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AUTHOR Offenberg, Robert M.; And Others
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ABSTRACT

Two related, federally-funded bilingual education projects in Philadelphia are evaluated: the Bilingual Learning Centers in Junior High Schools and the Bilingual Learning Centers in Elementary Schools. The aim of these projects was to improve the cognitive skills of limited-English-proficient pupils through the addition of individualized instruction in learning centers to ongoing bilingual education programs. The native language of most of the pupils was Spanish, and the projects served two junior high schools and two elementary schools. The learning centers were staffed by resource specialists and bilingual aides, and provided specialized equipment and small-group instruction to assist in individualization. The programs were evaluated by statistical analysis of participants' standardized achievement test scores and attendance records. Findings showed that the junior high and elementary school projects met their objectives in attendance and English reading skills, but neither met the English vocabulary acquisition objective. The listening comprehension objective was met only by the elementary school project, and the mathematics computation objective was met only by the junior high school project. A list of center resources and results of the statistical analyses are appended. (MSE)

THE TITLE VII BILINGUAL LEARNING CENTERS PROJECTS IN 1985-86: BILINGUAL LEARNING CENTERS IN JUNIOR HIGH AND ELEMENTARY SCHOOLS

Prepared by
Robert M. Offenberg
Carlos Rodriguez-Acosta
Barbara Holden
Bob Epstein

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FEDERAL EVALUATION RESOURCE SERVICES

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EXECUTIVE SUMMARY

The bilingual learning centers projects were used to individualize the instruction of limited English proficiency pupils who were in schools with locally supported (LEA) bilingual programs. Bilingual Learning Centers in Elementary Schools served two schools, was in its second year of operation, and was regarded as fully implemented. Bilingual Learning Centers in Junior High Schools served two schools, was in its third year of operation, and was fully implemented. There were some differences between the learning centers and the proposal specifications.

Specialized equipment and the services of resource specialists and aides were used to individualize the instruction. The projects provided service to 219 pupils.

The junior high and elementary school projects met the objectives dealing with attendance and English reading skills. Neither met the English vocabulary acquisition objective. The objective dealing with listening comprehension was met only by the elementary school project, and the mathematics computation objective was met only by the junior high school project.

BILINGUAL LEARNING CENTERS PROJECT

This report contains the evaluations of two related projects: Bilingual Learning Centers in Junior High Schools and Bilingual Learning Centers in Elementary Schools.

The aim of these projects was to improve the cognitive skills of limited English proficient (LEP) pupils through the addition of individualized learning centers to on-going bilingual programs. The first language of participating pupils was primarily Spanish, and all participants were in need of English for Speakers of Other Languages (ESOL) instruction or had scored below the 26th national percentile on the standardized tests used in their schools. The projects served two junior high schools and two elementary schools that had Spanish-English bilingual education programs.

The individualized learning centers were operated by resource specialists and bilingual classroom aides. Specialized equipment and small groups were used to individualize the instruction.

Rationale

There was a critical need to individualize the instruction of the mainly Hispanic LEP pupils who attended the participating schools: Penn Treaty and Stoddart-Fleisher Junior High Schools and Hunter and Welsh Elementary Schools. A review of preprogram test results and records indicated that there were pupils who required ESOL classes and others who, despite mastery of oral English skills, scored poorly on the City-Wide Testing Program that were used to evaluate the performance of mainstream public school pupils. These findings suggested that the ongoing bilingual programs could be improved in two ways: First, they could be expanded to serve Hispanic and other non-English dominant pupils who had low scores but did not need ESOL. Second, a bilingual learning center could be added to the school to provide individualized and small group instruction for the bilingual program pupils and the group of pupils with low test scores. The centers were to emphasize oral and written English, and mathematics. Instruction in Spanish as a first language and other academic disciplines were optional.

Previous Findings

The two individualized learning center projects were implemented in successive years. The Bilingual Learning Centers in Elementary Schools was begun in 1984, and the Bilingual Learning Centers in Junior High Schools was begun in 1983. Both centers were funded for October, and began serving pupils shortly thereafter.

In 1984-85 both projects had the same program objectives, and both attained the attendance objective. The objective dealing with mathematics was attained by only the Junior High School project, and neither project attained the two English language objectives. Of the four schools, only one, Penn Treaty Junior High School, had implemented a program that was consistent with the proposal's design. Plans were underway to bring the other programs closer to the original design.

