THE EFFECT OF TEACHER AIDES
ON SCHOOL ACHIEVEMENT

by

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A thesis
submitted in partial fulfillment of the requirements for the degree of
Master of Arts in the School of Education
Fresno State College
February, 1968
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A program to improve the educational experiences of deprived youths and their families in a target area in Tulare, California, was initiated under Title I of the Elementary Secondary Education Act of 1965. The program centered around the use of teacher aides in classrooms in target area schools. Other elements of the program, less significant because of the limited number of youngsters involved, related to study trips offered to both youths and their families and to special reading curricula provided at limited grade levels. The purpose of this study was to evaluate the effectiveness of the
CHAPTER I

INTRODUCTION

With money being spent by the Federal Government on many and varied educational programs throughout the country, there seems to be a need to justify the expenditure of these funds. One way to accomplish this would be to attempt to determine whether the programs are effective and, if so, just how effective. To this end, this study was carried forward.

It was designed to reveal the nature and the degree of the changes produced by one such federally sponsored program in the program containing teacher aides after teacher aides had been used one school year.

THE PROBLEM

A program to improve the educational experiences of deprived youths and their families in a target area in Tulare, California, was initiated under Title I of the Elementary and Secondary Education Act of 1965. The program centered around the use of teacher aides in classrooms in target area schools. Other elements of the program, less significant because of the limited number of youngsters involved, related to study trips offered to both youths and their families and to special reading curricula provided at limited grade levels. The purpose of this study was to evaluate the effectiveness of the growth in reading achievement of children in the lower grades taught by a teacher having the use of teacher aides with the growth in reading achievement of children taught by a teacher without.
Statement of the Problem. This study was undertaken to compare the growth in reading achievement of children taught by a teacher having the use of teacher aides with the growth in reading achievement of children taught by a teacher without the use of teacher aides.

Relevant Issues. In order to determine the reading achievement of children involved, the following information was needed:

1. The grade placement in reading attained by children in the program containing teacher aides before the teacher aides were used.
2. The grade placement in reading attained by children in the program containing teacher aides after teacher aides had been used one school year.
3. The grade placement in reading made by children under a one teacher directed program at the time when the experimental group was tested (1 above) and again when they were retested (2 above).

Hypotheses. There will be no significant difference between the growth in reading achievement of children taught by a teacher having the use of teacher aides and the growth in reading achievement of children under a one teacher directed program.

1. There will be no significant difference between the growth in reading achievement of children in the lower grade placement in reading.
one-fourth of the group taught by a teacher having the use of teacher aides and the growth in reading achievement of children under a one teacher directed program who have been matched to those in the lower one-fourth of the group having aides.

2. There will be no significant difference between the growth in reading achievement of children in the upper one-fourth of the group taught by a teacher having the use of teacher aides and the growth in reading achievement of children under a one teacher directed program who have been matched to those in the upper one-fourth of the group having aides.

Basic Assumptions: to warrant Elementary and Secondary Education.

1. When additional money is being spent to improve an established educational program, improved educational achievement should result.

2. When the use of teacher aides, special reading programs, and travel experiences for children and families are used in addition to the regular one teacher directed program, improved educational achievement should be apparent.

Delimitations. The data for this study were obtained from tests given in May, 1966, and May, 1967, at the Roosevelt and Maple schools in Tulare, California, to first and second graders (as determined by 1965-66 grade status). There were 241 youngsters involved at Maple school (the target school) and 190 youngsters at Roosevelt school (the next school in line on the target school rating). They were tested with the
reading tests from the Stanford Achievement Test.

**Definition of Terms.** The following definitions have been set forth in an attempt to clarify their meanings:

1. **Teacher aides** - Persons, preferably ones preparing for the teaching profession, who aide a teacher in many of his menial duties thereby freeing him to give more time to the actual instruction of students.

2. **One teacher directed program** - A regular program of instruction taught by one teacher and designed to produce academic proficiency in youngsters.

3. **Target school** - A school that is sufficiently educationally handicapped to warrant Elementary and Secondary Education Act funds under the Title I program of the Federal Government.

Thus making his teaching more effective. There have been many of these proposals, but this review considers only those concerned with the relieving of a teacher's work load through the transfer of clerical, menial, and similar responsibilities to a teacher aide, thus making it possible for the teacher to make more effective use of his professional training.

Very little can be found in any early publications pertaining to the use of teacher aides in the classroom. This term can be found only in the more recent publications. One can find, though, that the excessive work load of teachers was a matter of concern to administrators as far back as 1925. 

Irvin K. Lewis, in his *Personal Problems of the Teaching*
CHAPTER II

REVIEW OF RELATED RESEARCH

Authorities in the field of education are becoming more and more aware, especially in recent years, that something must be done relative to the work load that has been building up on teachers. Some speak of lowering the teacher-pupil ratio. Others talk of providing higher salaries in order to get teachers who are competent enough to handle the extra load. Still others talk of relieving the teacher from clerical responsibilities so that he may have more time to plan and prepare lessons, give individual and group instruction, and guide the personal-social development of his pupils, thus making his teaching more effective. There have been many of these proposals, but this review considers only those concerned with the relieving of a teacher's work load through the transfer of clerical, monitorial, and similar responsibilities to a teacher aide, thus making it possible for the teacher to make more effective use of his professional training.

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Ervin E. Lewis, in his Personnel Problems of the Teaching Staff (New York: Teachers College Press, 1929), states that there was, and still is, concern by many about how the extra work load of teachers might be the best place to start.

