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ABSTRACT

The Grants, New Mexico, Bilingual/Bicultural Program reported in this document was designed to introduce into the first-grade curriculum the native language of the child. Ten general objectives of the program are listed, in which the overall objective is introducing or clarifying concepts in a child's Spanish or Indian dialect and then giving emphasis to the child's culture and native language as a means to reinforce a positive attitude toward himself and his cultural heritage. Sections are devoted to (1) description of program, (2) evaluation design, and (3) statistical analyses and findings. Based on the findings, the author recommends continuation of the district's English language program due to its overall effectiveness; continuation of the bilingual education approaches that include elementary grades Spanish language instruction, use of Spanish or tribal dialect for non-English-speaking first grades, and English-as-a-second-language emphasis for children with little or no knowledge of English; testing with a larger sample to establish conclusive findings on the cultural variables measured by the Cultural Sensitivity Instrument; and program continuance due to favorable support by parents. (AN)

BILINGUAL/BICULTURAL EDUCATION -- AN EFFECTIVE LEARNING SCHEME FOR FIRST GRADE SPANISH SPEAKING, ENGLISH SPEAKING, AND AMERICAN INDIAN CHILDREN IN NEW MEXICO

A Report of Statistical Findings

and Recommendations

for

The Grants Bilingual Education Project

Grants, New Mexico

by

Dr. Atilano A. Valencia

September, 1970

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I. INTRODUCTION

The Grants Bilingual/Bicultural Program was designed to introduce the first-grade curriculum in the native language of the child. Specifically, this means that either Spanish or an Indian dialect is used to introduce or clarify concepts as needed. Additionally, special emphasis is given to the child's culture and native language as a means to reinforce a positive attitude toward himself and his cultural heritage.

The Grants Bilingual/Bicultural Program is viewed as a vehicle for teachers and pupils to gain an understanding and positive attitude toward the various cultural groups existing in the school system and to involve students in activities that will enhance their academic achievement and aspirations. The general objectives of the program are:

1. To help students learn communicative skills in their native tongue and a second language.
2. To help students become proficient in two languages, which will, in turn, facilitate their educational development and vocational aspirations.
3. To help students learn subject matter from content areas, such as social studies and science, in their native language and second language.
4. To help students maintain or develop a positive self-concept by studying their history and culture.

5. To help students see the advantages of living in a multiculture environment.
6. To help students understand and form positive attitudes toward their own history and culture, as well as those of other ethnic groups represented in the community.
7. To provide a fine arts program which will acquaint students with the music and art of the several cultures represented in the community.
8. To develop a teacher and teacher aide pre-service and inservice education program which will improve services, materials, cultural awareness, and explore new and more appropriate teaching strategies with outside professional resource assistance.
9. To design an instructional program suited to the particular needs of the linguistically and culturally different students.
10. To develop effective liaison between the school and the Spanish and Indian speaking parents, and, therefore, establish parental support for the bilingual/bicultural program.

Initially, the program was designed to provide a bilingual teacher and a bilingual aide for each of ten first grade classrooms. Spanish and English were to be the principal media of instruction; and in the Indian classrooms, some instruction and story telling was to be carried in Navajo, Acoma, and

Laguna. TESL* techniques were to be used with special emphasis in the utilization of tapes, films, filmstrips, books, transparencies, pictures, art, music, and other media relative to the child's cultural heritage.

*TESL refers to Teaching English as a Second Language.

II. DESCRIPTION OF PROGRAM

Bilingual/Bicultural instruction was differentiated in terms of the following types of students:

Group (1) - Pupils with linguistic limitations in Spanish and English

Group (2) - Pupils functional only in Spanish

Group (3) - Pupils functional only in English

Group (4) - Pupils functional in the Keresan language and limited in English

Group (5) - Pupils functional only in the Keresan language

Group (6) - Pupils functional only in the Navajo language

Group One: Pupils with linguistic limitations in Spanish and English received basic instruction in both languages. Spanish was used to clarify and reinforce concepts taught in English. Reading readiness, language and cultural understanding were taught in both languages. Both languages also were used in subject areas such as social studies, music, science, physical education, art, and health education.

Group Two: Pupils functional only in Spanish received instruction in the native language ninety per cent of the time and in English the remaining ten per cent. English was presented as a second language. Language development was emphasized in the readiness program. Children learned to read in Spanish first and then in English. All activities centered around the Spanish language and eventually transferred to English as the program developed. As the students gained greater vocabulary in English, Spanish was used to a lesser degree in the learning activities.

Group Three: Pupils functional only in English received their basic instruction in English ninety per cent of the time and the remaining ten per cent in Spanish. At the beginning, the readiness and regular first grade program was oral language oriented, with Spanish introduced as a second language. A cultural heritage component was presented as a part of social studies, art, music, etc. Essentially, both languages became a part of the instructional program.

Groups Four and Five: Pupils functional in the Keresan language with limited English,, and pupils functional only in Keresan were provided with a program in which English was presented as a second language. The Keresan language was used to clarify concepts given in English. English was given emphasis through related readiness language activities in the areas of language arts, music, art, social studies and play activities. Teaching English as a second language also was the major objective of the instructional program for the Laguna and Acoma students. Bilingual techniques and materials were incorporated in the various areas of the academic program.

Group Six: Pupils functional in the Navajo language were performed with TESL techniques and related bilingual/bicultural content and methodology. The Navajo students, located in one school (a community situated in the remote southern area of the Navajo reservation), were given a readiness program with emphasis in the Navajo language. Navajo instructional materials, available locally and/or near this school, were utilized. Also, under Title I, the unit has been nongraded and a language arts oriented program has been developed and implemented. The materials for instruction were developed by the teachers and are related to the cultural heritage of the Navajo people.

