F values of .18, 2.78 and 3.21 for the group/sex, group/race and group/language interactions, respectively, at the third-grade level (Table 10), and the F values of .02, .38 and .66 for the group/sex, group/race and group/language interactions, respectively, at the sixth-grade level (Table 11), did not reach significance. Thus, the null hypothesis of no significant difference between bilingually educated and traditionally educated elementary school students in self-concept when these students were examined by sex, race and English-speaking level was accepted.

Attitude Towards Reading

The data presented in Tables 12 and 13 revealed the F ratios for the combinations tested by analysis of covariance for the attitude-toward-reading measure. These revealed that no F values reached significance at the .05 level. This was true for the interaction between groups and also when each of the three factors—sex, race and English-speaking level—was used as a source of interaction with group.
Table 12

Analysis of Covariance: Attitude Toward Reading Third-Grade Students Educated Bilingually Compared With Third-Grade Students Educated Traditionally

<table>
<thead>
<tr>
<th>Factor</th>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>y.x</td>
<td>y.x</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>10.2</td>
<td>10.2</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>94</td>
<td>2982.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>34.4</td>
<td>34.4</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>2621.9</td>
<td>32.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>1.2</td>
<td>1.2</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>2621.9</td>
<td>32.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>15.7</td>
<td>15.7</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>80</td>
<td>2621.9</td>
<td>32.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td>Source of Variation</td>
<td>df</td>
<td>Sum of Squares (y.x)</td>
<td>Mean Square (y.x)</td>
<td>F</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
<td>-----</td>
<td>------------------------</td>
<td>-------------------</td>
<td>------</td>
</tr>
<tr>
<td>Group</td>
<td>Between Means</td>
<td>1</td>
<td>14.4</td>
<td>14.1</td>
<td>.16</td>
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<tr>
<td></td>
<td>Within Group</td>
<td>145</td>
<td>12739.2</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Sex</td>
<td>Between Means</td>
<td>1</td>
<td>2.0</td>
<td>2.0</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>11262.4</td>
<td>87.31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Race</td>
<td>Between Means</td>
<td>1</td>
<td>11.1</td>
<td>11.1</td>
<td>.13</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>11262.4</td>
<td>87.31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group/Language</td>
<td>Between Means</td>
<td>1</td>
<td>154.0</td>
<td>154.0</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Within Group</td>
<td>129</td>
<td>11262.4</td>
<td>87.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thus, the hypothesis that there was no significant difference between bilingually educated and traditionally educated elementary school students in attitude toward reading held for both grade levels, whether the groups were considered singly or against the variables of sex, race and language.

RESULTS OF t TESTS

Findings of significant differences between groups in the analysis of covariance procedure led to the performance of t tests whenever more than one pair of means figured in this significance. This was necessary for two interactions in this study: the group/sex interaction on the Word Knowledge Subtest at the third-grade level and the group/language interaction on the Reading Comprehension Subtest at the sixth-grade level. To perform t tests, number of students, mean, standard deviation and standard error were used, and the two-tailed probability test was used to determine the significance of the t values obtained.

**t Tests for Word Knowledge**

The t test results for each pair of mean scores for the group/sex interaction found to be significant by analysis of covariance for third-grade students on the Word Knowledge Subtest were presented in Tables 14 through 19. Of the six comparisons generated, two differences proved to be significant at the .05 level of confidence. In the comparison of the mean scores of male students educated bilingually with that of female students educated bilingually
Table 14

*t Test: Word Knowledge Subtest*
Third-Grade Male Students Educated Bilingually Compared With
Third-Grade Female Students Educated Bilingually

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>Male</td>
<td>22</td>
<td>22.55</td>
<td>8.61</td>
<td>1.84</td>
<td>2.78</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>27</td>
<td>29.81</td>
<td>9.64</td>
<td>1.86</td>
<td>.008</td>
</tr>
</tbody>
</table>

Table 15

*t Test: Word Knowledge Subtest*
Third-Grade Male Students Educated Bilingually Compared With
Third-Grade Male Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>Male</td>
<td>22</td>
<td>22.55</td>
<td>8.61</td>
<td>1.84</td>
<td>2.30</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>27</td>
<td>29.26</td>
<td>9.91</td>
<td>2.27</td>
<td>.027</td>
</tr>
</tbody>
</table>
Table 16