If one looks first at surveys of teachers and their needs and research concerning teachers' activities, some insight into the problem may be attained. In a report of 109 schools in the Los Angeles City School District, 44.1 percent of the teachers were relieved of clerical duties by teacher aides.
Staff brought out the idea that required clerical duties added very materially to the teacher's load. Dennis Cooke, a few years later, in *Problems of the Teaching Personnel*, further analyzed this problem and stated that when all duties are considered, elementary school teachers carried a heavier teaching load than did high school teachers. This still is felt to be true today and not only in the United States. E. M. Lawson, from the Nottingham Training College of England, also feels that the primary school is the first place where auxiliary help will be needed if the currently larger classes continue.

From these references, plus other available readings, one senses that there was, and still is, concern by many about teachers needing more time to teach. It would also appear that the elementary school might be the best place to start. If one looks first at surveys of teachers and their needs and research concerning teachers' activities, some insight into the problem may be attained. In a report of 309 schools in the Los Angeles City School District (85.1 percent of California), concluded that since

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of the total number of schools at that time, it was stated by teachers that their greatest need for help was in the areas of (1) typing and duplicating of teacher-prepared materials for classroom instruction; (2) keeping attendance records; (3) recording and listing identifying information on printed forms; (4) collecting money for various activities; and (5) correcting and scoring of standardized tests. These appear to be problems of a clerical nature. "A Survey of the Teacher's Time Required for Clerical Duties in an Elementary School System", by H. W. Kanode, who surveyed the Fresno City Elementary School District of California, concluded that since a secretary is paid less and tends to be more efficient in this type of task it would be more economical for a district to hire a secretary than to have the teachers do this work. From this it might be surmised that there really are some tasks which a teacher performs that could better be handled by others, thus giving the teacher more time for professional activities for which he is better trained.

In a report of a study conducted in Bay City, Michigan, titled "The Teacher Aide Plan", C. P. Park reported that the teacher's work week averaged 41 hours and 41 minutes.


He found that 20 to 40 per cent of the day was taken up with recitation and 14 to 23 per cent of the day with directed study. Activities such as taking roll, writing on boards, supervision, and housekeeping consumed 21 to 69 per cent of the remaining time. Breaking this down further, it was found that 40 to 220 minutes per week were spent on clerical work during school time and an average of 5 hours 34 minutes on clerical work outside school time.

Trump and Baynham\(^7\) found that about one-third of a teacher's day goes to clerical and subprofessional tasks and another third to work which could just as well be done by various kinds of automated devices. This created a situation, they felt, that provided only one third of each day for performance of work the teacher was trained to do--and finds satisfaction in doing--and that it contributed little to the morale of a talented, conscientious teacher. In fact, they go further to stress that the lack of time for professional work damaged professional pride.\(^8\)

This last line of thinking was also supported by Kanode\(^9\) as he concluded that the provision of secretarial help would boost teacher morale and allow more time for professional planning and guidance.

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\(^8\) Ibid.

\(^9\) Kanode, op. cit., p. 70.
The Ford Foundation also found that activities that do not require professional competencies absorb from 21 per cent to as high as 69 per cent of the teacher's day. These activities include supervising, writing drills, dictating spelling lists, correcting papers, taking roll, making routine reports, monitoring pupils on the playground during lunch or in the halls between classes, and a variety of housekeeping duties.

From the above cited references there appear to be activities that could be carried out by a person other than one trained professionally for teaching. Authorities from as far away as England, such as P. Lord, Chief Education Officer for Lancashire, report that "it seems obvious that there are a hundred-and-one things that happen in the schools that auxiliaries can do." John Gardner, present Secretary of the United States Department of Health, Education, and Welfare, in his book, Goals for Americans, states that "the use of teacher aides to carry out routine tasks is one promising development" to relieve the overburdened teacher.

The duties or tasks that aides are performing in the field include assisting the preschool program, and counseling.


field in recent years shall next be examined to discover whether they are similar to those responsibilities cited above which were thought to be capably performed by one other than a professionally trained school teacher. A recent survey of jobs performed by teacher aides in Florida included managing the orderliness of the room, clerical assistance, helping to supervise children on playgrounds and lunchrooms, caring for materials, and working with individuals and small groups under the teacher’s direction. In a training program for teacher aides in the Altoona Schools of Pennsylvania each aide was required to learn to set up and operate audio-visual equipment, perform clerical duties, supervise study halls, halls, grounds, etc., take directions and supervision, maintain a high level of behavior, be prepared to stand for long periods, lift up to 40 pounds, and be alert and action-oriented individuals. Still one other source lists as jobs for aides: monitoring study centers, managing audio-visual equipment, assisting on field trips, helping on playgrounds helping school nurses and doctors, advising case workers and gathering information, strengthening school-community relations, assisting the preschool program, and counseling.


14 J. Branicki, "How to Train and Use Teacher Aides." Phi Delta Kappan, XLVIII (October, 1966), 61.

From these three references one can see that there are areas that overlap in all three. These areas, of course, would be where the greatest needs lie for helping the teacher become unburdened from nonprofessional activities. It is interesting to note that already safeguards are being set up to protect the children and assure that the teacher remains responsible for the teaching program. Florida, for one, stipulates that no aide may instruct pupils in any subject, assume responsibility for classes, grade papers that require subjective judgment, assign actual grades, administer discipline, or conduct special classes for exceptional groups. They feel the aide is there to assist the teacher—not replace him.

If such regulations as these have already been put into effect, it would seem that teacher aides already have been accepted, in part at least, as a possible solution to the problem of the over-burdened teacher. As far back as 1955, opinion surveys showed that teachers, parents, and pupils all thought the teacher aide plan brought values other than those that could be measured by subject matter tests. As recently as 1961, opinion surveys showed that teachers, parents, and pupils all thought the teacher aide plan brought values other than those that could be measured by subject matter tests.17 The National Education Association, as recently

16_"Teacher Aides," loc. cit.