III. EVALUATION DESIGN

Independent Variables

An evaluation component was designed to ascertain the overall effectiveness of the program after the first year of operation. Specifically, the internal evaluation phase of the program was designed to ascertain the level of English and Spanish language proficiency on a pre-/post-test basis. Parental attitudes toward their children using the native and second language in school, parental attitudes toward the present bilingual/bicultural program, and pupil (Mexican American, American Indian, and Anglo American) attitudes toward their own and other cultural characteristics were measured by specially designed instruments.

The experimental effects of the bilingual program were to be evaluated as follows:

1. Two language components of the Bilingual Program (English and Spanish) were to be evaluated for effectiveness in terms of oral language attainment. In essence, the evaluation scheme was to compare achievement gains in language (Spanish and English), with reference to pre/post-test results among the experimental and control groups in the school system, between experimental groups, as well as between the experimental groups and the control group.
2. The testing program was to determine attitudinal change among parents toward Spanish, English, and Indian language instruction and usage.

3. The testing program was to determine attitudinal change among parents toward the inclusion of Mexican American and American Indian cultural elements in curriculum content and instruction.
4. The testing program also was to ascertain the attitudinal change of pupils toward given characteristics of people in their own and other cultures.

Sampling Population and Treatment Conditions

After the installation of the bilingual/bicultural program, the following samples of the total district first grade population were selected for experimental and control conditions:

School	Treatment Condition	Bilingual Components	n	Approximate Percentage of Ethnic Population		
				Anglo Amer.	Mexican Amer.	American Ind.
Cubero	Experimental	Keresan/English Spanish/English	31	4	38	58
Seboyeta	Experimental	Spanish/English	17	3	64	33
San Mateo	Experimental	Spanish/English	10	--	100	--
San Rafael	Experimental	Spanish/English	26	26	72	2
Sierra Vista	Experimental	Spanish/English	51	15	68	17
Fence Lake	Experimental	Navajo	12	--	--	100
Control -- Sierra Vista	Control		35	10	68	22

All of the experimental group children were exposed to oral English instruction, oral Spanish instruction, reinforcement of concepts in the native

language of the child (Spanish or Indian dialect), and content related to the cultural heritage of the different ethnic groups. Additionally, a control group (children not exposed to a bilingual/bicultural program) was provided for comparative purposes. It was, therefore, expected that the experimental conditions and control group condition, coupled with the testing, would produce sufficient quantitative and qualitative measures for the evaluator to formulate a number of valid conclusions on program effectiveness and recommendations for further alterations.

Test Instruments

Four types of instruments were used to measure the language (English and Spanish) proficiency and cultural attitudes among the children in the program. The English Oral Capacity Test was used to determine the level of English proficiency on a pre- and post-test basis, the California Achievement Test was used to ascertain the level of proficiency in mechanics of English and Spelling on a post-test basis, the Spanish Oral Capacity Test was applied to determine the level of oral Spanish ability on a pre- and post-test measure, and the Valencia Cultural Sensitivity Test was given to measure experimental group attitudes toward given characteristics in their own and two other general ethnic groups.

The English Oral Capacity Test and the Spanish Oral Capacity Test consist of about 33 possible responses. These tests do not provide a measure of various separate language components. Both of these tests can serve adequately as pretest measures of general oral language proficiency in English and Spanish, but because of their limitations in extent and variety of language responses, other test instruments related to the program emphases should be used as post-test measures. Therefore, inferences on English achievement in this program must be

drawn from two test sources: The English Oral Capacity Test and the California Achievement Test. On the other hand, due to the unavailability of a more adequate and appropriate Spanish oral language instrument at the time of pre- and post-testing, only the Spanish Oral Capacity Test was selected as a Spanish language measure. Although greater quantity and variety of linguistic data would be produced by a more sophisticated instrument, sufficient data have been collected through this instrument to formulate some indications of program effectiveness on this language variable.

Two major English language components from the California Achievement Test were selected for use in this evaluation study: Language Mechanics and Spelling. In this test, Language Mechanics incorporates pupil orientation toward word usage and structure, and Spelling simply refers to readiness in spelling. The first test component consists of 65 possible correct responses and the second component consists of 20 possible answers. A table of national norms is provided with the instrument, which enables the evaluator to statistically compare experimental group results with the test norms.

The Cultural Sensitivity Instrument, designed by the author of this report, measures the child's attitudes toward physiological characteristics found in three general American ethnic groups (Anglo American, American Indian, and Mexican American). It is pictorial in nature and gives a quantitative attitudinal measure in centimeters. A total of 1,360 points is possible on each of the given variables. The higher the score, the greater is the positive attitude of the child toward his own and/or two other ethnic groups. At the conclusion of the testing and scoring, three scores would be available of each examinee. This test must be administered on an individual basis. Preliminary data from a pilot study indicate that the realiability of the test is beyond .90, in terms of the Pearson r.

A parental attitudinal questionnaire was designed at the SWCEL to be administered to a sample of parents of the experimental and control group pupils. This instrument was used to determine parental attitudes toward Spanish, English, and Indian language instruction and usage. It also was designed to ascertain parental attitudes toward the inclusion of Mexican American and American Indian cultural elements in subject matter content and in the instructional strategies.

All of the testers and raters have been trained by the SWCEL in testing methods and procedures relative to each measuring instrument. Rater reliability has been controlled, as nearly as possible, by training, as well as by the nature of the scoring procedures and rating scales incorporated with the instruments.

IV. STATISTICAL ANALYSES AND FINDINGS

Experimental and Control Group Achievement in Oral English

Two analyses of variance and two analyses of covariance were performed to ascertain group achievement gains and differences in oral English.