**t Test: Word Knowledge Subtest**
Third-Grade Male Students Educated Bilingually Compared With Third-Grade Female Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>22</td>
<td>22.55</td>
<td>8.61</td>
<td>1.84</td>
<td>1.12</td>
<td>0.23</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad.</td>
<td>25</td>
<td>25.92</td>
<td>10.54</td>
<td>2.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17

**t Test: Word Knowledge Subtest**
Third-Grade Female Students Educated Bilingually Compared With Third-Grade Male Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>27</td>
<td>29.81</td>
<td>9.61</td>
<td>1.86</td>
<td>0.19</td>
<td>0.85</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad.</td>
<td>19</td>
<td>29.26</td>
<td>9.91</td>
<td>2.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 18

*t Test: Word Knowledge Subtest
Third-Grade Female Students Educated Bilingually
Compared With
Third-Grade Female Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling. Female</td>
<td>27</td>
<td>29.81</td>
<td>9.64</td>
<td>1.86</td>
<td>1.39</td>
<td>0.17</td>
</tr>
<tr>
<td>Trad. Female</td>
<td>25</td>
<td>25.92</td>
<td>10.54</td>
<td>2.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19

*t Test: Word Knowledge Subtest
Third-Grade Male Students Educated Traditionally
Compared With
Third-Grade Female Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trad. Male</td>
<td>19</td>
<td>29.26</td>
<td>9.91</td>
<td>2.27</td>
<td>1.08</td>
<td>.29</td>
</tr>
<tr>
<td>Trad. Female</td>
<td>25</td>
<td>25.92</td>
<td>10.54</td>
<td>2.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(Table 14), the t value of 2.78 was significant at the .01 level, in favor of bilingually educated female students. A test of difference in mean scores between male students educated bilingually and male students educated traditionally (Table 15) resulted in a significant difference at the .05 level, favoring traditionally educated male students. No other comparisons between pairs of mean scores for the group/sex interaction were significant at the .05 level of confidence.

t Tests for Reading Comprehension

Only one factor, language, produced a significant interaction with group for the Reading Comprehension mean scores, and this was only for the sixth-grade level. The t values obtained for difference in mean scores for each pair of mean scores of the group/language interaction for reading comprehension were presented in Tables 20 through 25. Analysis of the data in these tables revealed that of the six comparisons generated, two pairs of scores accounted for the significant difference obtained. In the comparison of the mean scores of limited-English-speaking sixth-grade students educated bilingually with that of dominant-English-speaking sixth-grade students educated traditionally (Table 20), the t value of 2.21 was significant at the .05 level, in favor of dominant-English-speaking students educated traditionally. A test of difference in mean scores between dominant-English-speaking students educated traditionally and limited-English-speaking students educated traditionally (Table 21)
Table 20

*t Test: Reading Comprehension Subtest
Sixth-Grade Limited-English-Speaking Students Educated Bilingually Compared With Sixth-Grade Dominant-English-Speaking Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling. Limited</td>
<td>47</td>
<td>23.96</td>
<td>7.5</td>
<td>1.1</td>
<td>2.21</td>
<td>.03</td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad. Dominant</td>
<td>47</td>
<td>23.96</td>
<td>9.4</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21

*t Test: Reading Comprehension Subtest
Sixth Grade Dominant-English-Speaking Students Educated Traditionally Compared With Sixth-Grade Limited-English-Speaking Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trad. Dominant</td>
<td>47</td>
<td>27.85</td>
<td>9.4</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad. Limited</td>
<td>24</td>
<td>20.54</td>
<td>8.5</td>
<td>1.7</td>
<td>3.3</td>
<td>.002</td>
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<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 22

**t Test: Reading Comprehension Subtest**
Sixth-Grade Dominant-English Speaking Students Educated Bilingually Compared With Sixth-Grade Limited-English-Speaking Students Educated Bilingually