17Park, op. cit., pp. 52-54.

18_"Teacher Aides," loc. cit.
as 1967, stated that the teacher aide is becoming an integral part of the educational program in many school districts.

If the solution for relieving the work load of teachers is through the use of teacher aides, as a survey of the recent literature shows is the case, then a decision must be made relative to the best type of teacher aide. Some support the idea of having volunteer workers as teacher aides. Jan Grayson\(^\text{19}\) cites an example in which mothers were used quite successfully in the lower primary grades. The Rutgers plan\(^\text{20}\) for teaching English proposes the use of housewives with college education at nominal pay. Still another proposal was that of using students training to be teachers.\(^\text{21}\)

By far the most common idea was to take the applicants who were available and screen them to get the best qualified for the area\(^\text{22}\) or choose from the applicants who have qualified themselves by taking a brief teacher aide training course, usually from a local junior college.\(^\text{23}\)

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\(^\text{22}\) Branick, \textit{loc. cit.}

Another point to consider is the problem of how districts are going to acquire trained teacher aides. As was mentioned above, one of the ideal approaches is to have applicants trained by a neighboring junior college. One such program was set up as a six-week in-residence institute in conjunction with the Office of Economic Opportunity Program. The applicants supervised the training of the Associated Day Care Service (one of Boston's Red Feather agencies).  

Another approach to the problem was taken in Hanford, California, when it was discovered that surrounding districts could not provide in-service training in the amount needed to properly orient new teacher aides. A course for training teacher aides was started under the guidance of Title I of the Elementary Secondary Education Act.

Still another, and possibly a more common approach, in these initial stages of the development of teacher aide training, is to give them on-the-job training. North Carolina's comprehensive school improvement project outlined the belief that some pre-service orientation is needed, but feels a major portion of aides' training should take the form of extensive on-the-job training. This is an important development in training teacher aides, and one which requires considerable time and effort on the part of school administrators and teachers.

form of on-the-job training. In Bay City, Michigan, aides were given an orientation day before they started, and then they were expected to learn to operate audio-visual equipment and duplicating machines. This idea of having aides learn on the job does have merit as studies show aides do learn under these conditions. One such study is that of Scriver and Urbanek, in which they concluded that arithmetic concepts were learned by the teacher aides while helping in the presentation of arithmetic to elementary classes. Teaching procedures were learned during the same operation.

One way teacher aides have been found to be effective in existing programs was as members of a team in team teaching situations. San Diego, California, found that a head teacher, an assistant teacher, and two aides made a good team when it ran its two year pilot program in this area. For the past two years, the city has operated a promising program that has the full support of schoolmen and parents alike. In the North Carolina project, already cited, three teachers and one nonprofessional teacher aide made up a team. It was felt that the teacher aide's presence gave the teacher more time to devote to planning, and more time to be given to

27 Park, op. cit., p. 51.

28 Scriver and Urbanek, op. cit., p. 87.


30 Emmerling and Chavis, op. cit., p. 177.
the pupil's personal-social needs. Another way teacher aides have shown their effectiveness is through saving time for the professional teacher. G. T. Tade found that on the college level, 50 percent of a teacher's time could be saved with a cadet teacher (an undergraduate) with no loss of achievement occurring except in critical thinking. In a study reported by G. Stafford titled "Teacher Time Utilization with Teacher Aides," it was discovered that a class load of 33 could be increased to 48 with no measurable amount of increase in time needed by the teacher for academic activities. Furthermore, it was found that with the use of an aide, time spent by the teacher on clerical activities decreased measurably.

In programs for retarded children, teacher aides have helped immensely. One such program is found in Las Vegas, Nevada, where a school that dealt with the mentally retarded, the emotionally disturbed, and the brain-damaged, benefited greatly by the "extra pair of hands" provided by volunteer aides.

From the reviewed research, it appears clear that

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33 R. E. Foster, "In Slow Gear: Volunteer Teacher Aides," Instructor, LXXIV (September, 1964), 136.
Teacher aides have been effective in relieving a teacher's workload. The effect of teacher aides on the achievement of the children whose teachers have been relieved of clerical tasks is the next area of review. One study, in 1955, showed that a gain of 7.3 months for children with aides was made compared to a 6.4 months gain for children without the aide. This was a study of fourteen classrooms. While it may be felt that academic achievement alone should not be the only criterion for judging the merits of the teacher aide program, the gains from relieving a teacher of a goodly portion of his work under today's standards should produce, to some degree, improved educational achievement, otherwise one may venture to guess that there must be a better solution than teacher aides.

SUMMARY

It would appear that concern for the over-loading of teachers has been an issue in teaching for many years. Only in relatively recent times has it been a practice to use teacher aides as one method of relieving this burden by reassigning duties of a clerical and monitorial nature to ones who have not been professionally trained in teaching techniques.

In studies identifying the areas in which teachers

34 Park, op. cit., p. 51.
feel that they need relief and in studies identifying how aides are being used in the field today, there seems to be a consensus that the need lies in the areas of clerical help, monitorial help, technical instruction assistance, (i.e. audio-visual operations), and general housekeeping.

Training of teacher aides has moved from little preparation to an orientation period and on-the-job training by the individual school districts. Activity at the junior college level has been developing to supply training programs for teacher aides of the future.

As judged by parents, teachers, and administrators, teacher aides are being used effectively to relieve the teacher work load. They serve in a variety of areas from team teaching situations, to volunteer aides for retarded children programs, to regular classroom teacher aides.

The community interest in schools has always been high in Tulare. The successful passing of an approximately one million dollar bond issue in 1960 and another five-hundred fifty thousand dollar bond issue in 1966, plus an increase in the override tax in 1962, indicates the degree of interest in and the support of the schools by the community. This was especially significant in light of the fact that several school bond and tax elections failed in neighboring communities at about the same time.