The data in Table I show significant gains (.01 level of confidence), in terms of a pre- and post-test comparison, for both experimental and control groups. Table II reveals significant gains for all of the experimental groups in this analysis at the .05 or .01 level of confidence. Because of the homogeneity of the response patterns within the groups, significant gains are noted with very slight pre-/post-test differences. It is apparent that learning was affected; however, the oral language instrument used in this testing fails to clearly reveal simple quantitative mean gains. Yet, favorable oral English achievement is noted in simple quantitative terms, as well as in terms of analysis of variance, among all of the experimental groups tested with the California Achievement Test. These statistical findings are given in the subsequent section of this report.

Tabel IV shows the significant difference in oral English proficiency between each experimental group and the control group. It is noteworthy that while the statistical comparison of the combined experimental groups with the control group, illustrated in Table III, shows no significant difference at the .05 level of confidence, the separate analyses given in Table IV reveal a significant variance in one of the comparisons. This difference is noted at

the .01 level of confidence in favor of one of the experimental schools (Cubero).

Based on the foregoing analyses, it can be concluded that the findings show favorable indications relative to the District's oral English program. The findings, however, quite consistently reveal close similarities between the experimental groups and the control groups on this particular variable.

TABLE I

Total Experimental and Control Group Achievement
In Oral English
Based on a Pre- Versus Post-Test Comparison,
Using Analysis of Variance

Groups	n	Pre-Test Mean	St'd. Deviation	n	Post-Test Mean	St'd. Deviation	F Ratio
Experi-mental	135	29.59	2.04	135	30.91	1.68	33.33**
Control	68	29.66	1.95	68	30.62	1.16	11.84**

**Denote a significant difference at the .01 level of confidence.

TABLE II

Experimental Group Achievement In Oral English
Based on a Pre- Versus Post-Test Comparison,
Using Analysis of Variance

Groups	n	Pre-Test Mean	St'd Deviation	n	Post-Test Mean	St'd Deviation	F Ratio
Cubero	31	30.10	1.96	31	31.58	1.01	13.62**
Saboyeta	17	30.18	1.46	17	31.29	1.32	5.14*
San Mateo	10	28.80	1.89	10	31.10	.94	10.69**
San Rafael	26	29.54	2.02	10	30.85	1.38	7.13*
Sierra Vista	51	29.27	2.16	51	30.37	2.13	6.53*

* Denotes significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE III

Total Experimental and Control Group Mean Differences
in Oral English Achievement,
Using Analysis of Covariance

Groups	n	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	St'd Deviation	F Ratio
Experi-mental	135	29.59	30.91	30.91	1.68	1.19
Control	68	29.60	30.68	30.67	1.19	

TABLE IV

Experimental and Control Group Mean Differences
in Oral English Achievement,
Using Analysis of Covariance

Groups	n	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	St'd Deviation	F Ratio
Cubero	31	30.10	31.58	31.51	1.01	11.51**
Control	68	29.60	30.68	30.71	1.19	
Seboyeta	17	30.18	31.29	31.17	1.32	2.21
Control	68	29.60	30.68	30.71	1.19	
San Mateo	10	28.80	31.10	31.23	.94	2.22
Control	68	29.60	30.68	30.66	1.19	
San Rafael	26	29.54	30.85	30.86	1.38	
Control	68	29.60	30.68	30.68	1.19	.49
Sierra Vista	51	29.27	30.37	30.40	2.13	.65
Control	68	29.60	30.68	30.65	1.19	

**Denote a significant difference at the .01 level of confidence.

Experimental and Control Group Achievement in Mechanics of English and Spelling

Since a pre-test was not used to determine the students' level of proficiency in mechanics of English and Spelling, experimental and control group students' achievement on these two variables was compared to data given in the national norms of the California Achievement Test.

Using a sample of 187 students from all of the experimental schools in the program as compared to an "n" of 200 in the Test's national norms, a close similarity is found (see Table V) between the means of the experimental students and the national norm on mechanics of English. Further, the statistical analysis reveals no significant difference at the .05 level of confidence. However, a significant difference (.01 level of confidence) in favor of the national norm is found in Spelling, a language arts skill that very likely is not stressed in the first grade instructional program of the experimental schools.

A second analysis shows that control group students (sample of 63) scored significantly higher (.01 and .05 level of confidence) than the national norms in both Mechanics of English and Spelling. However, it is noted that the control group was selected from a school with a larger representation of Spanish surname and Anglo American students, as compared to a larger representation of Spanish surname and Indian pupils in the combined experimental groups. It is noteworthy that the combined experimental groups nearly equal the national norm on one variable, while the control group surpasses the norm on the same variable. This truly is a favorable indication for the District's English language program at the first grade level.

Several other analyses were performed to compare each experimental school's achievement with the national norms on the two aforementioned variables. Table VI reveals a close similarity in group means and ratios in some instances

and differences in other situations. For example, Cubero and San Mateo scored significantly lower than the national norms on both variables, while Seboyeta scored significantly higher than the national norm in Mechanics of English and slightly higher (not statistically significant) than the norm in Spelling. San Rafael and Sierra Vista scored very similar to the national norm on Mechanics of English and were significantly below the national norm in Spelling. Fence Lake was slightly beyond the national norms on both variables; however, because of the disproportionate "n's" (12 in Fence Lake and 200 in the national norms), the statistical analysis does not reveal a significant difference. It also is possible that a larger "n" would have affected the achievement mean.

