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ABSTRACT

The Occupational Proficiency Training (OPT) Program was initiated to identify potential dropouts and place them in an alternative vocational education program. Remedial communication and mathematics classes were also included in the program's design. In the first year 21 ninth grade students 14 years of age and two years behind grade were selected. To determine knowledge of and attitude about the program, surveys were conducted of students in the OPT program, their parents, and teachers of vocational education and remedial reading and mathematics. Results indicated students and parents were knowledgeable about and pleased with the program. Teacher comments were also positive. The California Achievement Test (CAT) was administered as a pretest/posttest to all Mitchell County High School students. On the pretest regular students (highest scores) performed higher than non OPT (qualified but not selected for OPT), OPT, and vocational education students. Score analysis indicated that regular students scored highest on pretest/posttests; vocational education students scored next highest; non OPT students scored third highest; and OPT students were low scorers. Improvements were noted in reading scores across all groups. Increases were greatest for OPT students. Mathematics scores improved for some groups but decreased for OPT students. (Nine data tables are provided.) (YLB)

Occupational Proficiency Training Program

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Evaluation Systems Design, Inc.

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In 1980 Mitchell County school officials and the high school's administrators initiated the Occupational Proficiency Training Program (OPT) in Mitchell County High School. This program is designed to identify potential drop-outs, place them in an alternative vocational education program, provide special communications and mathematics assistance, and maintain knowledge through recordkeeping of a student's progress through the program. Evaluation Systems Design, Inc. (ESDI) of Tallahassee, Florida conducted an evaluation of the program's first year of operation which is presented in this report.

Program activities for the first year concentrated on identifying students, placing them in the program, conducting surveys and testing. Curriculum development was initiated in February, 1981, and teacher in-service training was conducted in June.

Previous evaluation reports provided by ESDI include the survey reports, "Report of Findings - Surveys" and "Business Survey", February 1981; and an analysis of pretest scores, "Analysis of California Achievement Test Pretest Scores", April, 1981.

A brief summary of these activities is reported first, followed by a presentation of the comparison of student performance at the beginning and end of the year.

Overview of Program Plan, Surveys & Pretest Results

The Occupational Proficiency Training Program seeks to identify for alternative education program placement, students who 1) are at least 14 years of age and two years behind grade, and 2) in the perceptions of teachers and the principal, will benefit from special program participation. In the first year of the program, 21 students who met the criteria and were ninth graders were selected for the program. It is the intent of the program to add ninth graders every year; thus, final results on the progress of the first group of students will not be available until 1984 when they graduate from high school.

The program is designed to allow students to choose one (or more) of the following vocational tracks:

1. vocational office training
2. ag power mechanics
3. horticulture
4. agri-business
5. health occupation
6. masonry
7. electrical construction
8. carpentry
9. automotive transportation
10. food services occupations

Though program emphasis is on occupational proficiency, successful performance in the academic areas of mathematics and communication is also stressed. It is intended that students be judged on their ability to perform according to the DOT (Dictionary of Occupational Titles) skills and objectives developed by the State Department of Vocational Education. In addition, all OPT students are required to attend remedial communications and mathematics classes to upgrade their capabilities in those subject areas. One civics class (world awareness) is also required during the four years of the program. Students will work part-time during the third and fourth years of the program.

Ninth grade students in the first year of the program are involved primarily in preliminary vocational information classes. During the first year of the program, students decide which vocational track they want to enter and begin their proficiency training the second year of the program, when they are in the tenth grade. The OPT students continue in remedial communication and mathematics' classes until they are judged proficient in those areas by the Georgia Competency Testing Program or by meeting district proficiency requirements.

Teachers play a key role in operating and maintaining the program. Cooperation and sharing between teachers of the remedial classes and the vocational teachers is necessary to ensure that 1) subject matter in the two programs is related, 2) individual student problems and successes are noted and discussed, 3) program goals and teacher plans are related, and 4) record keeping is accurately maintained.

In order to determine teachers', students' and parents' knowledge of and attitude about the program during its developmental year, surveys were conducted of the following groups:

- students in the OPT program,
- parents of students in the OPT program,
- teachers of vocational education and remedial reading and mathematics, and
- business in the Camilla, Pelham, Newton, and Baconton communities.

The purpose of the business survey was to ascertain the interest of local businesses in hiring OPT students during their third and fourth years of the program. Previous reports have documented the results of the surveys. This report provides a brief summary of results.