Seven of Tulare's eight elementary and junior high school principals came from the teaching ranks in Tulare. The superintendent, the assistant superintendent, and the
CHAPTER III

DESIGN AND PROCEDURES

Population. The students in the study live in Tulare, California, which had approximately 14,000 residents at the time this study was completed. The elementary school population was about 4,200 youngsters. Tulare has five K-6 schools and one K-5 school, two junior high schools for grades seven and eight, and two senior high schools. The per capita and assessed valuation of the Tulare City School District placed it in the lower half of the financial ladder on a statewide basis, but made it representative of a large number of rural communities in California and elsewhere.

The community interest in schools has always been high in Tulare. The successful passing of an approximately one million dollar bond issue in 1960 and another five-hundred fifty thousand dollar bond issue in 1966, plus an increase in the override tax in 1962, indicate the degree of interest in and the support of the schools by the community. This was especially significant in light of the fact that several school bond and tax elections failed in neighboring communities at about the same time.

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superintendent's administrative assistant all have been former principals in the district. At the time of the study there were head teachers at each school, training for pre-administrative posts; that Maple School (K-6) on the west side had four head teachers, all having served as former principals.

The district was the first in the area to develop a program to emphasize the instruction of rapid learners. Through a Fels Foundation grant, and with the help of consultants from Fresno State College, a three year pilot program was initiated before the need was officially recognized by the state.

The Tulare City Schools office led the county, and a good part of the state, in developing programs for the mentally retarded, as well as for the physically handicapped youngsters; has developed a Head Start program for pre-school youngsters in the culturally deprived sections of the city; has initiated a team teaching plant, Kohn School, which has led other surrounding districts to model programs and buildings of a similar nature; has been a leader in developing the Clemmie Gill School of Science and Conservation; and has developed a summer program, titled Widening Horizons, that has attracted state wide attention.

On the basis of these accomplishments Tulare seemed a likely place to undertake a program in which teacher aides would be used to release teachers from many trivial duties of a monitorial and clerical nature. Teachers, thus released, might then use their professional training to a
greater extent in developing the academic achievement and personal-social adjustment of children.

This program was begun in May of 1966, after a preliminary survey indicated that Maple School (K-6) on the west side of Tulare was one of two schools in Tulare that would qualify as target schools under the limitations as established under Title I of the Elementary Secondary Education Act of 1965. This school had a population of seven-hundred thirty-nine students with two-hundred forty-one students in grades one and two, from which came one-half of the population for this study. The other half of the population for this study came from Roosevelt School (K-6) which was also found on the west side of Tulare. Roosevelt School had a population of seven-hundred twenty-three students, of which one-hundred ninety students were in grades one and two. One evidence of the similarity of the two schools was the fact that Roosevelt School was very nearly accepted as the target school for this program, as it was found closely to match Maple School on the basis of requirements necessary for Title I funds. Due to the similarity of the two schools, it was set up as the control school for the Title I project.

Interestingly, it was found, after completing this year's state testing requirements (1966-67), that this year's sixth grade's mean reading grade placement at Maple School was 5.0 and at Roosevelt School it was 4.5 (Note Table I).
TABLE I

1966-67 STATE TESTING RESULTS

STANFORD ACHIEVEMENT TEST
(READING)

<table>
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<tr>
<th>School</th>
<th>Mean Grade Placement</th>
<th>Date of Test</th>
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<tr>
<td></td>
<td>May 1967</td>
<td>May 1967</td>
</tr>
<tr>
<td></td>
<td>Grade 1</td>
<td>Grade 2</td>
</tr>
<tr>
<td></td>
<td>May 1967</td>
<td>May 1967</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>Oct. 1967</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>Grade 6</td>
</tr>
<tr>
<td>Maple</td>
<td>1.7</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>2.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Roosevelt</td>
<td>1.5</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>2.8</td>
<td>4.5</td>
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Long Thorndike Test of Mental Maturity

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<th>School</th>
<th>Mean I.Q. Score</th>
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<tbody>
<tr>
<td></td>
<td>October 1966</td>
<td>October 1966</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>Grade 6</td>
</tr>
<tr>
<td>Maple</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>Roosevelt</td>
<td>86</td>
<td>92</td>
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ETHNIC GROUPS AT MAPLE AND ROOSEVELT SCHOOLS

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<th>Mexican</th>
<th>Negro</th>
<th>Other</th>
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<tbody>
<tr>
<td>Maple</td>
<td>57%</td>
<td>30%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Roosevelt</td>
<td>55%</td>
<td>33%</td>
<td>7%</td>
<td>5%</td>
</tr>
</tbody>
</table>
These scores were from the Stanford Reading Test given in October, 1966. The first grade's comparative means were 1.7 for Maple and 1.5 for Roosevelt; the second grade's means were 2.0 for Maple and 2.1 for Roosevelt; and the third grade's means were 2.4 for Maple and 2.8 for Roosevelt when tested in May, 1967, on the Stanford Reading Test.

Comparative I.Q. scores were also available on the sixth and third grades for the year 1966-67. The mean I.Q.'s were 94 for Maple and 92 for Roosevelt for the sixth grades and 94 for Maple and 86 for Roosevelt for the third grades. This points up the similarities between the students at the two schools. This similarity was further strengthened when a comparison of ethnic groups within the schools was considered, as shown in Table II. Maple had 9 per cent of its students Negro, 30 per cent Mexican, 57 per cent Caucasian, and 4 per cent other minorities. Roosevelt had 7 per cent Negro, 33 per cent Mexican, 55 per cent Caucasian, and 5 per cent other minorities.