Additional analyses were undertaken to show the significant differences in Mechanics of English and Spelling achievement between all of the experimental schools. In reference to Table VIII, it is noted that Cubero scored significantly lower (.01 and .05 level of confidence) than Fence Lake, Seboyeta, San Rafael, and Sierra Vista. It also is observed that Fence Lake scored significantly higher than Cubero, San Mateo, San Rafael, and Sierra Vista. But again, it is conceivable that a larger "n" in Fence Lake would have affected the achievement mean. It further is noted that Seboyeta scored significantly higher (.01 level of confidence) than Cubero, San Mateo, San Rafael, and Sierra Vista. A close obervation of the data reveals that Seboyeta attained the highest mean among the six experimental schools in this study. Additional observations show that San Rafael and Sierra Vista were among the four schools that scored near or above the national norm in Mechanics of English. These two schools also scored higher than San Mateo and Cubero.

The difference between the schools in Spelling were notably minute and statistically insignificant at the .05 level of confidence. Except for Fence Lake, all of the experimental schools were below the national norm on this variable.

The foregoing findings provide substantial evidence in favor of the District's first grade English language program. It clearly is apparent that both experimental and control group pupils have achieved near or above the national norm in Mechanics of English, measured by the California Achievement Test. Only in Spelling is a difference indicated in favor of the national norm, and this may have resulted from less emphasis applied on this variable in the instructional program. Some variance is noted between some of the experimental schools in Mechanics of English. This difference may have resulted from population variances in ethnic composition, initial proficiency in English and/or instructional effectiveness. Most importantly, the close relationship between all of the schools means to the national norm on Mechanics of English reflects the overall effectiveness of the English language program.

TABLE V

A Comparative Analysis of Combined Experimental Group Scores with California Achievement Test Norms on Two English Language Variables, Using Analysis of Variance

Variables	Groups	n	Experimental Post and CAT-Norm Means	St'd Deviation	F Ratio
Mechanics of English	Experimental Sample --	187	28.91	10.20	2.83
	Nat'l Norm	200	30.55	8.85	
Spelling	Experimental Sample --	187	2.34	2.75	43.44**
	Nat'l Norm	200	3.98	2.12	
Mechanics of English	Control Group Sample --	35	36.02	12.99	14.22**
	Nat'l Norm	200	30.55	8.85	
Spelling	Control Group Sample --	35	4.78	4.10	4.02*
	Nat'l Norm	200	3.98	2.12	

* Denotes a significant difference at the .05 level of confidence.

** Denotes a significant difference at the .01 level of confidence.

TABLE VI

A Comparative Analysis of Separate Experimental Group Means with California Achievement Test Norms on Two English Language Variables, Using Analysis of Variance

Variables	Groups	n	Experimental Post and CAT-Norm Means	St'd Deviation	F Ratio
Mechanics of English	Cubero Sample--	45	23.20	8.11	25.84**
	Nat'l Norm	200	30.55	8.85	
Spelling	Cubero Sample--	45	2.36	1.91	22.30**
	Nat'l Norm	200	3.98	2.12	
Mechanics of English	Seboyeta Sample--	18	37.50	8.68	10.12**
	Nat'l Norm	200	30.55	8.85	
Spelling	Seboyeta Sample--	18	4.17	4.54	.09
	Nat'l Norm	200	3.98	2.12	
Mechanics of English	San Mateo Sample--	12	24.00	5.90	6.32*
	Nat'l Norm	200	30.55	8.85	
Spelling	San Mateo Sample--	12	1.08	1.11	21.92**
	Nat'l Norm	200	3.98	2.12	

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE VII

A Comparative Analysis of Separate Experimental Group Means with California Achievement Test Norms on Two English Language Variables, Using Analysis of Variance

Variables	Groups	n	Experimental Post and CAT-Norm Means	St'd Deviation	F Ratio
Mechanics of English	San Rafael Sample--	36	29.92	7.80	.15
	Nat'l Norm	200	30.55	8.85	
Spelling	San Rafael Sample--	36	1.89	1.79	30.93**
	Nat'l Norm	200	3.98	2.12	
Mechanics of English	Sierra Vista Sample--	64	29.91	10.01	.23
	Nat'l Norm	200	30.55	8.85	
Spelling	Sierra Vista Sample--	64	1.94	2.62	39.85**
	Nat'l Norm	200	3.98	2.12	
Mechanics of English	Fence Lake Sample--	12	34.00	14.80	1.54
	Nat'l Norm	200	30.55	8.85	
Spelling	Fence Lake Sample--	12	4.33	3.70	.27
	Nat'l Norm	200	3.98	2.12	

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE VIII

Experimental Group Differences on Mechanics of English, Based on The California Achievement Test and Analysis of Variance

Treatment Groups and Post-Test Means		Treatment Groups and Post-Test Means					
		Cubero	Fence Lake	Seboyeta	San Mateo	San Rafael	Sierra Vista
		23.20	34.00	37.50	24.00	29.92	29.91
		F Ratios					
Cubero	23.20	.00	10.80**	14.30**	.80	6.72*	6.71*
Fence Lake	34.00	10.80**	.00	3.50	10.00**	4.08*	4.09*
Seboyeta	37.50	14.30**	3.50	.00	13.50**	7.58**	7.59**
San Mateo	24.00	.80	10.00**	13.50**	.00	5.92*	5.91*
San Rafael	29.92	6.72*	4.08*	7.58**	5.92*	.00	.01
Sierra Vista	29.91	6.71*	4.10*	7.60**	5.91*	.01	.00

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE IX

Experimental Group Differences on Spelling,
Based on the California Achievement Test
and Analysis of Variance

Treatment Groups and Post-Test Means		Treatment Groups and Post-Test Means					
		Cubero 2.36	Fence Lake 4.33	Seboyeta 3.08	San Mateo 1.08	San Rafael 1.89	Sierra Vista 1.94
		F Ratios					
Cubero	2.36	.00	1.98	1.81	1.27	.47	.42
Fence Lake	4.33	1.98	.00	.17	3.25	2.44	2.40
Seboyeta	3.08	1.81	.17	.00	3.08	2.28	2.23
San Mateo	1.08	1.27	3.25	3.08	.00	.81	.85
San Rafael	1.89	.47	2.44	2.28	.81	.00	.048
Sierra Vista	1.94	.42	2.40	2.23	.85	.05	.00