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilin. Dominant English</td>
<td>27</td>
<td>24.7</td>
<td>7.5</td>
<td>1.4</td>
<td></td>
<td>.43</td>
</tr>
<tr>
<td>Biling. Limited English</td>
<td>47</td>
<td>24.0</td>
<td>7.5</td>
<td>1.1</td>
<td></td>
<td>.67</td>
</tr>
</tbody>
</table>

Table 23

**t Test: Reading Comprehension Subtest**
Sixth-Grade Dominant-English-Speaking Students Educated Bilingually Compared With Sixth-Grade Dominant-English-Speaking Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling. Dominant English</td>
<td>27</td>
<td>24.7</td>
<td>7.5</td>
<td>1.4</td>
<td></td>
<td>.12</td>
</tr>
<tr>
<td>Trad. Dominant English</td>
<td>47</td>
<td>27.9</td>
<td>9.4</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 24

*t Test: Reading Comprehension Subtest*
Sixth-Grade Dominant-English-Speaking Students Educated Bilingually Compared With Sixth-Grade Limited-English-Speaking Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>27</td>
<td>24.7</td>
<td>7.5</td>
<td>1.4</td>
<td>1.9</td>
<td>0.07</td>
</tr>
<tr>
<td>Dominant</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad.</td>
<td>24</td>
<td>20.5</td>
<td>8.5</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 25

*t Test: Reading Comprehension Subtest*
Sixth-Grade Limited-English-Speaking Students Educated Bilingually Compared With Sixth-Grade Limited-English-Speaking Students Educated Traditionally

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T Value</th>
<th>2-Tail Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biling.</td>
<td>47</td>
<td>24.0</td>
<td>7.5</td>
<td>1.1</td>
<td>1.67</td>
<td>0.10</td>
</tr>
<tr>
<td>Limited</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trad.</td>
<td>24</td>
<td>20.5</td>
<td>8.5</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
resulted in a significant difference at the .01 level, again favoring dominant-English-speaking students educated traditionally. No other differences between pairs of mean scores for the group/language interaction were significant at the .05 level of confidence. The only interpretation derived from these results was that traditionally educated dominant-English-speaking students in the sixth grade performed significantly better in reading comprehension than limited-English-speaking students of the study, whether they were educated bilingually or traditionally.
Chapter 5

SUMMARY, RESULTS AND CONCLUSIONS, AND RECOMMENDATIONS

This concluding chapter summarizes the purpose, design and procedure of the study, presents results and conclusions which may be drawn from the data collected during the study and makes recommendations for further study. The chapter is divided into three sections: Summary, Results and Conclusions and Recommendations.

SUMMARY

Purpose

The purpose of this study was to determine if there was a difference in achievement in word knowledge, reading comprehension, and total reading and mathematics computation of elementary school students educated bilingually and elementary school students educated traditionally. The study also sought to determine if there was a difference between these two groups in self-concept and attitude towards reading. The sample selected for this investigation was a group of third- and sixth-grade students enrolled in selected elementary schools in one parish in the State of Louisiana.

Design and Procedure

Forty-nine third-grade students and seventy-three sixth-grade students, a total of 122 students enrolled in
bilingual education programs in the elementary schools in St. Martin Parish, Louisiana, comprised the experimental group of the study. Forty-three third-grade students and seventy-one sixth-grade students, a total of 117 students enrolled in regular education programs in elementary schools in St. Martin Parish, Louisiana, comprised the control group. Three students were eliminated in the final analysis because of a lack of post-test scores, so, the total sample for this study was 236 students.

The standardized instruments used to conduct the study were administered both in the fall and the spring of the 1978-79 school year. These instruments consisted of the Reading and Mathematics Subtests of the Metropolitan Achievement Test, Form F, the Piers-Harris Children's Self-Concept Scale; and the "Reading" section of the Estes Attitude Scales. Two other instruments were administered only in the fall of 1978. These were the Louisiana State Parental Survey of Home Languages and the Teacher Student-Evaluation Form.