TABLE II

<table>
<thead>
<tr>
<th>ETHNIC GROUPS AT MAPLE AND ROOSEVELT SCHOOLS</th>
</tr>
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</table>
| A district survey of the principal and the teachers of Maple School and Roosevelt School.

<table>
<thead>
<tr>
<th>School</th>
<th>Caucasian</th>
<th>Mexican</th>
<th>Negro</th>
<th>Other</th>
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<tbody>
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<td>7%</td>
<td>5%</td>
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</table>

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Comparative I.Q. scores were also available on the
sixth and third grades for the year 1966-67. The mean I.Q.'s
were 94 for Maple and 92 for Roosevelt for the sixth grades
and 94 for Maple and 86 for Roosevelt for the third grades.
This points up the similarities between the students at the
two schools. This similarity was further strengthened when
a comparison of ethnic groups within the schools was con-
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students Negro, 30 per cent Mexican, 57 per cent Caucasian,
and 4 per cent other minorities. Roosevelt had 7 per cent
Negro, 33 per cent Mexican, 55 per cent Caucasian, and 5
per cent other minorities.

This was done throughout Maple School while
sides were not being used at Roosevelt School.

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and 4 per cent other minorities. Roosevelt had 7 per cent
Negro, 33 per cent Mexican, 55 per cent Caucasian, and 5
per cent other minorities.

This was done throughout Maple School while
sides were not being used at Roosevelt School.
The basic design for this study was experimental. Since the two schools, Maple and Roosevelt, were so similar, it was decided to use Maple as the experimental school and Roosevelt as the control school. Both schools received equal treatment and guidance from the district's main office. Each class had a single professionally qualified teacher. The superintendent, Clifford Gaynard, had assured everyone involved with the program "that the quality of the professional staffs at each school was equal."35 Class size in grades one and two was 32 or below. These two grade levels were chosen for the study as they were less affected by the other district programs than were any other grade levels. The independent variable introduced in this experiment was the one teacher aide who was hired for every two teachers to assist the teacher in doing a better job professionally. This was to be done by relieving the teacher of some nonprofessional duties and through assisting the teacher in any other area the teacher felt would be of assistance. This was done throughout Maple School while aides were not being used at Roosevelt School. A district survey of the principal and the teachers of Maple School, revealed that by the end of the 1966-67 school year the aides had become an integral part of the school program.

35 Statement by Clifford Gaynard, Superintendent of the Tulare City Elementary Schools, personal interview.
As the principal, Ronald Buenafe, stated, "The teacher aides are the most valuable part of this program. They are especially effective in the lower grade classes, and all the teachers feel they could not do their jobs as well without them."  

To evaluate the comparative achievements of the control and experimental groups, it was deemed desirable to match students from Maple and Roosevelt Schools so that the only variable between the two groups of students was the program featuring teacher aides. All other factors and experiences were as equated and controlled as possible. The two groups of students were matched on a four-point basis. First they were matched by sex, then ethnic group, next age (within 6 months of one another), and lastly I.Q. (within 10 points of each other). After matching, there were two equated groups of 92 boys and girls from each school in the first and second grades as of the 1965-66 school year.

Collection of Data. The instruments used to provide data for this study included the California Test of Mental Maturity and the Stanford Achievement Test. The CTMM provided scores with which the youngsters were matched in equating groups. This test was given in May, 1967, rather than at the beginning of the experimental period, because

Statement by Ronald Buenafe, personal interview.
the youngsters would be a year older and a more valid score could thus be attained for equating purposes.

The Stanford Achievement Test was given to all children enrolled at Maple and Roosevelt schools in May, 1966. Grade one was administered the Reading Test, Form W (Primary I) and Grade two was given the Reading Test, Form W (Primary II). The teacher aides in the meantime had been undergoing an indoctrination period with consultants from Fresno State College and administrators of the Title I program from Tulare City Schools. The aides began meeting with classes at Maple School in May, 1966. During this indoctrination period, the teachers were also given help on how to use teacher aides most effectively.

After a year had elapsed, during which time the program was being administered in the Maple School, the Stanford Achievement Test was re-administered with the 1965-66 first graders now taking Form W (Primary II), and the 1965-66 second graders taking Form X (Primary II). This was in May, 1967.

In each instance, after the tests were given, they were scored by the teachers, and the results were then sent to the Title I director, who compiled the results by schools. Roosevelt and Maple schools were briefed each year, by the head of the district's psychological services department, on how to administer the tests accurately.
After each testing period was completed, the results were compiled on specially prepared class record sheets. For the California Test of Mental Maturity, the results were organized in such a way as to facilitate the matching of youngsters. This form may be noted in the Appendix. The Stanford Achievement Test results were broken down, as shown in the Appendix, so that the district might later make other comparative studies from these same data. The column titled "No." was for the matched pairs, i.e., R-3 (Roosevelt number 3) and M-3 (Maple number 3). In this way the desired data could readily be removed from the master sheets when needed. The scores were recorded as raw scores and grade placements, so that the information could be used to satisfy both state required results of testing and local district interpretation of the reading program and the teacher aide program.