Experimental and Control Group Achievement in Oral Spanish

Based on an experimental sample of 97 pupils and a control group sample of 35 students tested with the Spanish Oral Capacity Test,* the pre- and post-test comparison shows a significant gain in oral Spanish for both groups. A gain of 9.29 points, significant at the .01 level of confidence, is indicated for the experimental group students. A gain of 4.60, also at the .01 level of confidence, is noted for the control group pupils. Since Spanish speaking children are found in the control group, it is not surprising to find an achievement gain between the pre- and post-tests. This gain may be attributed to the maturity variance among the children between the Fall and Spring and a plausible test (learning) variable. However, apart from these two plausible intervening variables, a greater significant gain is found in the experimental group as compared to the control group. A second analysis illustrated in Table XI clearly shows this difference (experimental versus control) at the .01 level of confidence. Therefore, it can be concluded that the utilization of Spanish as an instructional medium has tended to improve the oral Spanish proficiency of first grade children in the experimental schools.

An additional analysis was performed to specifically identify the experimental schools which scored significantly higher than the control school. Table XII reveals higher means for all of the experimental groups as compared to the control group in this analysis. Only one school, Seboyeta, failed to show a significant difference as compared to the control school; yet, the mean for this

*The Spanish Oral Capacity Test used in this study is an adaptation of a test used for non-English speaking children by the Texas Technological University Pre-School Screening Service.

school is comparable to those of the other experimental schools. At least two factors affected the statistical measure for the Seboyeta experimental group: one, the experimental pre-test mean initially was high as compared to the control group mean, which resulted in a greater adjustment of the post-test mean through analysis of covariance; and two, a low "n" (9 pupils) also tended to lower the probability of a significant F ratio. It is noteworthy that four of the schools scored significantly higher than the control school, with three placing at the .01 level of confidence. Only Fence Lake was excluded from this statistical treatment. Fence Lake, with nearly 100 per cent Navajo, was not provided with Spanish language exposure. In this school, concepts were introduced or reinforced in Navajo -- the native language of the child.

Experimental group gains in oral Spanish were statistically notable (.01 level of confidence) in Cubero, San Mateo, San Rafael, and Sierra Vista. The number of points achieved on the test ranged from approximately 8 to 15 (see Tables XII and XIII). Gains as high as 50 per cent are indicated. The probability of higher Spanish language scores exist; however, the Spanish Oral Capacity Test poses a limit on the total number and variety of language responses that can be recorded. While the test has indicated significant gains in achievement, other more sophisticated instruments are needed to measure higher and more varied language components among Southwestern Spanish-speaking children. In spite of the limitations of the Spanish language instrument, the statistical data have provided sufficient evidence to conclude that the Grants Bilingual Program has been notably successful in raising the oral Spanish language proficiency among first grade children in the experimental schools.

TABLE X

Total Expetimental and Control Group Achievement in Oral Spanish
Based on a Pre- Versus Post-Test Comparison,
Using Analysis of Variance

Groups	n	Pre-Test Mean	St'd Deviation	n	Post-Test Mean	St'd Deviation	F Ratio
Experi-mental	97	13.47	8.66	97	22.74	7.94	59.67**
Control	35	10.60	7.06	35	15.20	7.82	6.48**

** Denote a significant difference at the .01 level of confidence.

TABLE XI

Total Experimental and Control Group Differences
in Oral Spanish Achievement,
Using Analysis of Covariance

Groups	n	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	St'd Deviation	F Ratio
Experi-mental	97	13.47	22.74	22.24	7.94	23.56**
Control	35	10.60	15.20	16.58	7.82	

** Denote a significant difference at the .01 level of confidence.

TABLE XII

Experimental and Control Group Mean Differences
in Oral Spanish Achievement,
Using Analysis of Covariance

Groups	n	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	St'd Deviation	F Ratio
Cubero	9	15.33	30.22	28.26	2.15	28.22**
Control	35	10.60	15.20	15.70	7.82	
Seboyeta	10	18.00	22.60	18.90	5.77	1.37
Control	35	10.60	15.20	16.24	7.82	
San Mateo	13	18.92	26.54	22.79	4.48	8.59**
Control	35	10.60	15.20	16.59	7.82	
San Rafael	22	12.18	20.23	19.49	8.59	5.24*
Control	35	10.60	15.20	15.66	7.82	
Sierra Vista	43	11.05	21.35	21.21	8.29	17.19**
Control	35	10.60	15.20	15.37	7.82	

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE XIII

Experimental Group Achievement in Oral Spanish
Based on a Pre-Versus Post- Comparison,
Using Analysis of Variance

Groups	n	Post-Test Mean	St'd Deviation	n	Post-Test Mean	St'd Deviation	F Ratio
Cubero	9	15.33	8.40	9	30.22	2.15	23.69**
Seboyeta	10	18.00	8.32	10	22.60	5.77	1.85
San Mateo	13	18.92	6.98	13	26.54	4.48	10.11**
San Rafael	22	12.18	7.66	22	20.23	8.59	10.26**
Sierra Vista	43	11.05	8.52	43	21.35	8.29	31.55**

** Denote a significant difference at the .01 level of confidence.

Experimental and Control Group Attitudes Toward Characteristics in Three American Ethnic Groups

A cultural sensitivity instrument, designed at the SWCEL by the author of this report, was administered to a small sample of experimental and control group children. Although the number of subjects tested was relatively low to draw conclusive observations on the three variables measured by the instrument, the data, nevertheless, provide several comparative indications of cultural attitudes between the groups in the study. The statistical results illustrated in Table XIV reveal a very close relationship between the pre- and post-test means among experimental and control group children. The number of mean points gained for both experimental and control group pupils, particularly in attitudes toward Mexican American cultural characteristics, are noteworthy. Statistical differences, based on analyses of variance, are not indicated due to the low "n" in the groups and the wide variance (Standard Deviation) within the groups relative to the three criterion variables.