Evaluation Methodology

Implementation of the projects was assessed through extensive monitoring of the learning centers and the LEA-supported bilingual programs that they enriched.

The Stanford Achievement Test, 1973 Edition, was used to evaluate the participants' growth in English vocabulary, reading and in mathematics. The Stanford Achievement Test levels used in the projects were chosen for their ability to distinguish among the achievement levels of pupils being served by the projects.

For assessment of aural comprehension a local curriculum-referenced measure, the Philadelphia Test of Aural Comprehension (TAC), was used. It was developed more than a decade ago and contains items common to ESOL texts used in the school district. The items are presented on audio tapes, and the responses are recorded in machine scorable test booklets. The test does not require the pupil to read.

The analyses of achievement scores all used multivariate approaches to separate pupils' scores into components, thereby separating the effects of non-programmatic elements, such as age, grade and mainland residence, from the effects of learning center use. The analyses included "linear" and "quadratic" trends to describe growth rates that change over time.

The evaluation of the attendance objective was based on pupil records as transcribed by teachers and on central office records. Each school reported project participant data for the period that its learning center was in operation. The comparison data came from monthly school reports that matched, as closely as possible, the time span of the participant data.

Implementation

The bilingual learning centers, for both the Junior High and the Elementary Schools, were fully operational by the beginning of October. The centers had most of their equipment and materials by the beginning of the program year, and were fully equipped by the end of the academic year (see the Information Based Evaluation section of this report).

The learning centers were coupled with preexisting, Spanish-English transitional bilingual programs operating at the project sites. The four project sites offered English for Speakers of Other Languages (ESOL) instruction, while only three sites offered Spanish as a First Language

(SFL) instruction, in their schools. The junior high schools also offered an assortment of Spanish language academic courses as part of their regular school program. The elementary schools had pull-out ESOL classes, some self-contained ESOL classes, and self-contained bilingual classes. The school sites also included students whose first language was Spanish who were not in need of ESOL or bilingual education, but whose standardized test performance indicated a need for some additional help. These students, while in the regular academic program of their school, received service from the bilingual learning centers. The learning centers used small group and individualized instruction to teach and reinforce the concepts being taught.

While the proposals' intentions had not always been interpreted in the same fashion at all sites, all but one of the school sites did so this year. The exception was Stoddart-Fleisher, one of the junior high schools, which used the learning center instruction in place of regular ESOL and to serve only beginning level ESOL students. This resulted in the undermining of the center's intended supplementary character, and in depriving nearly all of the more English-competent ESOL students of the benefits of contact with it. In the two elementary school sites and the remaining junior high school site nearly all of the students served were studying ESOL in the bilingual programs.

The bilingual learning centers used small group and individualized instruction to teach and reinforce English language arts concepts, with some also teaching mathematics and Spanish as a first language. The centers were each managed by a resource specialist who was a Spanish-English bilingual teacher. Working with the resource specialists were bilingual aides: three per-site in the elementary schools and two per-site at the junior high schools. Staff served a total of 219 students; 122 in the elementary program (48 at Hunter and 74 at Welsh) and 97 in the junior high school program (11 at Stoddart-Fleisher and 86 at Penn Treaty).

The centers were similar in their physical layout, with each center divided into stations where various types of instructional activities took place. In three of the four centers the rooms were large and comfortable, conducive to small group and individualized instruction. Hunter Elementary School was able to overcome the limitations placed upon the program due to a lack of space, by both limiting the number of students served and by an imaginative layout of the equipment and furnishings in the center.

Thirty-nine bilingual learning center sessions were observed during 13 site visits. During all such visits, resource specialists and aides were observed giving individualized or small group instruction to the students. The students changed instructional activities during these sessions, by moving from one instructional station to another, as individuals or as part of a small groups.

The amount of time spent in the learning centers varied according to the students' level of English proficiency and their rosters, as well as the centers' organizational structures. At the Stoddart-Fleisher Junior High School, they participated on a daily basis with some students coming

for at one period per day and others for up to four or five periods per day because the school used the center in lieu of the regular ESOL classes. Some of these students were unable to function in the regular program because they did not know English and were unable to function in the bilingual program because they were not Hispanic. The center also offered instruction in mathematics and Spanish as a first language.

At Penn Treaty Junior High School, pupils attended the center two or three times per week, for one or more periods, depending on their class rosters. The instruction at the center was primarily in ESOL, with limited service in mathematics for those who needed it.