Treatment of Data. After the results from the testing program had been recorded, and tabulations necessary for the state requirements had been made, work began on developing a statistical analysis of the teacher aide program at Maple School. Of the children in the first and second grades at Maple School, it was found that 92 could be matched by sex, age, ethnic grouping, and I.Q. to 92 children of 190 first and second grade children at Roosevelt School. The 1965-66 test results for these 92 children were then taken off of the master sheets of the district and recorded on a specially prepared record sheet as shown in the Appendix.
The 1966-67 test results were also recorded on these sheets and the difference (gain or loss) between these two scores computed. The mean of the differences (the mean increase in grade score between the two years' results) was then computed to discover the amount of growth made in reading by the 92 children at Maple School between the year 1965-66 and 1966-67. These children had had the help of teacher aides in the classroom. The same procedure was followed with the results of the testing program at Roosevelt School. A mean increase in grade score in reading of the 92 children at Roosevelt was computed. Then a t-test was used to evaluate the difference in reading achievement between the Maple and Roosevelt students. The statistical procedure used was that outlined in G. M. Smith's A Simplified Guide to Statistics. Another analysis of data was made in terms of the lower and upper one-fourths of the 92 children at each school. It seemed reasonable to assume that the lower one-fourths of the two schools and the upper one-fourths of the two schools would not benefit to the same degree, due to the presence of teacher aides at one school. It, therefore, was deemed important to discover which school's group at both the upper


and lower levels, benefited most from the help of teacher aides.

The lower one-fourth (23 children) of the ninety-two Maple School children were marked with red on the form for Standard Achievement Test Results (Appendix) and the upper one-fourth (23 children) of the Maple School children were having the use of teacher aides with the growth in reading marked with green. Their matched Roosevelt School children were also appropriately marked. The Maple School youngsters were chosen on the basis of their 1965-66 test score. The mean increase in total reading score was computed for the teacher aides had been used, and then to test the youngsters lower one-fourth of Maple School and then for Roosevelt School. A t-test was used to evaluate the school differences in reading scores. The statistical procedure used was for small samples and was taken from Blommers and Lindquist's text Elementary Statistical Methods in Psychology and Education.

The same statistical procedure was used on the upper one-fourth of the 92 Maple School youngsters and their matched Roosevelt counterparts.

Results from the procedures above were prepared in a series of Tables. These appear in Chapter IV. An analysis of the results of the statistical procedures is also presented in Chapter IV.

This study was undertaken to compare the growth in reading achievement of children being taught by a teacher having the use of teacher aides with the growth in reading achievement of children being taught by a teacher without the use of teacher aides. To accomplish this goal it was necessary to test the youngsters at Maple School before the teacher aides had been used, and then to test the youngsters again after the teacher aides had been used one year. The instrument used was the Stanford Achievement Test (Reading Section). The resulting differences in the youngsters' scores at Maple School are shown in the Appendix (Pre-test and Post-test Differences at Maple School).

The same method of analysis was used for Roosevelt School's youngsters. The results may also be noted in the Appendix (Pre-test and Post-test Differences at Roosevelt School).

The differences in growth between the pre-test scores and the post-test scores were summed for each school, and their respective means calculated. Maple School's mean growth in reading achievement for the period under study was .598 of a school year (based on a 10 month year) while Roosevelt School's mean growth in reading achievement was .637 of a school year.
Standard deviations were calculated for each school with Maple School having a standard deviation of .463 and Roosevelt School having a standard deviation of .454. Both means and standard deviations as well as \( t \)-test results may be noted in Table III.

**TABLE III**

RESULTS FOR THE TOTAL MATCHED GROUP OF YOUNGSTERS AT ROOSEVELT AND MAPLE SCHOOLS

<table>
<thead>
<tr>
<th>School</th>
<th>Maple</th>
<th>Roosevelt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean Growth Difference</strong></td>
<td>.598</td>
<td>.637</td>
</tr>
<tr>
<td><strong>Standard Deviation of Growth Differences</strong></td>
<td>.463</td>
<td>.454</td>
</tr>
<tr>
<td><strong>Difference in Mean Growth</strong></td>
<td>.039</td>
<td>.039</td>
</tr>
<tr>
<td><strong>Standard Error of the Difference in Mean Growth</strong></td>
<td>.526</td>
<td>.663</td>
</tr>
<tr>
<td><strong>Standard Deviation of Growth Differences</strong></td>
<td>.297</td>
<td>.059</td>
</tr>
</tbody>
</table>

*This was evaluated at the 1\% level.*

To evaluate the difference between two means, calculations were made to determine the value of \( t \). This computation resulted in a \( t \) of .059, which when evaluated at the 1\% level, proved not to be significant. As a result, the null hypothesis was accepted in regard to the growth in
reading achievement of the students being compared at Maple and Roosevelt Schools. The score was interpreted from Fisher's Table. An analysis was then made of the lower one-fourth of Maple School's youngsters (Note Table IV). The mean growth of these 23 youngsters was computed and found to be .526 of a school year with a standard deviation of .237. The 23 Roosevelt School youngsters' mean growth was also computed. The mean growth was found to be .722 of a school year with a standard deviation of .311. Computations were then made to evaluate the difference of the two growth means. A \( t \)-score of 1.25 was attained, which resulted in the acceptance of the null hypothesis when the score was interpreted from Fisher's Table. The difference in the mean growth to the lower one-fourth of the Maple School youngsters was not statistically significant.

Though none of the phases of this study yielded statistically significant results, it would be well to note at this point that there may have been reasons why the differences were not statistically significant. One possible explanation may have been the fact that

<table>
<thead>
<tr>
<th>School</th>
<th>Maple</th>
<th>Roosevelt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Growth Difference</td>
<td>.526</td>
<td>.722</td>
</tr>
<tr>
<td>Standard Deviation of Growth Differences</td>
<td>.227</td>
<td>.311</td>
</tr>
<tr>
<td>Difference in Mean Growth</td>
<td>.196</td>
<td></td>
</tr>
<tr>
<td>Standard Error of the Difference in Mean Growth</td>
<td>.084</td>
<td></td>
</tr>
<tr>
<td>( t )</td>
<td>2.333</td>
<td></td>
</tr>
</tbody>
</table>

*This was evaluated at the 1% level.*
of 2.333 was attained, which resulted in acceptance of the null hypothesis when this score was interpreted from Fisher's Table of $t$ at the 1% level. The difference in the mean growth was not significant between the lower one-fourth of the Maple School youngsters and of the matched Roosevelt School youngsters. The difference was found to be significant at the 5% level.