Statistical mean differences on the three aforementioned variables, in terms of the post-test and analyses of covariance, are found between experimental and control group students. And since a total of 1,360 points is possible on each of the cultural variables measured by the instrument, it tentatively can be concluded that greater program emphasis is needed in depicting, in a favorable light, various elements of the three general cultural groups in the program. At this stage of the program development, it is suggested that further testing, with a larger sample, is needed to clearly establish the validity of the findings.

TABLE XIV

A Pre- Versus Post-Test Comparative Analysis
on Three Attitudinal Variables Relative to Characteristics
in Three American Ethnic Groups, Using Analysis of Variance

Variables	Groups	n	Pre-Test : Mean	Post-Test Mean	St'd Deviation	F Ratio
Attitude Towsrd Anglo American Characteristics	Experi-mental	6	379.83	380.33	107.04	.00
Attitude Toward American Indian Characteristics	Experi-mental	6	431.17	408.83	99.33	.12
Attitude Toward Mexican American Characteristics	Experi-mental	6	357.00	423.33	123.89	.77
Attitude Toward Anglo American Characteristics	Control	11	357.55	397.55	70.66	.47
Attitudes Toward American Indian Characteristics	Control	11	372.00	416.09	77.48	1.76
Attitude Toward Mexican American Characteristics	Control	11	306.18	351.64	64.93	2.79

TABLE XV

A Control Versus Experimental Group Comparative Analysis on Three Attitudinal Variables Relative to Characteristics in Three American Ethnic Groups, Using Analysis of Covariance

Variables	Groups	n	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	St'd Deviation	F Ratio
Attitude Toward Anglo American Characteristics	Experimental	6	379.83	380.33	379.91	117.66	.14
	Control	11	375.55	397.00	397.23	54.61	
Attitude Toward American Indian Characteristics	Experimental	6	431.17	408.83	402.66	127.92	.08
	Control	11	372.00	416.09	419.46	78.33	
Attitude Toward Mexican American Characteristics	Experimental	6	357.00	423.33	410.53	104.70	1.87
	Control	11	306.18	351.64	358.62	53.39	

Parental Attitudes Toward Bilingualism and the Bilingual Education Program

The Parental Attitudinal Questionnaire designed at the SWCEL was administered on a post-test basis to 19 experimental group parents and 10 control group parents. The experimental group was composed of a sample of parents whose children were exposed to the Bilingual/Bicultural program, while the control group was composed of a sample of parents whose children were not exposed to the program compohents. Sixteen of the parents were Mexican American and 13 were American Indian.

Three additional analyses were performed to ascertain ethnic group differences in attitudes toward bilingualism and bilingual education. Table XVI shows a very close similarity between Mexican American experimental group parents and Mexican American control group parents on 36 responses relative to the aforementioned variables. In general, the responses also tend to fall quite consistently in the favorable category, with slightly higher means noted for the experimental group. None of the small differences appear significant at the .05 level of confidence.

The first 8 questions pertained to parental observations about their children's improvement in the first language. The findings (see Tables XVI and XVIII) show a very close relationship between the experimental and control group responses in the majority of these variables. Yet, while a significant difference at the .05 level of confidence is noted in only one of the 8 variables (variable 1), all of the means tend to favor the experimental group. Specifically, this means that the experimental group parents indicated some notable improvement in the first language, while the control group parents revealed some or no improvement on this variable.

Questions 9 and 10 referred to parental perceptions relative to their children's improvement in vocabulary and fluency in the second language. A very close similarity in the means of the groups is found. The responses for the experimental and control groups tended to be approximately at or slightly above the some category.

Question 11 was stated as follows: Do you believe that learning Spanish will interfere with a child's ability to speak English? Both groups clearly indicated that learning Spanish will not interfere with the child's ability to speak English.

Question 12 referred to the child's usage of Spanish with Spanish surnamed children. The statistical findings tend to favor the experimental group, but the difference is small and insignificant. The responses for experimental group parents are concentrated in the some category, while control group responses appear to fall between the some and none categories.

Question 13 referred to the child's usage of English with Spanish surnamed children. Here, the means between the groups again appear relatively close. The responses for all of the groups tended to fall between the some and very much categories.

Table XVII shows the comparative data between Mexican American experimental group parents and American Indian experimental parents on 29 of the 36 variables. A very close relationship appears between the majority of the comparisons. Only 6 significant differences are indicated in the statistical findings. The first two differences are found in response to these questions: Does your child associate with Spanish-speaking children and English-speaking children? A significant difference (.05 level of confidence) is noted in favor of the Mexican American experimental group on the former variable. However, the finding is reversed in favor of the American Indian experimental group (.01 level of confidence) in reference to the child's association with English-speaking

children. Further observations by District personnel are suggested to determine the factors or conditions which account for these differences.

Another difference between the two experimental groups is noted in response to the question: What is your feeling about your child learning to write in Spanish? The statistical analysis clearly reveals a significant difference (.01 level of confidence) in favor of the Mexican American experimental group. This finding was highly predictable because of the difference in native dialects between the two ethnic groups.

The fourth significant difference (.05 level of confidence) between the two experimental groups is noted in reference to the question: What is your opinion about the idea that Spanish-speaking children should learn to read first in Spanish? It is noteworthy to find that a higher (mean) positive response was expressed by the American Indian experimental group. On this variable, the Mexican American parents scored between the indifferent and favorable categories.