The data collected from the standardized instruments were evaluated by the basic statistical procedure of analysis of covariance. Tests for significant differences between means were considered at the .05 level of confidence. The data collected from the latter two instruments were used, along with Parish prior-year percentile rankings on the total reading scores of the Metropolitan Achievement Test, to classify students of the study according to English-
RESULTS AND CONCLUSIONS

At the beginning of the study, five hypotheses to be investigated were formulated:

1. There is no significant difference in word knowledge, reading comprehension, total reading and mathematics computation between bilingually educated elementary school students and traditionally educated elementary school students.

The analysis of the data revealed significant differences between the two groups in only one area of achievement—mathematics computation. At the third-grade level, this difference favored the bilingually educated students. At the sixth grade level, however, the difference favored the traditionally educated students.

2. There is no significant difference in self-concept and attitudes towards reading between bilingually educated elementary school students and traditionally educated elementary school students.

Results of the analysis indicated no significant difference between the two groups in attitude toward reading; but a difference in self-concept was noted between the two groups at one grade level, the sixth grade. This difference favored the bilingually educated students.

3. There is no significant difference in achievement in word knowledge, reading comprehension, and total reading and mathematics computation between bilingually educated
elementary school students and traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

Analysis of the data revealed significant differences between the two groups in only two instances: when the third-grade group was examined by sex on the Word Knowledge Subtest, and when the sixth-grade group was examined by English-speaking level on the Reading Comprehension Subtest. In the case of differences found for third graders on the Word Knowledge Subtest, the results indicated that male students educated bilingually were outperformed by two groups: female students educated bilingually and male students educated traditionally. In the case of differences found for sixth graders on the Reading Comprehension Subtest, the results indicated that traditionally educated, dominant-English-speaking students in the sixth grade performed significantly better in reading comprehension than limited-English-speaking sixth graders whether they were educated bilingually or traditionally.

4. There is no significant difference in self-concept between bilingually educated elementary school students and that of traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

Results of the analysis indicated no significant differences between the two groups when either one of the factors was used as a source of variation.
5. There is no significant difference in attitude toward reading between bilingually educated elementary school students and traditionally educated elementary school students when these students are examined by sex, by race, or by English-speaking level.

Analysis of the results indicated no significant differences between the two groups when either one of the factors was used as a source of variation.

The overall conclusion which was drawn from this study was that, essentially, bilingually and traditionally educated students did not differ substantially on any of the variables tested. The few cases in which significant differences were found did not allow one to establish the superiority of one approach over the other in improving academic achievement, self-concept or attitude toward reading for the sample studied. Significant differences between the two groups were found in mathematics computation, but at one grade level, bilingually educated students were favored, and at the other grade level, traditionally educated students were favored. Sixth-grade dominant-English-speaking students educated traditionally performed significantly better than sixth-grade limited-English speaking students of the study in reading comprehension, but this was when either instructional approach, bilingual or traditional, was used.

The only finding which might lead to designating one approach superior to the other was the results of the group/sex interaction on the Word Knowledge Subtest at the third-
grade level. For one of the two comparisons producing significant differences, third-grade male students educated traditionally performed significantly better than third-grade male students educated bilingually. Thus, the traditional approach seemed to be a more effective approach to instruction in word knowledge for third-grade male students.

In the non academic areas of the study, one approach was superior for the self-concept of sixth graders—bilingual education. However, it did not prove superior for third graders. Neither approach had a significantly better effect on the attitude towards reading for either grade level, third or sixth.

The results obtained in this study fit well into the pattern of findings in bilingual education research presented in the literature. A sizeable number of the studies which used comparative analyses to test the effectiveness of bilingual education programs in academic achievement showed superior results for bilingual education; but there was almost an equal number of studies in which essentially no significant differences were found between the bilingual education approach and traditional education. The same was true for attitude toward reading. As in this study, bilingual education was shown in some research to be superior to traditional education in specific areas of academic achievement for some groups of students but not for other groups in these areas (for example, the results for mathematics in this study). In the area of self-concept, bilingual educa-
tion was generally favored over traditional education in the literature. In this study, the bilingual education approach was favored for the improvement of self-concept at one grade level, but not the other. An area of achievement in which bilingual education received the most support from research was native language achievement for the limited-English speaker. This area was not examined in the present study.