**Table V**

<table>
<thead>
<tr>
<th>RESULTS FOR THE UPPER ONE-FOURTH OF THE MAPLE YOUNGSTERS</th>
</tr>
</thead>
</table>
| The mean growth of the upper one-fourth of the Maple School and their matched Roosevelt youngsters was then calculated, and this resulted in a growth mean of .804 of a school year with a standard deviation of .768 (Note Table V). The 23 Roosevelt School youngsters' mean growth was calculated to be .613 with a standard deviation of .437. Computations were then made to evaluate the difference of the two growth means. A $t$-score of 1.021 was attained, which resulted in the acceptance of the null hypothesis when the score was interpreted from Fisher's Table of $t$ at the 1% level. The difference in the mean growth between the upper one-fourth of the Maple School youngsters and of the Roosevelt School youngsters was not statistically significant.

Though none of the three phases of this study yielded differences that were statistically significant, it would be well to look at the results in light that there may have been reasons why the differences were not statistically significant.

One possible explanation may have been the fact that
one teacher aide was used for every two teachers. This meant
that the teacher aide was available only one-half the time
class was in session. This limited help may not have given
the teacher and the teacher aide time enough to develop
significant improvement in the youngster's reading skills.

Another factor having the possibility of affecting
the results of this program is that Tulare City School's
administration wanted the teachers to use the teacher aides
in a way that the aides would benefit the teachers most.
This meant that teacher aide's part in the reading program

### TABLE V

**RESULTS FOR THE UPPER ONE-FOURTH OF THE MAPLE YOUNGSTERS**

AND THEIR MATCHED ROOSEVELT YOUNGSTERS

<table>
<thead>
<tr>
<th>School</th>
<th>Maple</th>
<th>Roosevelt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Growth Difference</td>
<td>.804</td>
<td>.613</td>
</tr>
<tr>
<td>Standard Deviation of Growth Differences</td>
<td>.768</td>
<td>.437</td>
</tr>
<tr>
<td>Difference in Mean Growth</td>
<td>.191</td>
<td></td>
</tr>
<tr>
<td>Standard Error of the Difference in Mean Growth</td>
<td>.187</td>
<td></td>
</tr>
<tr>
<td>$t^*$</td>
<td>1.021</td>
<td></td>
</tr>
</tbody>
</table>

*This was evaluated at the 1% level.*
could have been many and varied or even non-existent. The principal of Maple School had indicated that the reading program was one area where the aides were used extensively, and this became one of the reasons for doing the study in Summery. The purpose of this study was to evaluate the area of reading. There was still the factor that each the effectiveness of the teacher aide phase of an instruc-teacher used the teacher aide in a way that the teacher felt program carried on in Tulare, California. This the aide to be most useful. It would be interesting to look further into the statistics available to discover which Elementary Secondary Education Act of 1965. The problem of teachers had been most effective in increasing reading the study was one of comparing the growth in reading achievement skills. After gathering this information, an analysis could have been made to see whether there were any worthy correla-teacher aides with the growth in reading achievement of ations between the methods the teachers employed in using children being taught by a teacher without the use of teacher aides.

In an analysis of the progress made by the lower one-fourth of the Maple School youngsters in relation to their matched Roosevelt School youngsters as compared to the results should be attainable. An experimental design was set up to test the hypothesis that there is no significant differ-ence between the reading achievement of children being taught youngsters, it was found that the upper one-fourth appeared to benefit much more from the teacher aide program. It would be interesting to study further the usage of the further, an analysis was made of the upper and lower one-teacher aides in the program in this light. To ascertain whether teacher aides had made it possible for the teachers in reality, as an enrichment source from which the brighter to give extra remedial help or whether the aides were serving, To accomplish these purposes, the Stanford Achievement youngsters were benefiting, would be interesting, indeed.
SUMMARY AND CONCLUSIONS

One year after this test was administered, the Stanford achievement test (Reading section) was again administered to the same group of students than in the second and final grades. At the same time, the California Test of Mental Maturity was also administered.

Summary. The purpose of this study was to evaluate the effectiveness of the teacher aide phase of an instructional program carried on in Tulare, California. This program was made possible by funds from Title I of the Elementary Secondary Education Act of 1965. The problem of the study was one of comparing the growth in reading achievement of children being taught by a teacher having the use of teacher aides with the growth in reading achievement of children being taught by a teacher without the use of teacher aides.

It was assumed that when additional money was being spent to improve an established education program, measurable results should be attainable. An experimental design was set up to test the hypothesis that there is no significant difference between the reading achievement of children being taught by a teacher having the use of teacher aides and the reading achievement of children taught by a teacher without the use of teacher aides.

The growth made in reading after one school year was then determined for each of the ninety-two youngsters at each school. The mean growth was then calculated for each school. Results should be attainable.

Further, an analysis was made of the upper and lower one-fourths of the experimental and control groups to see whether there were significant differences in growth in reading achievement between these groups.