Two other significant differences (.01 level of confidence) are indicated in favor of the Mexican American experimental parents. These responses relate to these questions: Do you believe that your child can gain a better education by learning subject-matter content in Spanish and in English; further, do you believe that some features of the Hispanic-Mexican culture should be included in the subject-matter content for Mexican American children? Because of the ethnic nature of the questions, it is not surprising to find all of the Mexican American responses in the favorable column.

Eight significant differences are noted between the American Indian experimental group and the Mexican American control group. Specifically, the differences were indicated as follows (see Table XVIII):

Questions	Direction of Significant Difference
Have you noticed an improvement in your child's ability to speak with you in Spanish or English?	.05 level of confidence in favor of the experimental group
Does your child associate with Spanish-speaking children?	.01 level of confidence in favor of the control group
Does your child associate with English-speaking children?	.01 level of confidence in favor of the experimental group
What is your feeling about your child learning how to write Spanish?	.01 level of confidence in favor of the control group
What is your opinion about the idea that Spanish-speaking children should learn to read first in Spanish?	.01 level of confidence in favor of the control group
At what grade level should Spanish language instruction be introduced for Mexican American children?	.05 level of confidence (the control group favored the elementary grades and the experimental group the junior high school grades)

TABLE XVI

Comparative Differences Between Mexican American Experimental Group Parents and Control Group Parents on Attitudes Toward Bilingualism and Bilingual Education, Using Analysis of Variance

Variables	Experimental Mexican Amer. n=6	Control Mexican Amer. n=10	St'd Deviation	F Ratio
1	2.17	1.80	1.94	.83
2	2.33	1.90	.83	.96
3	2.50	2.10	.82	.80
4	2.33	2.10	.95	.20
5	2.00	1.90	.83	.04
6	2.00	1.90	.83	.04
7	2.33	1.60	.86	2.90
8	2.33	1.60	.86	2.90
9	2.33	2.40	.70	.03
10	2.33	2.40	.70	.03
11	1.00	1.00	.00	.00
12	2.33	1.80	.79	1.67
13	2.50	2.40	.50	.13
14	2.50	2.60	.50	.13
15	2.33	2.20	.43	.31
16	2.83	3.00	.24	1.74
17	3.00	3.00	.00	.00
18	3.00	3.00	.00	.00
19	3.00	3.00	.00	.00
20	3.00	3.00	.00	.00
21	3.00	3.00	.00	.00
22	3.00	3.00	.00	.00
23	3.00	3.00	.00	.00
24	2.66	2.10	.85	1.64
25	3.00	2.70	.39	2.24
26	2.67	2.80	.66	.13
27	2.67	2.80	.66	.13
28	3.00	3.00	.00	.00
29	3.00	3.00	.00	.00
30	3.00	3.00	.00	.00
31	3.00	2.80	.48	.58
32	3.00	3.00	.00	.00
33	3.00	3.00	.00	.00
34	1.67	2.20	.71	2.15
35	1.33	1.10	.39	1.27
36	2.00	1.40	.78	2.24

TABLE XVII

Comparative Differences Between Mexican Americans Experimental Group Parents and American Indian Experimental Group Parents Toward Bilingualism and Bilingual Education, Using Analysis of Variance

Variables	Experimental Mexican Amer. n=6	Experimental Amer. Indian n=13	St'd Deviation	F Ratio
1	2.17	2.38	.57	.56
2	2.33	2.31	.65	.00
3	2.50	2.38	.75	.08
4	2.33	2.38	.87	.01
5	2.00	2.08	.83	.03
6	2.00	2.08	.83	.03
7	2.33	2.08	.81	.37
8	2.33	2.08	.81	.37
9	2.33	2.31	.57	.00
10	2.33	2.31	.57	.00
11	1.00	1.08	.22	.44
12	2.33	2.08	.74	.44
13	2.55	2.77	.46	1.32
14	2.50	1.85	.60	5.74 *
15	2.33	3.00	.41	23.26 **
16	2.83	2.92	.31	.31
17	3.00	2.92	.22	.44
18	3.00	2.92	.22	.44
19	3.00	2.92	.22	.44
20	3.00	1.92	.64	27.68 **
21	3.00	3.00	.00	.00
22	3.00	3.00	.00	.00
23	3.00	2.85	.31	.97
24	2.67	3.00	.31	5.81 *
25	3.00	3.00	.00	.00
26	3.00	3.00	.00	.00
27	2.67	2.23	.58	2.35
28	3.00	1.31	.93	41.90 **
29	3.00	1.85	.61	54.90 **

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

TABLE XVIII

Comparative Differences Between American Indian Experimental Group Parents and Mexican American Control Group Parents Toward Bilingualism and Bilingual Education, Using Analysis of Variance

Variables	Experimental Amer. Indian n=13	Control Mexican Amer. n=10	St'd Deviation	F Ratio
1	2.38	1.80	.68	4.67 *
2	2.31	1.90	.74	1.69
3	2.38	2.10	.79	.68
4	2.38	2.10	.79	.68
5	2.08	1.90	.83	.23
6	2.08	1.90	.83	.23
7	2.08	1.60	.85	1.76
8	2.08	1.60	.85	1.76
9	2.31	2.40	.56	.14
10	2.31	2.40	.56	.14
11	1.08	1.00	.20	.76
12	2.08	1.80	.75	.72
13	2.77	2.40	.49	3.43
14	1.85	2.60	.64	11.07 **
15	3.00	2.20	.48	47.47 **
16	2.92	3.00	.20	.76
17	2.92	3.00	.20	.76
18	2.92	3.00	.20	.76
19	2.92	3.00	.20	.76
20	1.92	3.00	.64	47.09 **
21	3.00	3.00	.00	.00
22	3.00	3.00	.00	.00
23	2.85	3.00	.28	1.65
24	3.00	2.10	.77	10.80 **
25	3.00	2.70	.34	5.08 *
26	3.00	2.80	.41	1.31
27	2.23	2.80	.58	.51
28	1.31	3.00	.95	71.27 **
29	1.85	3.00	.63	93.37 **

*Denotes a significant difference at the .05 level of confidence.