The student survey was conducted in February 1981 to determine what the OPT students knew about their special placement and treatment and their attitudes about the OPT program. From the survey, it was apparent that students:

1) knew why they were chosen to participate in the OPT program,
2) were generally pleased to have been selected,
3) felt that the program was good for them, and
4) considered the vocational training they would receive in the program as important as the diploma itself.

The parent survey was also conducted in February 1981. The survey asked for some demographic information about the parent (type of job held, last grade completed, single parent) and required the parents' responses to questions such as how their child was chosen for participation in the program, their perception of the purposes of the program, and how they felt about their child's participation in the program.

The results of the parent survey indicated that parents:

1) knew why their child had been chosen for the program,
2) were pleased with the selection, and
3) were aware of the program's goals.

Parents appeared to be very supportive of the program.

Teacher interviews also took place in February 1981. Both remedial teachers and vocational education teachers were asked to respond to questions such as their attitudes about the OPT program, whether they thought it would help students, how they were handling the OPT students, and the level of communication between remedial and vocational teachers. Results showed that teachers:

1) were strongly in favor of the program,
2) realized the potential in cooperation, and
3) received good assistance from the administration.

Vocational and remedial teachers felt that the OPT program had great potential for helping students stay in school and giving them a better chance for success upon completion of the program. Teachers were overwhelmingly supportive of the program.

A business survey was conducted by mail in February 1981. The purpose of this survey was to ascertain the interest of local businesses in hiring OPT students in their third and fourth years of the program. A low rate of response limited any generalization of the results. Responding businesses that had previously hired Mitchell County High School students reported that they were pleased with those students' work and would be willing to hire Mitchell County High School students again. Most businesses reported that they could not afford to hire or did not require additional help at the present time.

Not only are knowledge and perceptions of a program important to its acceptance and usefulness, but a measure of student status at the beginning of a program and at various points during the development of the program is also necessary. For the OPT program, the California Achievement Test (CAT) was used to provide baseline data against which to compare changes due to the program.

As a pretest measure, the CAT was administered to all students in grades 7-12 at Mitchell County High School in February 1981. The results of the pretest are discussed in a previous report entitled "Analysis of California Achievement Test Pretest Scores, April, 1981".

To summarize, students were separated into four groups, according to their school program, as follows:

OPT - students who were in the OPT program,
Non-OPT - students who were qualified for the OPT program, but were not selected to participate this first year (i.e., they were not ninth graders);
Voc Ed - students who were in vocational education programs, but were not OPT or Non OPT students; and
Regular - all other students in the school.

Students were administered different forms of the CAT according to their grade level:

Grade 7 - Form 17C

Grades 8 & 9 - Form 18C

Grades 9, 10, 11 - Form 19C

For each type of program, Table 1 presents by test form and grade, the mean raw scores for reading and mathematics on the pretest of the CAT. The highest possible raw score is 70 on the reading test and 85 on the math test.

Table 1

Mean Raw Scores on the CAT Pretest by Test Form and Program

Program Type	Form 17C Grade 7			Form 18C Grades 8 & 9			Form 19C Grades 10,11, & 12		
	N	Math Mean	Reading Mean	N	Math Mean	Reading Mean	N	Math Mean	Reading Mean
OPT	-	-	-	18+	34.1	26.2	-	-	-
Non OPT	27	28.1	26.0	62	38.9	28.1	-	-	-
Voc Ed	-	-	-	7	32.5	21.0	106	40.8	31.7
Regular	116	37.9	33.3	348	50.2	35.0	326	45.7	34.7
All	215++	36.7	32.3	435	47.6	33.4	433++	44.5	33.9

++ not additive, due to misgrids.

+ 18 of the 21 OPT students took the pretest.

On the pretest, regular students scored highest consistently for each form. On Form 18C, the only form taken by all students, the ranking of groups was:

1) regular students,
2) Non OPT students,
3) OPT students, and
4) Voc Ed students.

Consideration should be given, however, to the small number of students (7) in the Voc Ed group who took Form 18C. Generalizations are extremely limited from results based on such a small sample. Comparisons of raw score means across forms is not possible since the test items in the forms are at different difficulty levels.

Posttest Procedures

In April, 1981 a posttest was conducted of grades 7-11 which consisted of the math and reading tests of Forms 17D, 18D, and 19D of the CAT. These are comparable tests equated to the pretest forms. The purposes of this testing were 1) to determine if increases in scores occurred from the pretest administration to the posttest administration, and 2) to provide baseline data for future evaluation of the OPT program.