At the Hunter Elementary School, students were served five days per week, with some coming for more than one period a day. This center offered mathematics to some of the students, some of whom did not study ESOL in the center. This center was the first to make use of computers for individual and small group instruction, and had five computers.

At the fourth site, the Welsh Elementary School, the center had a very favorable instructional environment. The room was especially large, well lit and ventilated, with clearly delineated learning stations. Students came daily, with beginning ESOL students being the primary beneficiaries. Only a few intermediate level students and no advanced students were served.

When the learning centers were visited, the staffs were often observed engaged in the detailed process of record keeping, necessary for the individualization of instruction. Great effort and attention was paid to the maintenance of the individual pupil records, which were maintained by the resource specialists. The recommendations the records contained were based on both formal and casual discussions between the ESOL teachers and the resource specialists.

Information Based Evaluation

The elementary and junior high school project evaluation plans contained specific "information based" evaluation goals about staff development and the implementing and equipping of the learning centers.

1. The implementation of the learning centers will be examined to determine the instructional equipment and instructional materials available at each site.

Table 1 contains a summary of the equipment available at the project sites. All of the equipment can be used to teach English language skills. Four of the devices have software that can be used for mathematics instruction as well. There was no Spanish language software ordered, and what was on hand was not used.

The junior high school project had no new equipment or materials ordered, or received, during the 1985 - 86 school year. What had been ordered during the previous year had arrived and was in use.

The elementary school project had received much of its equipment and materials by the first part of the school year, and continued to receive more throughout the rest of the year. Much of the elementary school project's new materials consisted of software for their computers.

2. The staff development activities to be conducted for bilingual program teachers at the project sites and for the staffs of the learning centers will be examined.

There were no staff development activities at the junior high school project, for either the learning centers' staffs or the bilingual program teachers.

The elementary school project held two workshops for its learning center and bilingual teaching staffs. One workshop, consisting of three sessions, dealt with the use of ESOL methodology for the teaching of reading and writing in the content areas. The second workshop, consisting of only one session, dealt with the use of computers as an instructional tool for the teaching of English as a second language. Both workshops were organized and directed by personnel from the School District's Division of Foreign Languages and members of its instructional staff. The sessions were held in March and April, with an average attendance of one principal, seven ESOL teachers (including the resource specialists) and 2.5 aides.

ATTAINMENT OF OBJECTIVES

Objective 1: To improve participants English reading and vocabulary performance to a statistically significant degree (at the 10% level) as a result of using an individualized learning center.

This objective was attained for reading in both the elementary school and the junior high school programs. It was not attained for vocabulary.

Pupils in grades 1-8 were tested with Stanford Achievement Tests, Sixth Edition in May. Pupils took the subtests that comprise the Total Reading section (Reading Comprehension and Word Study Skills) and the Vocabulary section. Pupils in grades 1-3 took Primary Level 1, those in grades 4-6 took Primary Level II, and Junior high school students took Primary Level III. These test levels were chosen because experience has shown that they are best able to discriminate among the pupils in the projects. Scale scores were used because they permit the combined analyses of several test levels and because they have other properties required for the statistical analyses.

Tables 2-5 show the analyses Reading and Vocabulary scores. In the four analyses, the background variables "Pupil Age," "Current Grade," "Years in U.S. Mainland," and "Years in ESOL/Bilingual Program" control statistically for the primary ways, other than the learning centers, that the target population develops competence--residence in a mainland environment and participation in preexisting programs. The variable group "Years in the Center" measures the effect of the Title VII project, independent of the effects of the background variables. Two trends for the "Years in Center" group were computed in recognition of the rapid acquisition of new skills shortly after initial participation in the center, and the slower acquisition that follows. These unequal rates of acquisition have often been found in previous studies.

Table 2 shows that in the elementary school program, pupils' reading scores were increased to a statistically significant degree by learning center participation. When pupils first began to use the center, their reading competence growth rate was more than 35 scale score points per year. The rate of acquisition of new competences slowed as the students continued in the program until after about nine months of use, the learning centers' value ended for the typical program participant.

Table 3 shows that in the junior high school program students' reading scores were also increased to a statistically significant degree. When the students first began to use the center, their reading competence growth rate was more than 29 scale score points per year. The growth of the typical student continued for about one and one half years.

Tables 4 and 5 show that neither the elementary school nor the junior high school project participants acquired new vocabulary to a statistically significant degree through use of the learning center. (The preexisting ESOL and bilingual programs, however, improved pupils vocabulary.)