There were very few studies in the literature which showed bilingual education as having a negative effect on any aspect of achievement in school. It must be noted here that research findings of no significant difference between bilingual education and traditional education programs in the various areas tested were not generally considered to be negative findings for bilingual education by researchers in the field. Rather, these findings were viewed as also supportive of the bilingual approach. The rationale for this position was well stated in words from Zappert and Cruz which Harrington (1980:9) quoted:

A non-significant effect is not a negative finding with respect to bilingual education. A non-significant effect, that students in bilingual education classes are learning at the same rate as students in monolingual classes, demonstrates the fact that learning two languages does not interfere with a student's academic and cognitive performance.

In addition, Harrington contended, such students have the advantage of learning a second language.

The statements of Zappert and Cruz and Harrington are accepted by this writer and proposed as the perspective in
which the results of the present study be viewed. The reader is reminded that bilingual education was developed in the first place to stop or aid in reducing the retardation in academic achievement experienced by many LEP students in English-only schools. When it can be said that the achievement of these students is not significantly different from that of students being educated traditionally, when the bilingual approach is used, then bilingual education presents itself as a positive force in American schools, one which can coexist with the regular education program. With the inconsistency in findings, however, it is left to additional research to pinpoint which features of bilingual education programs work best for which LEP students and under which conditions the more positive results are obtained.

RECOMMENDATIONS

The large bulk of the literature in bilingual education addressed the problem of evaluating the effectiveness of bilingual education. Authorities in the field pointed to the lack of research in bilingual education, the methodological weaknesses found in the research conducted, and the inconsistent results obtained from the studies. The following recommendations are made in the light of these findings:

1. That more longitudinal studies be conducted with bilingually educated students.

2. That specific types or specific features of bilingual education programs be evaluated to determine which elements might account for the effect of bilingual
education on various areas of achievement.

3. That evaluation designs in bilingual education research be developed to determine the effect of various non-academic factors on the effectiveness of bilingual education.
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APPENDIX A

LETTER TO SUPERINTENDENT

September 25, 1978

Dear Mr. Mills:

The purpose of this letter is to acquaint you with the procedures of the study I am proposing to conduct in St. Martin Parish and to enlist your assistance with the administrative details needed to schedule the activities.

The research I am planning to conduct is a comparative study of the reading and mathematics achievement, self-concept and attitude toward reading of bilingually educated and traditionally educated students. The population I would like to use is the students enrolled in Parish bilingual education programs and students enrolled in traditional instruction in the third and sixth grades in the following schools: Cecilia Primary, St. Martin Primary, Parks Primary, Teche Elementary, St. Martin Elementary and Parks Elementary.

The procedures of the study will consist of the following steps:

(1) Administration of the Reading and Mathematics Subtests of the Metropolitan Achievement Test to students in third and sixth grades enrolled in traditional instruction in the schools listed above and to students enrolled in Parish bilingual education classes—October, 1978.

(2) Administration of a self-concept scale and an attitude scale to this same population—October, 1978.

(3) Repetition of Steps 1 and 2 in April, 1979.

I would like to meet with the principals of the schools and the teachers of the classes in question individually during the week of October second to schedule the activities at times during the school day that would be convenient with them. I would like to administer the
Metropolitan Achievement Test to the students during the week of October ninth and the other two instruments during the following week (October 16–October 20).

I would appreciate very much a letter from you to the principals informing them of the study and enlisting their cooperation. I would also like your permission to observe some of the bilingual education classes in action during the school year.

I am certainly grateful for your assistance with this project. I look forward to being back in St. Martin Parish again. Even though this study will involve a good deal of work, I anticipate that it will be fun for me as well. I will be contacting you in a few days for your response. It will be nice talking with you.