The math posttests were administered to all students in grades 7-12, as part of a Title IV-C project that was funded in the school. The reading posttests were administered as part of the OPT evaluation. For all grades except ninth, students who took the "C" level of a form on the pretest were given the "D" level of the same form on the posttest. For the ninth grade math posttest, however, students were administered level 19D as the posttest instead of level 18D.

To hold down the costs and administrative efforts of testing, a sample of students was selected for the reading posttest. A roster of students who took the pretest was generated. In addition to all OPT students, every third student was selected to be administered the reading posttest.

In order to provide a comparison of pretest to posttest scores, a matched sample of students was required. This means that scores for a student on the pretest had to be matched to scores for the same student on the posttest. In addition, students had to have both reading and math scores. Any student who did not have four scores (pretest reading, pretest math, posttest reading, posttest math) was eliminated. Table 2 presents the numbers of students in the matched data set for each group:

Seven of the original OPT sample of 21 students were dropped in the matching process. Three OPT students who took the pretest did not take both sections of the posttest. One student who took the posttest did not take the pretest. Three of the OPT students took neither the pretest nor the posttest.

The number of vocational education students included in the posttest sample was 44% of the original vocational education students. The number of Non OPT students was 35% of all the Non OPT students. The number of OPT students was 67% of the total OPT students. The number of regular students was 23% of all the regular students in the school.

Table 2

Samples for Pretest and Match Data Set

	Pretest Sample	Matched Data Set Posttest Sample	Percent Included in Posttest Analysis
OPT	21	14	67%
Non OPT	89	31	35%
Voc Ed	108	48	44%
Regular	860	199	23%

Two types of raw score conversions were used to standardize the scoring scale for the comparison of scores of all groups of students across all levels of the CAT. The first conversion was to normal curve equivalents (NCE's). NCE's are derived from associating the raw score percentile ranks to intervals on a normal curve. NCE's are two-digit numbers based on an equal interval scale. That is, the difference between two scores on the scale is the same across all parts of the scale. The mean average score when using NCE's is 50 and the range is from 0 to 100. Use of NCE's provides a method of interpreting results of different tests on the same scale. Scores above 50 indicate that the sample of students is performing better than the national norming group.

The second conversion was to scale or standardize scores. Scale scores are three-digit numbers on one continuous scale that has been developed from raw scores on all test forms through an equating process. Scale scores are also on an equal interval scale. Scale scores were used in the analysis of variance to determine whether differences occurred between scores of students in the various groups.

The NCE's and scale scores can be used to chart student change through several years of a program, regardless of which levels of the CAT were administered. They are especially useful in a program such as the OPT program where student achievement will be measured during each year of a four-year program.

Posttest Results Raw Scores and NCE's. Posttest results are presented first for normal curve equivalents, and then the analysis of variance of the scale scores is examined. Raw scores and scale scores of all students participating in the analysis compose appendix A of this report. Scores for OPT students are presented on the last page (p. 24).

Table 3 provides raw score means for each form and level of the test by program category. Table 4 presents these same results as Normal Curve Equivalent Scores for each program category. The differences in the sample sizes for Forms 18 and 19 are due to the ninth graders who took Form 19D on the math posttest, rather than Form 18C.

Using the Normal Curve Equivalent scores, improvements or no change in Reading scores were noted for all groups and levels. For Mathematics scores, improvements were noted on Levels 17 and 19, but decreases were observed on Level 18. It should be noted that the differences in samples from pretest to posttest on Levels 18 and 19 Mathematics prohibits firm conclusions since some students were being compared with a different national norming population on the posttest than on the pretest.

Regular students were performing at or within 5 points of the national norm on all levels in both reading and mathematics. Of the four sample groups, regular students consistently scored highest on every form of the test. Vocational education and Non OPT students, consistently scored lower than regular students. OPT students scored the lowest of all the groups.

Interpretation of the Normal Curve Equivalent scores should consider the very small sample sizes for some of the groups. As a rule, the scores of any group consisting of fewer than 10 students should be considered too unstable to interpret.