Objective 2: To improve participants mathematics computation skills to a statistically significant degree (at the 10% level) as a result of using an individualized learning center.

This objective was attained by the junior high school project, but not the elementary school project.

Computation subtests of the Stanford Achievement Test battery were used to evaluate this objective. The test levels and the analytical approach were similar to those used for evaluating Objective 1.

Table 6 shows that there was no statistically significant relationship between the length of time elementary school pupils participated in the learning center program and their Mathematics Computation scores.

Table 7 shows that there was a statistically significant relationship in the junior high school program. The "Years in the Center" linear trend shows that the typical students' Mathematics Computation growth rate was over 27 scale score points per year shortly after initial participation in the center. The rate of growth of students' computation skills slowed as they continued in the program, until, after one and one third school years, the learning center's value ended for the typical program participant.

The contrast between the elementary school and the junior high school mathematics findings is consistent with the different emphases on mathematics instruction in the learning centers, as reported in the implementation section of this report. The greater emphasis on mathematics instruction in the junior high school project learning centers, especially at Penn Treaty Junior High School, produced a positive outcome.

Objective 3: The rate of aural comprehension skills growth will be enhanced to a statistically significant degree (at the 10% level) by using a learning center.

This objective was attained for the elementary school program, but not for the junior high school program.

In both projects, the Test of Aural Comprehension (TAC) was administered in May to pupils who were using the learning centers. Multiple regression was used to decompose pupils' achievement into the effects of age, grade, United States Mainland residence, years of ESOL or bilingual instruction, and the variable of primary interest, years of learning center participation.

Eighty elementary school pupils were tested with the TAC. The data were complete for the 78 pupils whose performance is described by Table 8. The table shows that participation in ESOL, resulted in statistically significant improvement in pupil achievement, of about 4.4 points per year. Addition of the learning center produced improvements in pupils' rates of growth that lasted for just over one year. The statistically significant linear trend shows that, for a brief time, the learning center increased the pupils' scores at a rate of 57 points per

year. The statistically significant quadratic trend of about -25 showed that the rate of growth due to the learning center decreased as pupils used it. After eleven months, the quadratic trend showed, the value of using the learning center for improving aural comprehension ended for the typical elementary school project participant.

Table 9 shows the analysis of junior high school students' TAC scores. None of the effects of pupil background or program participation were statistically significant. This indicates that the amount of time that students used the junior high school learning centers did not have any measurable effect on their TAC test scores.

Objective 4: The average daily attendance of participants who use the learning centers will be equal to or better than, the average daily attendance of the project schools during the same period.

This objective was attained for both the elementary and the junior high school projects. As shown by Table 9, the average daily attendance of pupils using the individualized learning centers exceeded the average daily attendance of pupils at every project school.

The attendance data for the school sites was obtained from monthly reports, while that of the learning centers came from records of participating pupils. The data are for the marking periods that best approximate the periods of actual project operation. The data does not include the last marking period, as records are not readily available at the end of the year.

The attendance period for the junior high school project covered the period from the beginning of October to mid-March. The Stoddart-Fleisher Junior High School learning center students' attendance was 81.1%, as compared to the overall school attendance of 71.9%. The learning center students' attendance for Penn Treaty Junior High School was 78.4%, compared to an overall school attendance of 59.8%.

The attendance period for the elementary school project covered the period from mid-September to mid-March. The Welsh Elementary School's learning center students' attendance was 91.2%, as compared to an overall school attendance of 88.6%. The Hunter Elementary School's learning center students' attendance was 91.1%, with that school's overall attendance standing at 87.1%.

IMPACT

The elementary and junior high school learning center projects have matured to the point where they are having systematic, positive effects on participants. Use of the learning centers improved English reading scores in both projects, computation scores in the junior high school project, English aural comprehension skills in the elementary school project and attendance in both projects. (Improvement in English vocabulary was the only measured skill that was not improved by the learning centers of either project). The increased positive findings are attributable, in the evaluators' opinion, to the more consistent compliance with the instructional plan outlined by the proposal. The one

site that failed to follow the proposal was also the one with the fewest pupils.