Sincerely yours,

T. Doris Chretien
APPENDIX B

EXPERIMENT SIGN-FORM

Date October 1, 1978

My signature, on this sheet, indicates the voluntary participation of the students involved in the experiment on the reading and mathematics achievement, self-concept and attitude towards reading of students in bilingual and monolingual programs conducted by:

T. Doris Chretien

Experimenter

indicates that she understands all subjects in the project are volunteers, that they can withdraw at any time from the experiment, that each subject has been or will be informed as to the nature of the experiment, that the data provided will be anonymous and the identity of no participant will be revealed without his permission, and that the performance of subjects in this experiment may be used for additional approved projects. Finally, each participant will be given an opportunity to ask questions prior to the start of the experiment and after his participation is complete.

Superintendent's Signature
PLEASE NOTE:

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These consist of pages:

222-225 and 226-227.
APPENDIX F

LOUISIANA STATE
PARENTAL SURVEY OF HOME LANGUAGES

1. Father's full name: ____________________________
   (Last) (First)

2. Mother's full name: ____________________________
   (Last) (First)

3. Names of children between the ages of 3 and 18:
   Give the child(ren)'s first name(s) and grade(s)
   if in school.

   NAME   GRADE   SCHOOL
   ___________________   ______   ________________
   ___________________   ______   ________________
   ___________________   ______   ________________
   ___________________   ______   ________________
   ___________________   ______   ________________

4. Do your children have the advantage of hearing a language other than English spoken when they are not in school?  Yes_____  No_____ 

5. If so, which language? _________________________________

6. Do they hear the other language
   ______ Most of the time?
   ______ Some of the time?
   ______ Not very often?

7. Is the other language spoken by:
   ______ The father
   ______ The mother
   ______ Grandparent(s)
   ______ Others (please specify____________________)

8. When another language is spoken, do your children
   ______ Understand most of what is said?
   ______ Understand some of what is said?
   ______ Understand very little of what is said?
   ______ Understand nothing of what is said?
9. Do your children speak the other language
   ____Much of the time?
   ____Some of the time?
   ____Not very often?
   ____Never?

10. If the answer to question number 4 is "No", would you be interested in having a second language taught to your children as part of their school studies?
    Yes____No____; If yes, which language? ______________
APPENDIX G

TEACHER STUDENT-EVALUATION FORM

Information on the following student in your class indicated that he/she comes from a French-speaking background. Please place a check mark in the blank next to any statement below if you feel the statement is true of the student whose name appears on this form.

Student Name_______________________________________________

1. The student has difficulty
   a. speaking in English __
   b. reading in English __
   c. writing in English __

2. The student responds in class
   a. in English only ___
   b. in French only ___
   c. in a mixture of French and English ___

3. The student sometimes speaks to you or his classmates in French ___.

T. Doris Chretien was born in Loreauville, Louisiana in 1945. She was graduated from the Iberia Parish School System in 1963. Her B.A. degree in English and Mathematics was acquired from the University of Southwestern Louisiana in Lafayette, Louisiana, in 1967.

Upon graduation, she began her professional experiences as a classroom teacher at the secondary level in St. Martin Parish. There she taught English at various grade levels for four years. She interrupted her teaching career in St. Martin Parish for a year to complete the requirements for a Masters of Arts degree in English at the University of Southwestern Louisiana. During that year, she also served as a Graduate Assistant in the English Department, teaching English courses at the freshman level. In 1972, she was employed as an Instructor by the University of Southwestern Louisiana.

She terminated her employment at USL in 1973 to assume the position of Special Assistant for the Division of Community Services in the State Department of Education. Three years later, she was appointed Director of Special Projects for the Division of Auxiliary Programs in the Department. She remained in this position until 1978 when she went on leave to become a full-time student at Louisiana State University.

She enrolled in the Ph.D. program in Education (Reading
and English) at Louisiana State University on a part-time basis in 1974. Residency and course requirements for the degree were completed in 1979. For the past two years, she has been a classroom reading teacher in Calcasieu Parish.

She is a member of Phi Kappa Phi Honor Society, the International Reading Association and the Louisiana Association of Educators.

She is married to David M. Chretien, Sr. They have one son, David Michael Chretien, Jr.
EXAMINATION AND THESIS REPORT

Candidate: Theresa Doris Chretien

Major Field: Education

Title of Thesis: Academic Achievement, Self-Concept and Attitude Towards Reading of Students in Bilingual and Traditional Programs

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

October 26, 1981