Table 3

Pretest - Posttest Raw Score Means

	Level 17				Level 18				Level 19			
	Pretest (Form C)		Posttest (Form D)		Pretest (Form C)		Posttest (Form D)		Pretest (Form C)		Posttest (Form D)	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
MATHEMATICS												
OPT					14	31.9					14	22.1
Non OPT	6	31.3	6	31.5	25	35.2	22	22.7				
Voc Ed					5	31.2	1	20.0	63	42.6	67	41.1
Regular	48	33.1	48	38.1	95	46.9	46	35.3	56	46.8	105	45.6
READING												
OPT					14	20.5	14	23.9				
Non OPT	6	27.8	6	21.7	25	26.0	25	28.9				
Voc Ed					5	23.6	5	24.6	63	31.8	63	33.1
Regular	48	30.00	48	31.7	95	33.2	95	36.1	56	36.1	56	39.6

Table 4

Pretest - Posttest Normal Curve Equivalents

	Level 17				MATHEMATICS									
	N	Pretest (Form C) NCE	Posttest (Form D) NCE	Pre-Post Change	Pretest (Form C) N	Pretest (Form C) NCE	Posttest (Form D) N	Posttest (Form D) NCE	Pre-Post Change	Pretest (Form C) N	Pretest (Form C) NCE	Posttest (Form D) N	Posttest (Form D) NCE	Pre-Post Change
OPT					14	33						14	24	
Non OPT	6	44	45	+1	25	37	25	30	-7					
Voc Ed					5	32	1	23	-9	63	42	67	45	+3
Regular	48	46	51	+5	95	49	46	45	-4	56	46	105	50	+4
					READING									
OPT					14	26	14	29	+3					
Non OPT	6	30	30	0	25	34	25	38	+4					
Voc Ed					5	32	5	32	0	63	36	63	44	+8
Regular	48	43	45	+2	95	44	95	46	+2	56	41	56	51	+10

Figure 1 depicts graphically the pretest and posttest NCE's by student group. Students' posttest NCE's rose or remained the same for all groups on the reading tests. On more than half of the mathematics tests, students' NCE's increased from the pretest administration to the posttest administration. Decreases were noted, however, for students who took Form 18C and D (eighth and ninth graders). Overall, NCE's on the math tests decreased an average of 2 NCE's; while on the reading tests, the NCE's increased by 2.5 NCE's .

As a result of the matching process to generate a comparative data set, some differences in the pretest raw score means were noted from the fall analysis to the spring analysis as presented in Tables 1 and 3. The relative differences, however, between scores by groups and levels of the test did not change as a result of the sample, except in one of the 16 cases.

Scale Scores and Analysis of Variance. In the norming process, the scores from each form of the CAT are equated to one scale, thus permitting scale scores to be cumulated across forms for each group. Scale score means for each group for the pretest and posttest are presented in Table 5.

Pretest and posttest means were highest for the vocational education students on both the reading and mathematics tests. Rankings of the groups for both reading and mathematics pretest and posttest mean scores were consistent with vocational education highest, regular students second, Non OPT third, and OPT students lowest. Differences in the age levels of the samples probably accounts for these rankings. The regular group included 28% tenth grade and higher students, but the vocational