The impact of the junior high school learning centers on mathematics suggests that they can be effective in improving performance in this subject when it is incorporated into the program in a structured format--participation of a specialist teacher or regular scheduling of the subject by the learning center staff. This report describes the last year of federal support for the junior high school project. The numbers of students served at each junior high school site suggest that continuation of the learning center using LEA funds was only warranted at Penn Treaty Junior Junior High School, where the program was consistent with the design and where meaningful numbers of students were served. (A modified version of the learning center program is presently continuing at this site). The small number of students served and the lack of attention to the proposal plan suggested that continuation of the learning center at the other site Stoddart-Fleisher Junior High School was not warranted. The learning center at this site has not continued beyond the end of the Title VII funding.

In conclusion, the 1985-86 evaluation of these projects provides the clearest evidence that the pupils have benefited from an individualized learning center. The findings show that the plans were successful when they were fully implemented, and when local compromises are minimized.

TABLE 1

PROJECT MATERIALS AND EQUIPMENT
IN BILINGUAL LEARNING CENTERS AT YEAR END

Instructional Materials and Devices	Centers in Project Schools	
	Junior High (2 sites)	Elementary (2 sites)
Typewriter	---	yes
System 80	yes	yes
Spellbinder*	---	yes
Voxcom	yes	yes
Craig Reader	yes	yes
Tape recorder	yes	yes
Charlie the Robot*	---	yes
Supportive Reading Skills	yes	---
Headphones	yes	yes
Spectra Machine	1 site	yes
Language Masters	yes	yes
Step-board*	---	yes
Computers	---	yes

* Appropriate for young children.

TABLE 2

ANALYSIS OF TOTAL READING SCALE SCORE:
ELEMENTARY ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	1.787001	1.934	.0606*	.924176
Current Grade				
Linear Trend	- .228914	- .134	.8938	1.703699
Years in U.S. Mainland				
Linear Trend	- .631843	- .968	.3391	.652590
Years in ESOL/Bil. Prog.				
Linear Trend	2.685136	.591	.5577	4.540151
Years in the Center				
Linear Trend	35.417135	1.877	.0681*	18.864374
Quadratic Trend	- 20.165004	- 2.451	.0190*	8.227118

*Significant at the 10% level or better.

R-Square = .27185 Mean Score = 117.311
N = 45 F = 2.36449 Sig. of F = .0487

The data in Table 2 refer to Objective 1. They show that, for pupils in the elementary schools, the reading scores were increased to a statistically significant degree by learning center participation.

TABLE 3

ANALYSIS OF TOTAL READING SCALE SCORE:
JUNIOR HIGH ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	- 3.303304	- 1.268	.2112	2.604446
Current Grade				
Linear Trend	6.366003	1.573	.1227	4.046395
Years in U.S. Mainland				
Linear Trend	- .145737	- .121	.9042	1.204260
Years in ESOL/Bil. Prog.				
Linear Trend	1.890965	1.589	.1191	1.190281
Years in the Center				
Linear Trend	29.303011	2.149	.0371*	13.637383
Quadratic Trend	- 9.754750	- 1.925	.0606*	5.067802

*Significant at the 10% level or better.

R-Square = .32482 Mean Score = 122.192
N = 52 F = 3.60808 Sig. of F = .0053

The data in Table 3 refer to Objective 1. The table shows a statistically significant increase in pupils' reading scores due to learning center participation.

TABLE 4

ANALYSIS OF VOCABULARY SCALE SCORE:
ELEMENTARY ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	.898628	1.030	.3096	.872616
Current Grade				
Linear Trend	2.042339	1.270	.2119	1.608650
Years in U.S. Mainland				
Linear Trend	.382529	.621	.5384	.616182
Years in ESOL/Bil. Prog.				
Linear Trend	8.946838	2.087	.0436*	4.286858
Years in the Center				
Linear Trend	- 5.233517	- .294	.7705	17.811942
Quadratic Trend	- .504099	- .065	.9486	7.768132

*Significant at the 10% level or better.

R-Square = .24451 Mean Score = 101.556

N = 45 F = 2.04975 Sig. of F = .0826

The data in Table 4 refers to Objective 1. The data indicate that there was no significant increase in vocabulary skills attributable to learning center participation.

TABLE 5

ANALYSIS OF VOCABULARY SCALE SCORE:
JUNIOR HIGH ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	- 3.792594	- 1.278	.2078	2.967349
Current Grade				
Linear Trend	7.107262	1.542	.1302	4.610219
Years in U.S. Mainland				
Linear Trend	- .869995	- .634	.5292	1.372062
Years in ESOL/Bil. Prog.				
Linear Trend	2.747125	2.026	.0487*	1.356134
Years in the Center				
Linear Trend	9.799073	.631	.5314	15.537614
Quadratic Trend	- 3.267735	- .566	.5742	5.773949

*Significant at the 10% level or better.