To accomplish these purposes, the Stanford Achievement Test was administered to all first and second grade youngsters at Maples School (the experimental school) and Roosevelt School (the control school).
Test (Reading Section was administered to all first and second grade youngsters at Maple School (the experimental school) and Roosevelt School (the control school). One year after this test was administered, the Stanford Achievement Test (Reading Section) was again administered to the same group of students then in the second and third grades. At the same time the California Test of Mental Maturity was also administered. The populations of the two schools were matched on the basis of sex, ethnic groups, age (6 month range), and I.Q. (within 10 points). Ninety-two boys and girls at each school were matched within these limitations, and they became the experimental and control groups. The growth made in reading for one school year was then determined for each of the ninety-two youngsters at each school. The mean growth was then calculated for each school. A t-test was used to determine if the difference between the mean growths of the two groups was significant. It was found to be not significant at the 1% level of confidence. The procedure of finding the mean growth and using a t-test was followed for the lower one-fourth of the experimental group and the Roosevelt youngsters. For the upper one-fourth of the experimental group, and their matched Roosevelt youngsters, the same procedures were used. These results were also not significant at the 1% level of confidence, and the acceptance of the null hypothesis in all
three phases of the study became necessary. The lack of a significant difference may be in part due to the fact that one teacher aide was shared by two teachers, thus not providing an aide long enough for the teacher to attain a significant improvement in her children's reading scores.

Another factor affecting the difference in achievement may be the philosophy of the district which implies that a teacher may use the teacher aide in the way the teacher deems best. The effectiveness of the teacher aide could have, and may well have, varied from room to room. The upper one-fourth of the experimental group, when compared to the Roosevelt youngsters, appeared to have benefited more from the use of teacher aides than the lower one-fourth of the experimental group when they were compared to their control group. The problem then arose again pertaining to the way the teacher aides had been used. There is the possibility with better guidance the teachers could have used the teacher aides more effectively and produced the anticipated achievement gain. Benefits derived from each of these methods are not to be minimized.

Conclusions. It would appear that under the method of administration being used at the time of this study, the teacher aides were not significantly affecting the achievement of youngsters in the area of reading at Maple School.

There is an indication drawn from the available data that the upper one-fourth of the youngsters have benefited
more greatly from the use of teacher aides as used during the study than have the lower one-fourth, when compared to their respective matched youngsters at Roosevelt School. This was not, however, borne out on a statistically significant basis. There was an indication from the teachers and the building principal at the experimental school that the teacher aides had become an integral part of the teaching team. The teachers felt that they were doing a better job with the use of teacher aides, which should be recognized as of value as a morale factor when dealing with a school staff.

Recommendation for Further Study. There appears to be a need to discover the effect of teacher aides on achievement of youngsters when the teacher aide was used full time with one teacher and in one class. The increase in the use of teacher aides time over the study just cited might create a significant increase in the achievement of youngsters in such a program when compared to youngsters not in such a program using teacher aides.

A study of the various ways teacher aides are used in a classroom and the benefits derived from each of these methods would assist in guiding districts in the best use of teacher aides.

A. BOKOSH


B. PHELPS

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C. WARNER


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**APPENDIX**

**C. NEWSPAPERS, UNPUBLISHED MATERIALS, AND PUBLICATIONS OF ORGANIZATIONS**


CALIFORNIA TEST OF MENTAL MATURITY
SCORE SHEET

TULARE CITY SCHOOL DISTRICT
TULARE CITY SCHOOL DISTRICT
TULARE, CALIFORNIA

<table>
<thead>
<tr>
<th>Sex</th>
<th>Grade</th>
<th>Teacher</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Ethnic | Name    | No. | Age in Months | **I.Q. |
*M - Mex.; N - Negro; O - Oriental; C - Caucasian
**Rank pupils from highest to lowest on basis of I.Q. score.
### STANFORD ACHIEVEMENT TEST RESULTS

**TULARE CITY SCHOOL DISTRICT**  
**TULARE, CALIFORNIA**

<table>
<thead>
<tr>
<th>Name</th>
<th>No.</th>
<th>Word Meaning</th>
<th>Paragraph Meaning</th>
<th>Total Reading</th>
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</thead>
<tbody>
<tr>
<td>Raw Score</td>
<td>Grade Score</td>
<td>Raw Score</td>
<td>Grade Score</td>
<td>Raw Score</td>
</tr>
</tbody>
</table>

---
<table>
<thead>
<tr>
<th>Name</th>
<th>No.</th>
<th>Teacher</th>
<th>Year</th>
<th>Word Meaning</th>
<th>Paragraph Meaning</th>
<th>Total Reading</th>
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<tr>
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<td>1.2</td>
<td></td>
<td></td>
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</tr>
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<td>.1</td>
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*One ten month school year represents 1.0*
PRE-TEST AND POST-TEST DIFFERENCES AT MAPLE SCHOOL

(These figures* represent the difference between the pre-test and post-test scores for each of the youngsters participating in this study.)

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*One ten month school year represents 1.0
PRE-TEST AND POST-TEST DIFFERENCES AT ROOSEVELT SCHOOL

(These figures* represent the difference between the pre-test and post-test scores for each of the 92 youngsters participating in this study.)

| .8  | 1.1 | .6  | .8  |
| .4  | .5  | .8  | .6  |
| .7  | .7  | .7  | .6  |
| 1.0 | 1.2 | .6  | 1.0 |
| .7  | .5  | .2  | .3  |
| .7  | 1.3 | .6  | .1  |
| .4  | .5  | .4  | .6  |
| .3  | .6  | .6  | -.1 |
| .9  | .7  | .6  | .0  |
| .6  | .7  | 1.7 | -.1 |
| 1.6 | .3  | -.2 | 1.2 |
| .6  | .4  | .3  | .4  |
| .5  | .3  | .4  | 1.1 |
| .6  | .5  | 1.0 | 1.0 |
| .7  | .9  | .3  | 1.3 |
| 1.5 | .3  | .3  | 1.0 |
| 1.0 | .3  | .6  | .5  |
| .3  | .6  | .7  | .5  |
| .7  | .6  | .3  | 1.5 |
| .4  | .9  | .6  | -.5 |
| 1.3 | .4  | 1.7 | .2  |
| 1.2 | .4  | .3  | .3  |
| 1.1 | .4  | .9  | .2  |

*One ten month school year represents 1.0