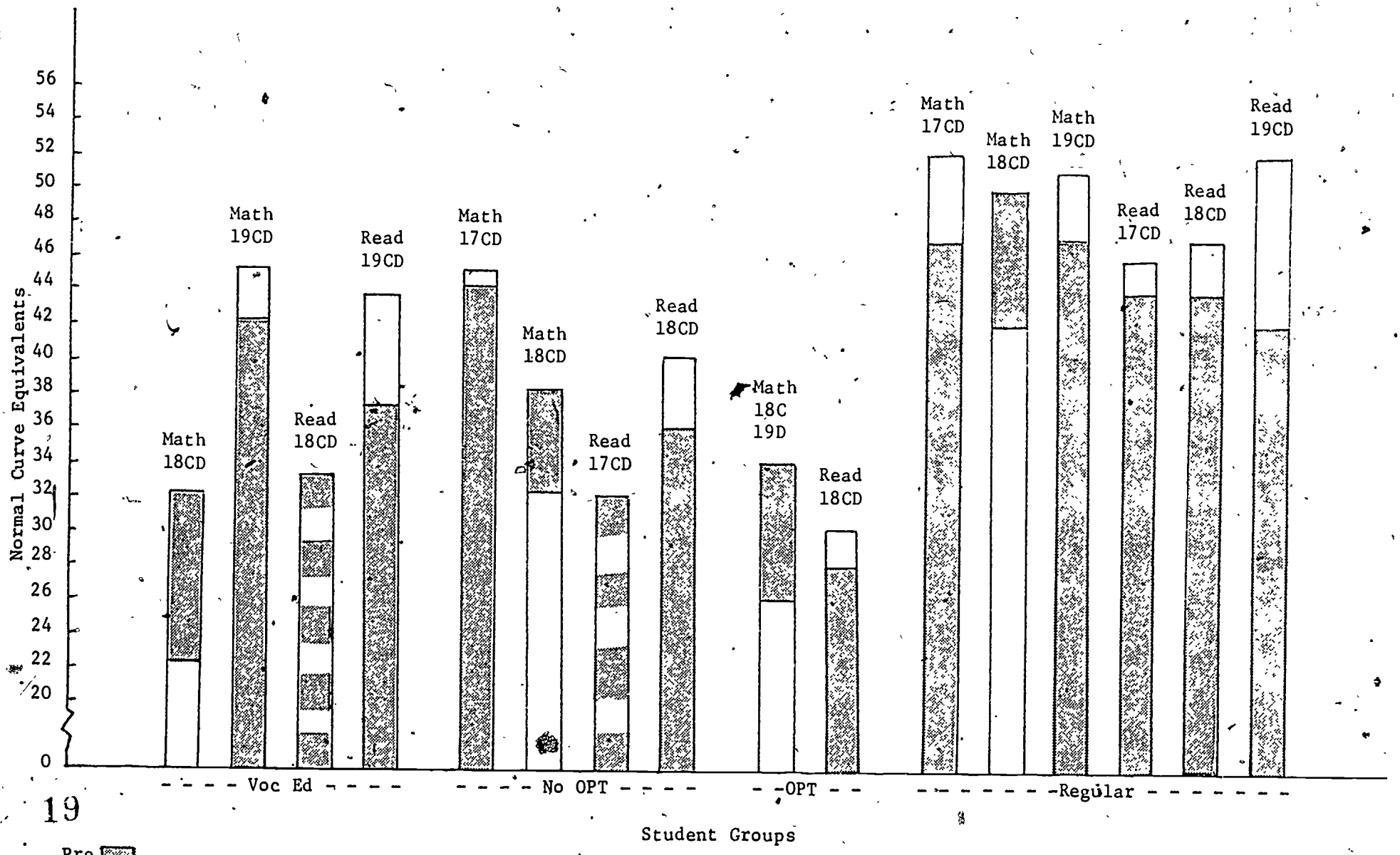

Figure 1. NORMAL CURVE EQUIVALENTS BY STUDENT GROUP ON THE PRE AND POST TESTS OF THE CAT

Table 5

Pretest - Posttest Scale Score Means by Program

Program	N	Mathematics Scores			Reading Scores		
		Pretest Mean	Posttest Mean	Pretest Posttest Change	Pretest Mean	Posttest Mean	Pretest Posttest Change
IPT	14	488	476	-12	447	468	+21
Non OPT	31	498	494	- 4	475	486	+11
Vocational Education	48	568	572	+ 4	544	558	+14
Regular	199	545	559	+14	527	545	+18

education group included 92% tenth grade and higher students. OPT students were all ninth grade students, but Non OPT were primarily tenth grade and higher students.

Changes noted between the fall pretesting and the spring posttesting were all positive for the reading test. The greatest increase was noted for the OPT students, followed by regular students. The least amount of increase was noted for Non OPT students. On the mathematics test, the regular education and vocational education students increased their scale scores, but the OPT and Non OPT scale scores decreased.

The classical experimental method of chosing equal students and placing them in different programs to examine the effectiveness of some aspect of the program (such as instructional technique) was not feasible for this evaluation.

The groups of students being evaluated currently were intact and unequal. Students in regular and vocational education programs in the school and the Non OPT students were randomly chosen for the data analysis from existing, long standing school programs; while the OPT students were all the available and qualified students in a new program. OPT students and Non OPT students were identified based upon previous low achievement scores. Differences in achievement may also exist between vocational education and regular students since they chose different types of high school programs.

As part of the data collection baseline for future evaluations of the OPT program, analysis of variance was used to identify differences among the intact groups. An analysis of variance using scale scores for

all four groups of students was performed on each of the four tests: pretest mathematics, pretest reading, posttest mathematics, and posttest reading. The results of the analysis of variance are displayed in Table 6.

The probability levels indicate that there were significant differences between the means of the groups of students participating in each of the four testings. These levels indicate that there is less than one chance in 100 that the differences observed were due to chance alone.

It was expected that the scores of the various groups would be different because these differences were the basis for selection for the program. Differences were not expected, however, between the OPT students selected for the program and the Non OPT students that would qualify for the program but had not been selected. An analysis was made to ascertain if the OPT students' and Non OPT students' scores were significantly different from each other and if when combined, they were significantly different from the Voc Ed students' scores. Vocational education students were chosen for the comparison because the OPT and Non OPT students are in the vocational track.