R-Square = .20069 Mean Score = 116.365
N = 52 F = 1.88312 Sig. of F = .1046

The data in Table 5 refer to Objective 1. The data indicate no significant increase in vocabulary skills attributable to learning center participation.

TABLE 6

ANALYSIS OF MATHEMATICS COMPUTATION SCALE SCORE:
ELEMENTARY ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	.496593	.809	.4237	.613847
Current Grade				
Linear Trend	4.612366	4.082	.0002*	1.129900
Years in U.S. Mainland				
Linear Trend	.082118	.190	.8506	.432796
Years in ESOL/Bil. Prog.				
Linear Trend	2.243707	.745	.4612	3.013021
Years in the Center				
Linear Trend	- 18.943645	- 1.488	.1453	12.734304
Quadratic Trend	5.607021	1.013	.3176	5.534418

*Significant at the 10% level or better.

R-Square = .57744 Mean Score = 133.477
N = 44 F = 8.42706 Sig. of F = .0000

The data in Table 6 refer to Objective 2. They show that there was no statistically significant relationship between the length of time in a learning center and mathematics computation scores.

TABLE 7

ANALYSIS OF MATHEMATICS COMPUTATION SCALE SCORE:
JUNIOR HIGH ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	- 3.346889	- 1.157	.2532	2.891730
Current Grade				
Linear Trend	7.532685	1.677	.1005	4.492734
Years in U.S. Mainland				
Linear Trend	1.068494	.799	.4284	1.337096
Years in ESOL/Bil. Prog.				
Linear Trend	- 1.406735	- 1.064	.2928	1.321575
Years in the Center				
Linear Trend	27.223293	1.798	.0789*	15.141657
Quadratic Trend	- 10.225257	- 1.817	.0758*	5.626807

*Significant at the 10% level or better.

R-Square = .16205 Mean Score = 154.019
N = 52 F = 1.45038 Sig. of F = .2170

The data in Table 7 refer to Objective 2. It shows that there was a statistically significant relationship between the length of time in a learning center and an increase in mathematics computation scores.

TABLE 8

ANALYSIS OF AURAL COMPREHENSION (TAC) SCALE SCORE:
ELEMENTARY ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	.298437	.546	.5869	.546813
Current Grade				
Linear Trend	1.248888	2.241	.0282*	.557361
Years in U.S. Mainland				
Linear Trend	.177821	.560	.5771	.317403
Years in ESOL/Bil. Prog.				
Linear Trend	4.401103	2.091	.0401*	2.104215
Years in the Center				
Linear Trend	57.063065	3.873	.0002*	14.733210
Quadratic Trend	- 25.084833	- 3.736	.0004*	6.714325

*Significant at the 10% level or better.

R-Square = .39098 Mean Score = 13.827

N = 78 F = 7.59669 Sig. of F = .0000

The data in Table 8 refer to Objective 3. The table shows that participation in the learning center resulted in statistically significant improvement in pupils achievement, aural English competence.

TABLE 9

ANALYSIS OF AURAL COMPREHENSION (TAC) SCALE SCORE:
JUNIOR HIGH ESOL PUPILS

Variable	Weight	t	Sig.	Standard Error
Pupil Age				
Linear Trend	- 2.153252	- 1.326	.1926	1.623470
Current Grade				
Linear Trend	.375797	.233	.8174	1.616249
Years in U.S. Mainland				
Linear Trend	1.226154	1.503	.1410	.815597
Years in ESOL/Bil. Prog.				
Linear Trend	- .442050	- .430	.6694	1.027319
Years in the Center				
Linear Trend	8.038082	.816	.4198	9.854357
Quadratic Trend	- 2.278710	- .652	.5186	3.497375

*Significant at the 10% level or better.

R-Square = .21362 Mean Score = 21.044

N = 45 F = 1.72040 Sig. of F = .1428

The data in Table 9 refer to Objective 3. It shows that none of the effects of pupil background or program participation were statistically significant.

TABLE 10

COMPARISON OF LEARNING CENTER AND OVERALL SCHOOL PUPILS' ATTENDANCE

	Junior High Schools		Elementary Schools	
	Penn Treaty	Stoddart-Fleisher	Welsh	Hunter
Project	78.4%	81.1%	91.2%	91.1%
School	59.8%	71.9%	88.6%	87.1%