**Denote a significant difference at the .01 level of confidence.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The statistical findings, based on the English Oral Capacity Test, revealed close similarities between the experimental groups and the control group in oral English proficiency. While these data do not reveal dramatic gains on this variable in favor of the experimental group as compared to the control group, the findings clearly show significant gains for all of the experimental groups at the .05 or .01 level of confidence. However, since the differences between the pre- and post-test means (in simple numerical terms) were not particularly dramatic, the possibility of higher oral language scores exist. This conclusion can be drawn due to the limitations of the English Oral Capacity Test. It was noted that the post-test means were at the maximum end of the test.

The data produced by the California Achievement were highly noteworthy. The findings show that the combined experimental groups nearly equal the national norm on one variable (Mechanics of English), while the control group surpasses the norm on the same variable. The experimental and control group differences can be attributed to the higher combination of Spanish and Indian speaking children across the experimental groups.

Separate analyses also were performed to determine the difference in English and Spelling proficiency between each of the experimental schools and the national norms. The data show two schools beyond the national norm in English mechanics, Seboyeta and Fence Lake. Therefore, it can be concluded that variance on this variable occurred between the experimental schools. Further analyses reveal that

some of these variances were significant at the .05 or .01 level of confidence. Based on these findings, it is suggested that further observations be conducted to determine unique learning conditions that may have produced greater English gains in some schools as compared to others.

The difference between the schools in Spelling were notably minute and statistically insignificant at the .05 level of confidence. Except for Fence Lake, all of the experimental schools were below the national norm on this variable. This difference may have resulted from less emphasis applied on this variable in the instructional program.

In the final analysis, it can be concluded that the close relationship of the experimental and control school means to the CAT national norm on Mechanics of English truly reflects the overall effectiveness of the District's English language program. The continuation of this effort is highly recommended.

Despite the limitations of the Spanish language instrument used in this evaluation study, the statistical data show sufficient evidence to conclude that the Grants Bilingual Program has been especially successful in raising the oral Spanish language proficiency among first grand children in the experimental schools. Experimental group gains were noted at or beyond the .01 level of confidence. Although some oral Spanish language development also occurred among Spanish speaking children in the control school, the statistical data reveal a significant difference (.01 level of confidence) in favor of the experimental schools. This findings, therefore, indicate that the Spanish language component in the Bilingual program has produced a significant learning effect on this variable among the experimental children.

The continuance of three bilingual education approaches are highly

recommended: one, Spanish language instruction through the elementary grades; two, application of Spanish or Tribal dialect as a medium of instruction and as a reinforcement of subject-matter concepts for the non-English speaking first grader; and three, particular emphasis in English as a second language for the child with little or no knowledge of English. It is hoped, therefore, that these children will eventually utilize both languages fluently in course work and in the larger world.

The results of the Cultural Sensitivity Instrument show a close similarity among the experimental and control group attitudes toward characteristics found in the three general ethnic groups in our Southwest (Anglo American, Mexican American, and American Indian). Further, the data show a close relationship between the pre- and post-test scores of both groups (experimental and control) on the three cultural variables. A careful observation of the scores reveals that both groups consistently failed to score in the favorable component of the measuring scale. At this stage of program development, it is recommended that further testing, with a larger sample, is needed to clearly establish conclusive findings on the three cultural variables measured by the instrument. Additional observations also are recommended to determine the degree of emphasis being given to the Mexican American and American Indian cultural heritage in the content and methodology. The second year evaluation should produce more conclusive evidence and further recommendations relative to the cultural component of the program. In the meantime, cultural program revisions based on district personnel observations and assessment procedures also are suggested.

The final statistical analyses in the evaluation study were performed to

ascertain parental ethnic group differences in attitudes toward bilingualism and bilingual education, Twenty-nine to thirty-six questions were presented relative to these variables. A three-point scale was used to determine degree of support, with 3 representing the maximum score. In general, the responses tended to fall quite consistently in the favorable category, with slightly higher means indicated for the experimental groups. While a few variances occurred between the Mexican American and American Indian experimental groups, these were principally of an ethnic nature. More importantly, it has been noted that the findings reveal a general trend of parental support for bilingual/bicultural education. Based on these observations, it is strongly recommended that the District continue to provide and expand the bilingual/bicultural program for children in the school system.

Appendix A: Sample of Parental Questionnaire

PARENTS' ATTITUDINAL QUESTIONNAIRE

	No Change	Same	High
1.0 Have you noticed an improvement in your child's ability to communicate with you in Spanish, such as in:			
1.1 Spanish vocabulary	___	___	___
1.2 Spanish usage without mixture of English words	___	___	___
2.0 Have you noticed an improvement in your child's ability to communicate with grandparents and other older relatives such as in:			
2.1 Spanish vocabulary	___	___	___
2.2 Spanish usage without mixture of English words	___	___	___
3.0 Have you noticed an improvement in your child's ability to communicate with his brothers and sisters in Spanish, such as in:			
3.1 Spanish vocabulary	___	___	___
3.2 Spanish usage with mixture of English words	___	___	___
4.0 Have you noticed an improvement in your child's ability to communicate with other children in Spanish, such as in:			
4.1 Spanish vocabulary	___	___	___
4.2 Spanish usage with mixture of English words	___	___	___
5.0 Have you noticed a change in your child's ability to communicate in English, such as			
5.1 English vocabulary	___	___	___
5.2 Fluency in speaking	___	___	___