The scale score means, F Ratios, and levels of significance are presented in Table 7 for the comparison between OPT and Non OPT students. None of the probability levels were smaller than the preset α .05. There did not appear to be any significant differences between the OPT and Non OPT students. These students appeared to have similar attributes which resulted in their obtaining similar scores on the CAT pretests and posttest for both math and reading. The small sample sizes, however, should be considered in interpreting these results.

Table 6

Analysis of Variance for Differences between Groups

Program	N	Mathematics Scores		Reading Scores	
		Pretest Mean	Posttest Means	Pretest Mean	Posttest Means
OPT	14	488	476	447	468
Non OPT	31	498	494	475	486
Vocational Education	48	568	572	544	558
Regular	199	545	559	527	545
F Ratio		12.17	16.54	11.27	12.46
Probability Level		$<.01$	$<.01$	$<.01$	$<.01$

Table 7

Pretest and Posttest Scale Score Means and F Ratios for Non OPT and OPT Students

Program	Pretest Math	Posttest Math	Pretest Reading	Posttest Reading
OPT	488	476	446	468
Non OPT	498	494	474	486
F Ratios:	.56	1.22	1.74	.91
Probability Level:	.46	.27	.19	.34

Table 8

Pretest and Posttest Scale Score Means and F Ratios for OPT/Non OPT (combined) and Voc Ed Students

Program	Pretest Math	Posttest Math	Pretest Reading	Posttest Reading
OPT/Non OPT	495	489	466	481
Voc Ed	568	572	544	558
F Ratios:	51.59	53.36	37.08	37.29
Probability Level:	$< .01$*	$< .01$*	$< .01$*	$< .01$*

* Significant at $< .05$

Table 8 presents the comparisons between the combined OPT and Non OPT students with the vocational education students. There were significant differences (probability levels beyond .01) between OPT/Non OPT students' scores and vocational education students' scores. These differences probably were due to the factors used in their selection as OPT/Non OPT students.

Summary

Survey information and California Achievement Test scores provide baseline data for the first developmental year of the Occupational Proficiency Training Program at Mitchell County High School in Camilla, Georgia. These data are extremely useful as they will provide a comparison for successive evaluations of the program.

The purpose of the OPT program is to provide a meaningful and worthwhile school experience for potential high school dropouts and to improve their skills. The results of the teacher, student, and parent surveys indicate that this is being accomplished.

Analysis of achievement scores indicated that regular students scored highest on pretests and posttest of the CAT; vocational education students scored next highest; qualified but not selected for OPT students scored next highest; and OPT students were low scorers. Improvements were noted in reading scores across all groups. Increases were the greatest for OPT students. Mathematics scores improved for some groups but decreased for OPT students.

It is recommended that students be administered the CAT in each successive year of the OPT program and that detailed records such as those recommended in the program plan be kept of their skills performance, their retention and transfer records and their parents' and teachers' attitudes about the program for future analysis.

Table 9
OPT Student Scores

Name	Sex	Form	Pro-gram	Race	PRETEST Math RS	PRETEST Math SS	PRETEST Read RS	PRETEST Read SS	POSTTEST Math RS	POSTTEST Math SS	POSTTEST Read RS	POSTTEST Read SS
Burks, Linda	2	23	3	2	35	506	15	410	25	509	30	510
Chester, Johnny	1	23	3	2	50	562	26	494	35	558	26	490
Davis, Charlie	1	23	3	2	30	484	25	488	14	409	24	478
Dotson, Shirley	2	23	3	2	38	518	22	470	30	537	23	472
Gardner, Delisa	2	23	3	2	27	469	17	430	15	420	23	472
Goodman, Darlen	2	23	3	2	20	426	17	430	17	442	18	432
Harvey, Timothy	1	23	3	2	34	501	17	430	17	442	20	450
Jackson, Cynthi	2	23	3	2	33	497	34	532	21	480	35	531
Lyons, Linda Lee A	2	23	3	1	25	458	22	470	22	488	13	380
Robinson, Lilli	2	23	3	2	29	479	18	439	19	462	17	423
Robinson, Lisa	2	23	3	2	43	537	15	410	34	554	24	478
Shaw, Myron	1	23	3	2	21	433	22	470	13	397	20	450
Thornton, Urtis	1	23	3	1	23	446	-0	234	19	462	26	490
Williams, Fredo	1	23	3	2	39	521	37	545	28	509	28	500